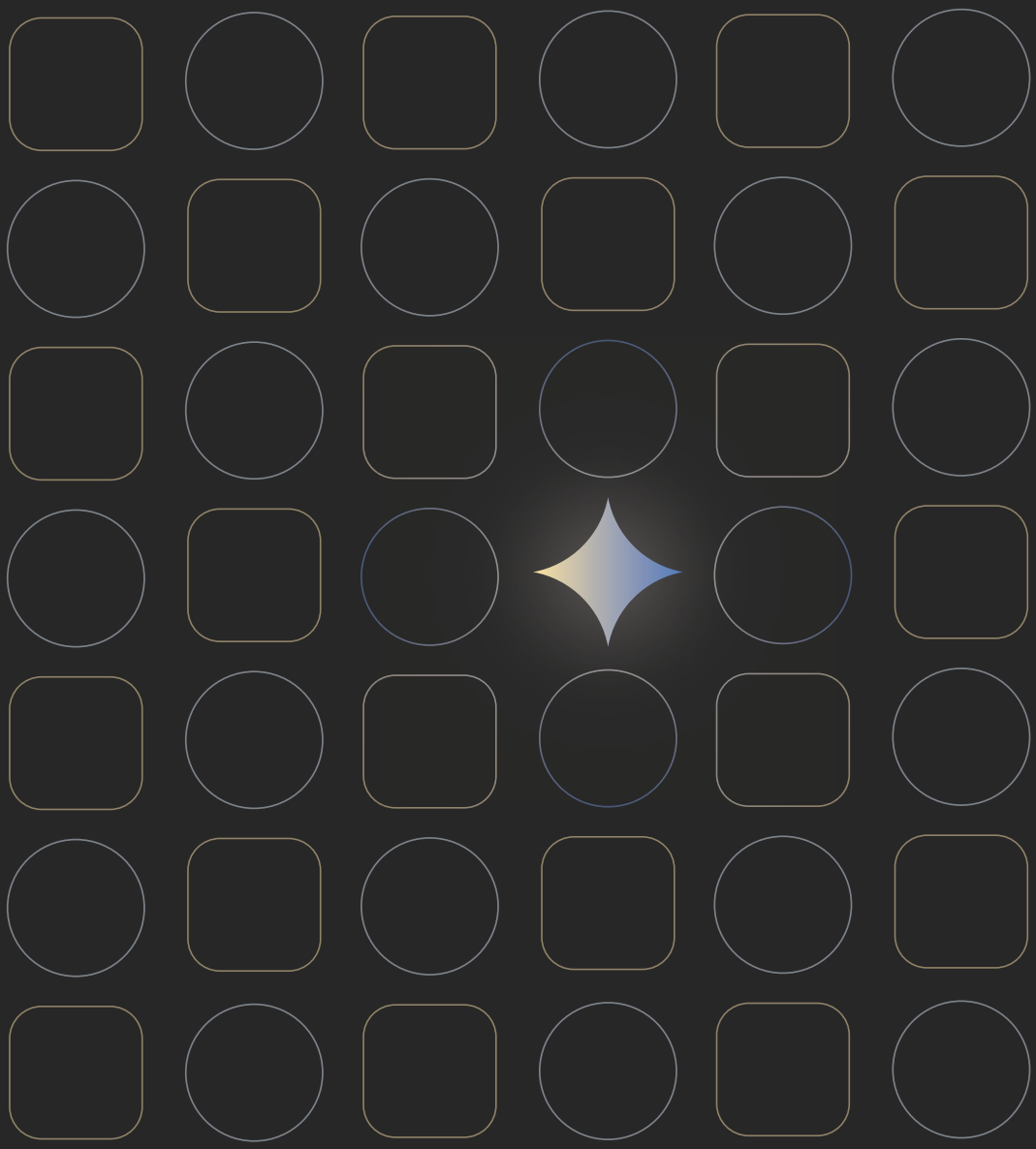

BRIDGING SYSTEMS:

ENHANCING MUSEUMS' EXPERIENCE THROUGH SILVER GENERATION ENGAGEMENT.

2024
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Bridging systems: enhancing Museums' experience through Silver Generation Engagement.

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Vorrei iniziare esprimendo la mia gratitudine al mio relatore di tesi, Andrea Di Salvo, che mi ha guidato e supportato durante la realizzazione di questo lavoro.

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ABSTRACT

Employing user experience (UX) and customer experience (CX) methodologies to enrich the museum experience for all visitors while l everaging the contributions of elder population. This study focuses on how museums, through enhanced physical and cognitive accessibility, can **engage the elderly population as active contributors to cultural experiences.**

In Italy, the **over 65 demographic is expanding rapidly** and represents an essential part of the community with significant cultural and economical value. By examining **key factors such as inclusivity, accessibility, and technological engagement,** this research seeks to **transform museums as hubs for promoting active ageing and technological literacy** through effective curatorial and educational planning.

This approach empowers the **silver generation and builds up the overall visitor experience,** ensuring museums remain relevant spaces for today's fluctuating society. **Bridging systems between elder communities and museum experiences** is a pivotal step toward transforming museums into inclusive, less ignorant cultural institutions.

PURPOSE OF THE STUDY

Every day around the world, people make the journey to the front doors of approximately ninety five thousand museums. For so long, **museums have been object-centered and artifact-driven.** The purpose of this thesis is to explore how museums can **transform from artifact-centered institutions into inclusive, visitor-focused spaces**. This research aims to provide insights into how museums can enhance the visitor experience, making museums more meaningful and impactful for all audiences, particularly in a post-COVID era where technological interactions often play a significant role.

How can museums shift from an object-centered model to a visitor-centric approach that enhances inclusivity, accessibility, and emotional engagement, especially for individuals with physical and cognitive challenges?

INFORMANTS OF THE STUDY

Università della Terza Età (UNITRE), Cultura Dietro L'Angolo, Abbonamenti Musei and Casa Nel Parco (Casa del Quartiere Mirafiori).

KEYWORDS

Customer Experience (CX): the perception and emotions individuals have during their interactions with an organization.
Experience Economy: an economic model focusing on crafting memorable, immersive experiences rather than just providing goods or services.
Visitor Experience: the overall perception, emotions, and insights gained during an interaction.
Placemaking: designing spaces to foster community connection and meaningful interactions.
Playfinding: the natural, serendipitous exploration of spaces, allowing individuals to discover at their own pace.
Micro Interest: expressing superficial tmeporary interrest about specific topics or activities.
Curatorial Activism: using curation to address social issues and foster meaningful visitor engagement.
Educational Activism: Leveraging education programs to drive inclusivity and promote social transformation.
Creative Ageing: Active engagement in creative activities to enhance the well-being, physical and mental health.

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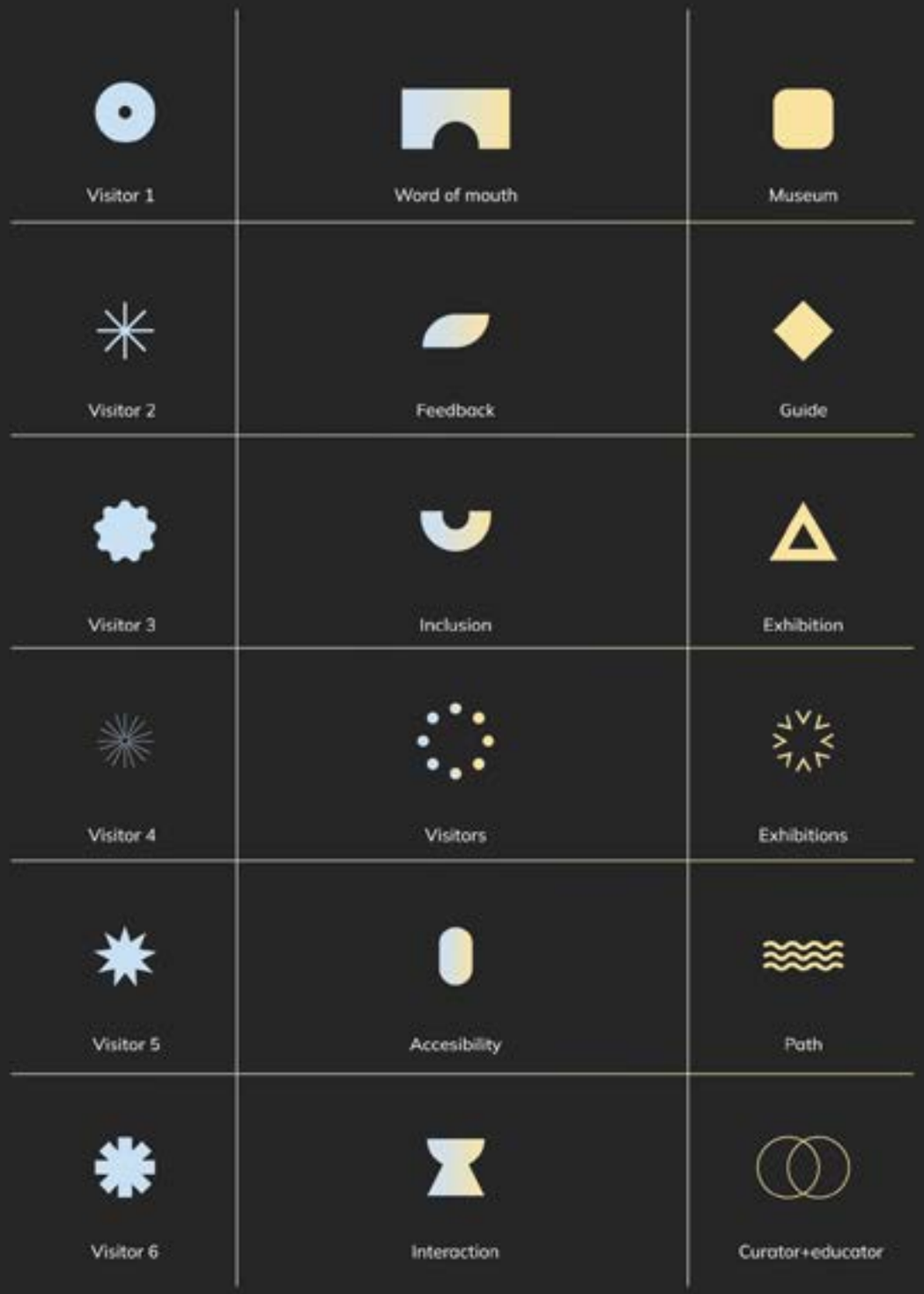


INTRODUCTION

As populations age at an unprecedented rate, museums face a critical challenge: **to evolve or risk fading into irrelevance.** Once revered as timeless institutions, museums now struggle to meet the diverse and changing needs of their visitors, particularly older adults. This study examines how **museums can reinvent themselves as inclusive spaces,** positioning accessibility as a powerful tool for social engagement.

The research examines into **museums as complex systems,** revealing structural gaps and overlooked connections that hinder inclusivity. By identifying these misalignments, the study uncovers opportunities to transform museums into environments that genuinely support and engage all visitors.

At the core of this exploration is **Stella, a prototype project that envisions a reimagined museum experience** driven by technology and user-centered design. Through Stella, this research offers a vision of **accessibility that goes beyond physical adjustments**, seeking instead to create meaningful, responsive, and adaptable cultural spaces.

By reimagining the museum experience for elders, this work aims to address not only accessibility but also the **shifting role of cultural institutions in a rapidly changing world**. Ultimately, this study aspires to **inspire museums to embrace inclusivity through innovation,** bridging these connections within their systems and redefining their purpose in modern society.

THEORICAL FRAMEWORK

The theoretical framework provides the foundation for understanding the relationship between **museums and elder inclusivity.** This chapter explores key concepts related to the role of museums in society, **the needs and preferences of elderly visitors,** and the growing importance of accessibility in cultural institutions. By examining the intersection of aging demographics and museum engagement, this framework establishes the **groundwork for developing inclusive strategies that enhance the visitor experience for older adult.**

2.1

MUSEUMS TODAY

The term “museum” comes from the Greek word “mouseion,” which originally referred to **a place dedicated to the Muses, the goddesses of art and science.** Today, museums are defined by the International Council of Museums (ICOM) as “a **nonprofit-making permanent institution in the service of society,** and of its development, open to the public, which **acquires, conserves, researches, communicates, and exhibits,** for purposes of **study, education, and enjoyment,** material evidence of people and their environment.” (International Council of Museums, 2023)

This definition emphasizes the multifaceted role of museums as c**ustodians of cultural heritage, centers of education and spaces for public enjoyment and reflection.** Museums are not merely repositories of artifacts; they are dynamic institutions that actively contribute to the cultural, educational, and social development of society.

2.1.1
THE HISTORY OF MUSEUMS

The concept of museums as we know them today has evolved over millennia. **The earliest known museums date back to ancient civilizations** as shown in *Figure 2*. For example, the Temple of Enlil in Nippur, Mesopotamia (around 2000 BCE), housed collections of cuneiform tablets used for educational purposes. Similarly, the Library of Alexandria in Egypt, founded in the 3rd century BCE, was not only a repository of books but also a center of learning and culture, making it one of the earliest institutions focused on the preservation and dissemination of knowledge.

During the Renaissance in Europe, the modern museum began to take shape. Wealthy **collectors, known as antiquarians, accumulated art, artifacts and curiosities** from around the world, often displayed in **"cabinets of curiosities."** These collections were primarily private, accessible only to the elite. Anyhow, the Enlightenment period brought about a shift in the purpose of museums. With the rise of knowledge and reason, the public museum was born as an **institution aimed at educating the masses.**

One of the **first public museums was the British Museum,** founded in 1753, with the mission of making knowledge accessible to the public, a principle that remains central to the museum's mission today. Similarly, the Louvre Museum in Paris, originally a royal palace, was opened to the public in 1793 during the French Revolution, further solidifying the role of museums as public institutions dedicated to education and cultural preservation. Over time, museums have undergone **several phases of evolution,** each responding to societal changes, technological advancements and shifting roles in education and culture.

Museum generations

Museum 1.0, Museum 2.0, Museum 3.0, and Museum 4.0. Each phase corresponds to the **progression of museums through various generations,** representing significant milestones in museum innovation. Museum 1.0 is exemplified by Ennigaldi-Nanna's museum in Iraq, which is recognized as the **first museum known to historians.** Museum 2.0 is represented by the Brooklyn Children's Museum, the **world's first children's museum, notable for being the first human-centered museum** focused on a specific audience. Museum 3.0 is illustrated by the 'Body Worlds' exhibition at the Pacific Science Center in the United States, which **customized its displays to meet the needs of participants.** Finally, Turin's Museo Egizio is classified as Museum 4.0 due to its initiative to **implement AI-guided tours,** blending historical objects with modern interactive displays.

2.1.2
THE ROLE OF MUSEUMS IN SOCIETY

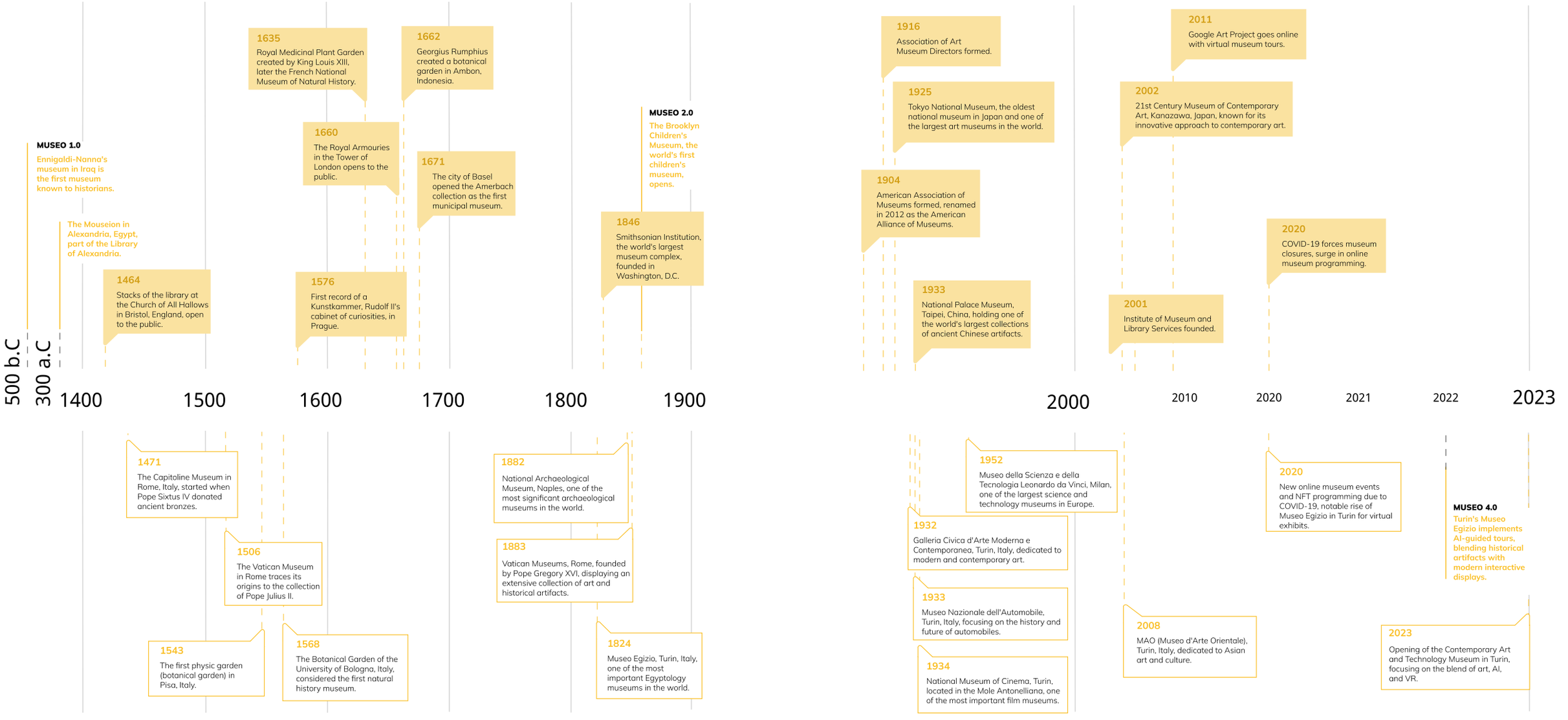
Museums play a critical role in **preserving and interpreting the cultural and natural heritage** of humanity. Their functions can be categorized into several key areas:

Figure 1- 5 pillars of Musuems' structure graph. Created by Author 2024.

Museum history timeline

Museums have evolved over time, tracing a long trajectory from ancient civilizations, as shown in *Figure 2 (Appendix D).*

Figure 2- Timeline of Museum History: Key Events in Italy and the rest of the World. Created by Author 2024



2.1.3
MUSEUMS AS EDUCATIONAL INSTITUTIONS

The instructive part of galleries is one of their most critical commitments to society. Exhibition halls **encourage learning in ways that are particular from formal instruction frameworks.** Through their shows, galleries display data in single environment that can lock in guests of all ages and foundations. The utilize of visual, sound related material components permits for a more **immersive learning encounter.**

Museums play a critical role in society by **providing educational opportunities that are distinct from formal education systems.** Unlike traditional classroom settings, museums offer learning environments where information is conveyed through multi sensory exhibits. By combining **visual, auditory and tactile elements, museums engage visitors in immersive learning experiences** that cater to various learning styles. According to Falk and Dierking (1992), the museum **environment itself significantly impacts how visitors learn,** as individuals actively construct knowledge based on the experiences and stimuli they encounter. This constructivist approach to learning, where **meaning is created through interaction with exhibits,** aligns with the role that museums continue to develop.

One of the key advantages of museums as educational institutions is their ability to cover topics that are often not included in standard educational curricula. Museums **provide a broader understanding of the world by introducing visitors to global issues,** historical events, scientific discoveries and artistic movements. This helps foster critical thinking and global awareness. For example, natural history museums allow visitors to explore environmental issues and biodiversity in ways that go beyond textbook learning, providing real world examples of complex ecological concepts.

Moreover, **museums have adapted to modern educational needs by embracing digital technology,** expanding their reach far beyond their physical walls. **Virtual exhibits, online collections, and interactive media** have transformed how museums engage with global audiences. This digital shift has made museum content accessible to anyone with an internet connection. The International Council of Museums (ICOM) also emphasizes this shift, recognizing the importance of **adapting to digital advancements to ensure continued educational relevance** (ICOM, 2022).

The relevance of museums in education will continue to grow as **these institutions adapt to the changing needs of society** while remaining true to their mission of preservation, education, and public service. In doing so, they uphold their role as important pillars of cultural education. Interactive learning has emerged as an effective teaching method utilized by educational museums, fundamentally **transforming the way visitors engage with content** (Abd El Wareath, 2022). Museums as an educational institution promote in society the following valuable competencies:

Active participation

Museums promote visitor engagement through discussions, questions, and hands on activities, **enhancing understanding and retention of the topics presented.**

Problem solving

Museums present challenges that require visitors to **identify problems and generate, test and evaluate creative solutions,** enhancing their problem solving skills.

Creative Activities

Educational museums offer workshops, mental games and creative challenges that stimulate **innovative thinking and allow visitors to express their creativity.**

Cross-Topic Learning

Interactive learning focuses on **transdisciplinary connections,** enhancing visitors' understanding of complex themes by linking concepts from different areas of knowledge.

Independent Learning

Visitors are encouraged to **explore themes at their own pace,** enabling them to apply knowledge practically and develop their unique skills and ideas.

Critical Thinking

Through various proposals and activities, museums encourage visitors to analyze and evaluate information, helping them **build logical arguments and think critically** about different concepts.

Fostering Critical Thinking

Museums contribute to the development of critical thinking skills by providing opportunities for visitors to **evaluate information and concepts.**

2.2

OVER 65

The term **“elderly” is commonly used to describe individuals who are “old” or “past middle age.”** According to the Merriam-Webster dictionary (“Elderly,” 2024), an elderly person is someone who has reached an **advanced stage of life,** typically characterized by a **decline in physical and sometimes cognitive functions.** In various studies and social services, including this thesis, **the elderly are often defined as individuals over the age of 65.** This age threshold is widely used due to its alignment with **retirement age and the associated shift from active employment** to a phase of life more focused on leisure, health and personal pursuits.

For the purpose of this thesis, an elderly individual is defined as a person who is over the age of 65, retired, and living independently in their own home. These individuals maintain their social lives through interactions with friends, neighbors, and family members. The participants in this study consist of **elderly citizens who continue to live in their private residences,** representing a diverse cross-section of this demographic. This definition acknowledges the **active and autonomous lifestyle that many elderly individuals lead,** emphasizing their ongoing engagement with their communities and social networks.

2.2.1
THE CONCEPT OF ELDERLY IN ITALY

In Italy, the definition of an elderly person aligns with global standards, typically referring to those aged 65 and over. Yet, the context of aging in Italy is deeply influenced by the country's demographic trends. **Italy has one of the oldest populations in Europe,** with a median age that is expected to rise significantly in the coming decades. As of 2020, approximately **23% of Italy's population was over the age of 65,** a proportion that is expected to increase to over 30% by 2040 (Istat, 2021).

The sociological perspective on aging in Italy also highlights the role of the elderly in society. Italian culture traditionally places a strong emphasis on family bonds and the **elderly often play a crucial role within their families, both as caregivers and as recipients of care.**

Furthermore, **Italian seniors are increasingly active and involved in community life,** challenging stereotypes of aging. Many participate in volunteer activities, continue to work beyond retirement age, and engage in lifelong learning opportunities.

The concept of **"active aging"** [2] (International Council on Active Aging, n.d.) is becoming more prominent, with policies and programs aimed at promoting health, social engagement and continued contribution to society among older adults. **The traditional division of generations is evolving** as society adapts to longer life expectancies **due to techonological and health advancements.** The concept of a **four-generation society is increasingly relevant** in discussions about aging and the elderly. This model divides the population into four overlapping generations:

Children and Young Adults (0-24 years)

This group includes those in **education and early stages of their careers.**

Working-Age Adults (25-64 years)

This generation is typically engaged in **full time employment, family and economic productivity.**

The Silver generation (65-84 years)

Traditionally considered "seniors," this group is now often characterized by **active retirement, involvement in community life and a focus on health and leisure.**

The Fourth Generation (85 years and older)

This newly recognized group is expanding due to increased life expectancy. It includes individuals who are often **more dependent on care** but still contribute to society in various ways.

The emergence of this fourth generation highlights the need for a more nuanced understanding of aging. Even so, they also represent a **growing segment of the population** that challenges conventional views on aging, showing that **longevity does not necessarily equate to frailty or disengagement.**

This chapter underscores the importance of viewing the elderly not merely as a homogenous group defined by age but as **individuals with unique needs and potentials.** As society continues to age, particularly in countries like Italy, there will be an **increasing need to adapt practices to ensure that the elderly are supported** and empowered to live active lives.

2 "Active aging promotes the vision of all individuals—regardless of age, socioeconomic status or health—fully engaging in life within all seven dimensions of wellness: emotional, environmental, intellectual/cognitive, physical, professional/vocational, social and spiritual" (International Council on Active Aging, n.d.).

In Istat's report (2021), the **population of Italy is broken down into four key generational groups.** Children and Young Adults (0-24 years) made up a significant portion, with those aged 0-14 comprising 13% of the population, and those up to 24 included in this broader age group. Working Age Adults (25-64 years) represented the majority in 2020, accounting for 63.8% of the total population, but this is expected to decrease to 53.3% by 2050. **The Elderly (65-84 years), who comprised 23.2% of the population in 2020, are projected to increase significantly, reaching 35% by 2050.** Lastly, the Fourth Generation (85 years and older), which made up 2% of the population in 2020, is expected to grow in size as life expectancy continues to rise, although precise future figures are not detailed in the report.

Italy's Population in 2020 by and Region

Greographic area	2020
North	27,6
Centre	11.8
South	20.2
Italy	59.6

Figure 3- Chart with an overview of Italy's Population in 2020 by Region. Created by Sofia Izquierdo

The table outlines Italy's resident population by geographical area in 2020, with a total population of 59.6 million. The distribution shows that the **North is the most crowded region,** home to 27.6 million people, followed by the South with 20.2 million residents, and the Centre with 11.8 million residents.

Mean age (2020)

45.7

The mean age of 45.7 years, reflects Italy's status as one of Europe's aging nations.

Italy's population (2020)

59.6 million

Italy's population as of January 2020, which stood at 59.6 million.

An elderly woman in front of 'Palazzo Vecchio' in Florence, Italy, Thursday, Feb. 17, 2022. - (Domenico Stinellis, 2022).

2050 Predictions

Projections for 2050, show a **10.5% decline in the working age population,** contrasted by an **11.8% rise in the silver generation (65+).** With a middle age expected to reach 50.7 years, this visualization highlights the impending demographic **shift toward an older population base.** Life expectancy projections, indicating an increase of 5.4 years for men and 4.1 years for women.

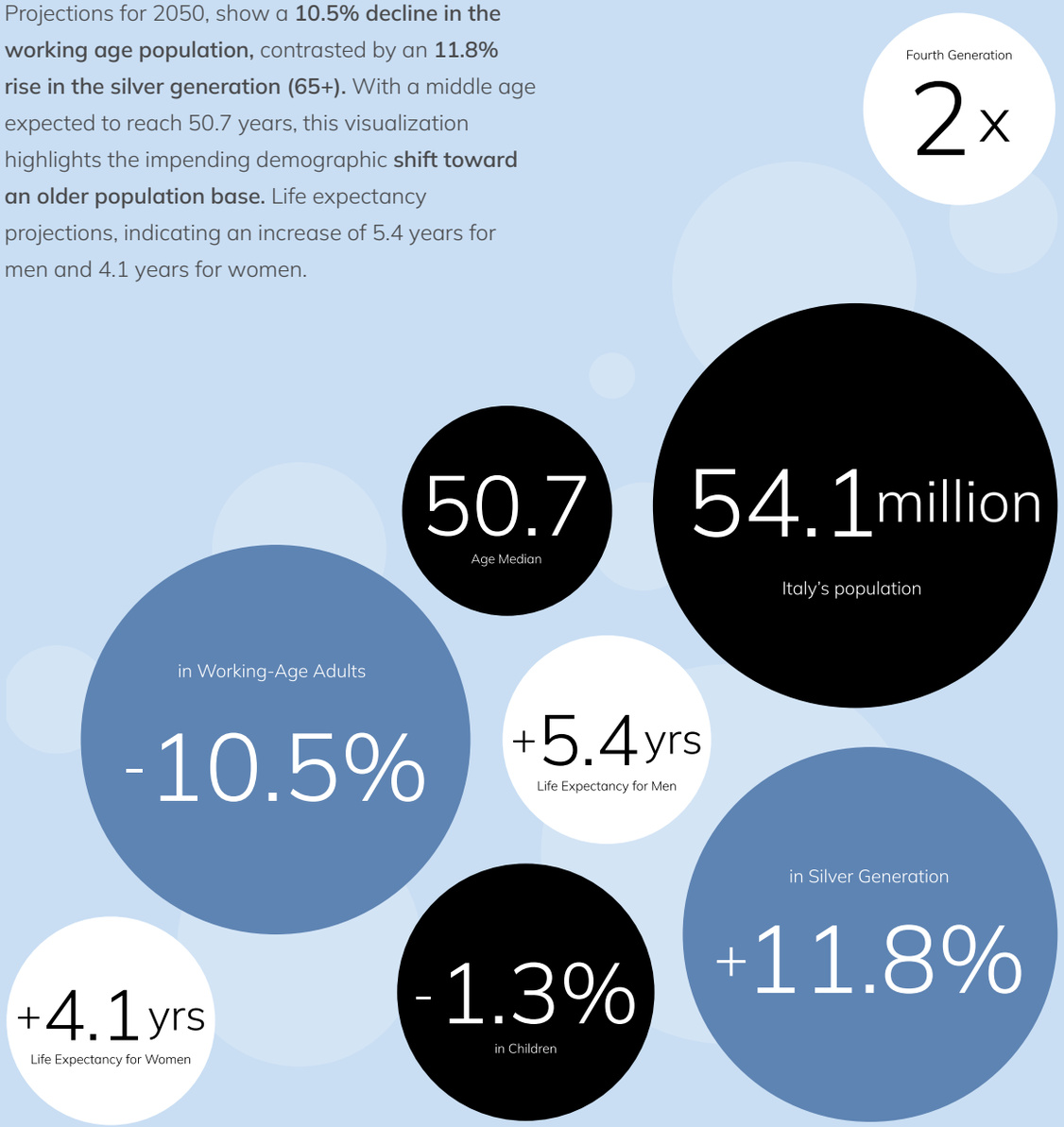


Figure 4- Forecasted Population Distribution for 2050. Created by Sofia Izquierdo

Historical and Projected Life Expectancy

Figure 5 presents **a timeline of life expectancy growth** for both genders from 1990 with projections to 2070. This chart underscores the **steady increase in life expectancy,** showing the gap between men and women and highlighting a continued upward trend, which will likely **impact social support systems and healthcare needs** as Italy's population ages.

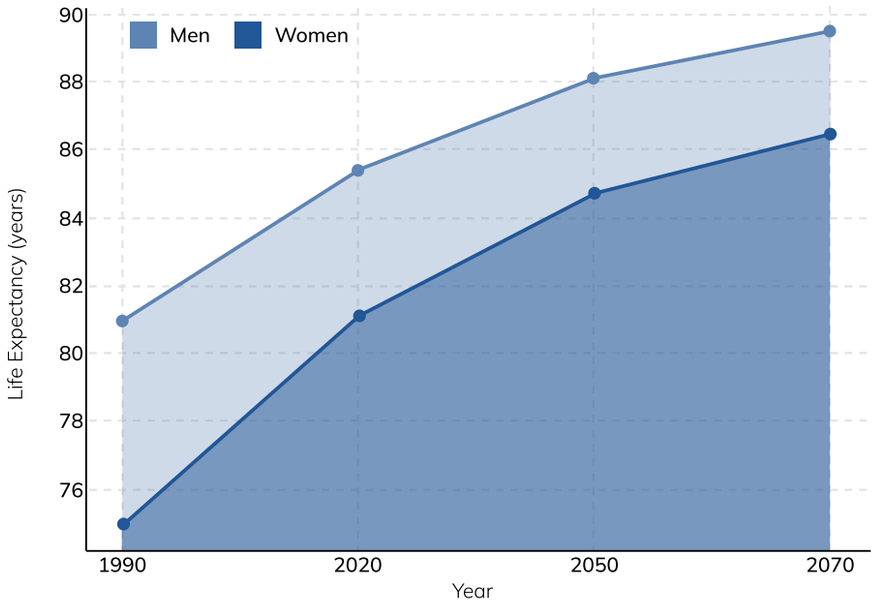


Figure 5- Historical and Projected Life Expectancy (1990 - 2070). Created by Sofia Izquierdo

63.8% of the population are working adults (15-64), forming the majority. **The elderly (65-85) account for 23.2%,** while children (0-14) make up 13%. A smaller segment, the 4th generation (85+), represents 2%.

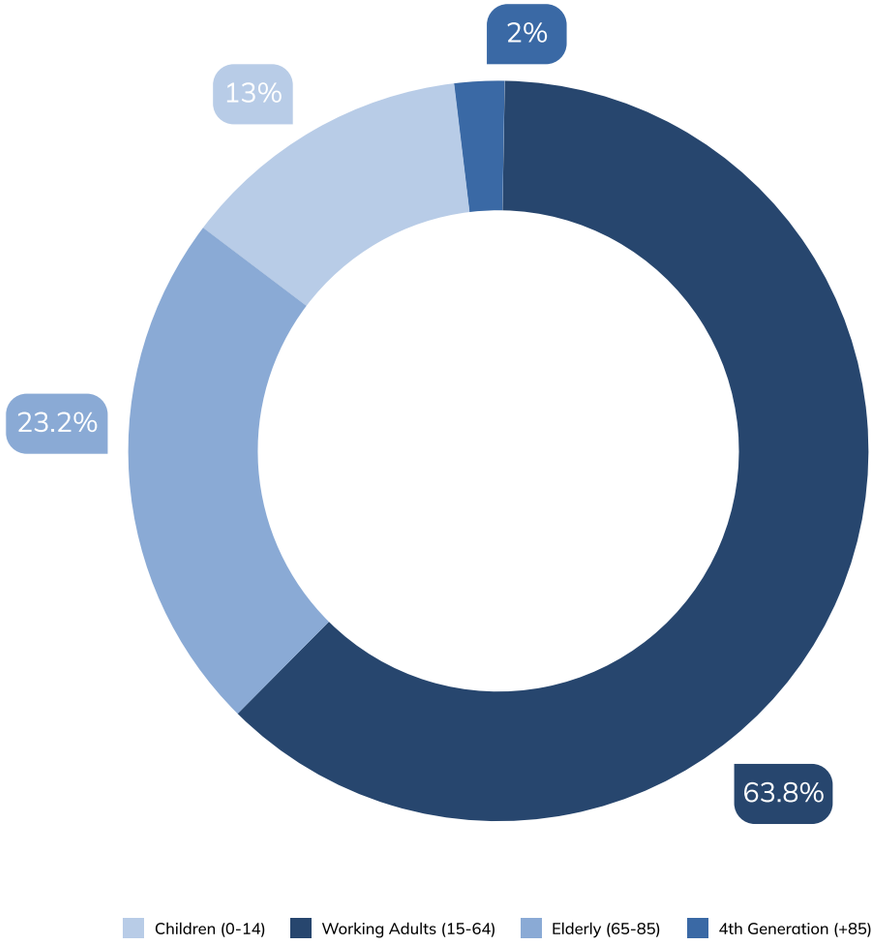
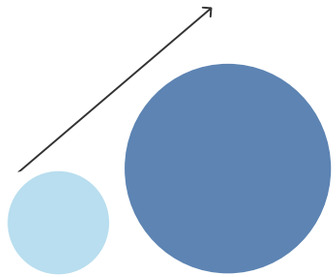


Figure 6- Age Distribution of Italy's Population in 2020. Created by Sofia Izquierdo

The number of people aged 65+ will more than double from

761
million in 2021 to

1.6
billion in 2050



(United Nations Department of Economic and Social Affairs, 2023)

According to an ISTAT report, **over two million people over 65 are at risk of social isolation.** This phenomenon is particularly acute in urban areas, where changes in the social fabric, the loss of a spouse, reduced family and friendship relationships and physical disabilities contribute to this isolation (Istat, 2023).

23%
of the population
in Italy, is over 50 years old

(United Nations Department of Economic and Social Affairs, 2023)

Elderly man in sunset light. Note. From Elderly man in sunset light (M. Vistocco, 2018).

The global population is aging: compared to 2020, the number of people over 60 is expected to double by 2050, increasing from about 1 billion over 60 to 2.1 billion in 2050 and 3.1 billion by 2100
(United Nations Department of Economic and Social Affairs, 2023)

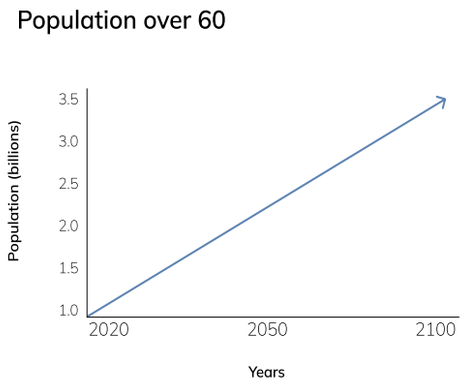


Figure 8- Italy's population over 60 prediction (Istat,2023).

Elderly couple conversing on a street in Siena, Italy, illustrating the social dynamics of older adults in an urban setting (Gottardi, 2017).

#2
Italy, oldest country
in the world

(Istat, 2023)

2.2.2
ACTIVE AGEING

The concept of active aging and the living conditions of the elderly in Italy have become central to discussions surrounding demographic changes, economic sustainability and social welfare. The phenomenon of population aging, where the elderly population grows while the younger generations shrink, **creates challenges and opportunities that shape Italy's societal landscape.**

In January 1, 2019, Italy's population of residents aged 65 and over numbered 13.8 million, representing 22.8% of the total population (Istat, 2020). This figure *(Figure 9)* highlights how **Italy is becoming progressively older,** with the elderly population increasing consistently over time. In 2009, people aged 65 and over accounted for 20.3% of the population, whereas in 1980, they represented 13.1%. These shifts are driven by longer life expectancies—over 80 years for men and over 85 years for women—coupled with a sustained decrease in birth rates, **as Italian couples are no longer having the two children per family** necessary for generational replacement.

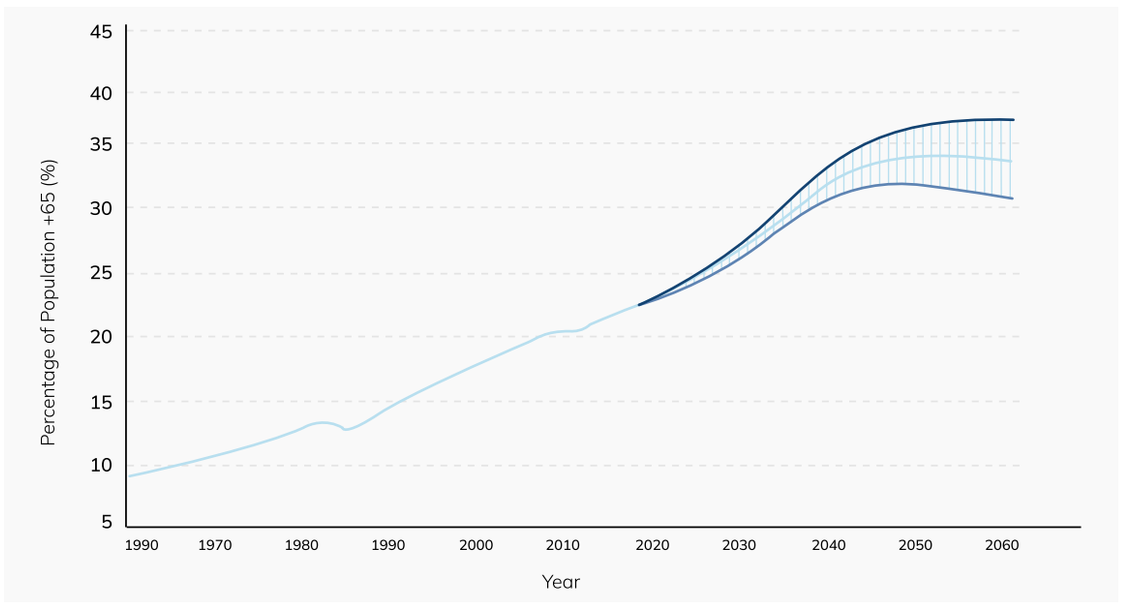


Figure 9- Population Aged 65 and Over in Italy. Historical Data 1960-2018 and Projections to 2060, Median Scenario and 90 Percent Confidence Interval (percentage values) Source: Istat elaborations.

Active aging is defined by the World Health Organization (WHO) as a **process that aims to optimize opportunities for health, participation and security** to enhance the quality of life as people age (World Health Organization [WHO], n.d.) In Italy, active aging encompasses a wide variety of aspects, from **continuing employment to participation in social, cultural and civic activities.**

The goal is to **ensure that older individuals remain active contributors to society** rather than being seen merely as a financial burden. In terms of employment, **older adults in Italy have increasingly extended their participation in the labor market.**

Between 2007 and 2018, employment rates among individuals aged 55 to 64 rose from 33.6% to 53.7%, indicating that **older individuals are not only living longer but are also remaining economically active for longer periods** (Istat, 2020).

This trend is vital for reducing the economic dependency ratio, which can be visualized through *Figure 10*, which highlights both the elderly dependency index and the parent support ratio from 1960 to 2060. **Active aging policies are essential in this context to prevent economic and social instability.**

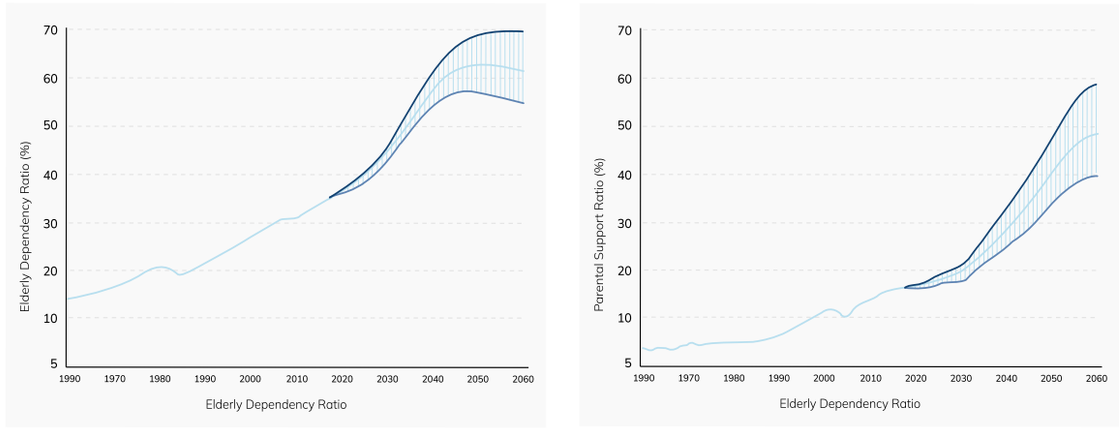


Figure 10- Elderly Dependency Ratio and Parental Support Ratio in Italy. Historical Data from 1960 to 2018 and Projections to 2060, Median Scenario, and 90 Percent Confidence Interval (percentage values). Source: Istat elaborations.

The relationship between active aging and economic development is well illustrated by the comparison of the Active Aging Index (AAI) and regional GDP per capita *(see Figure 11)*, which highlights how regions with higher AAI tend to show stronger economic performance.

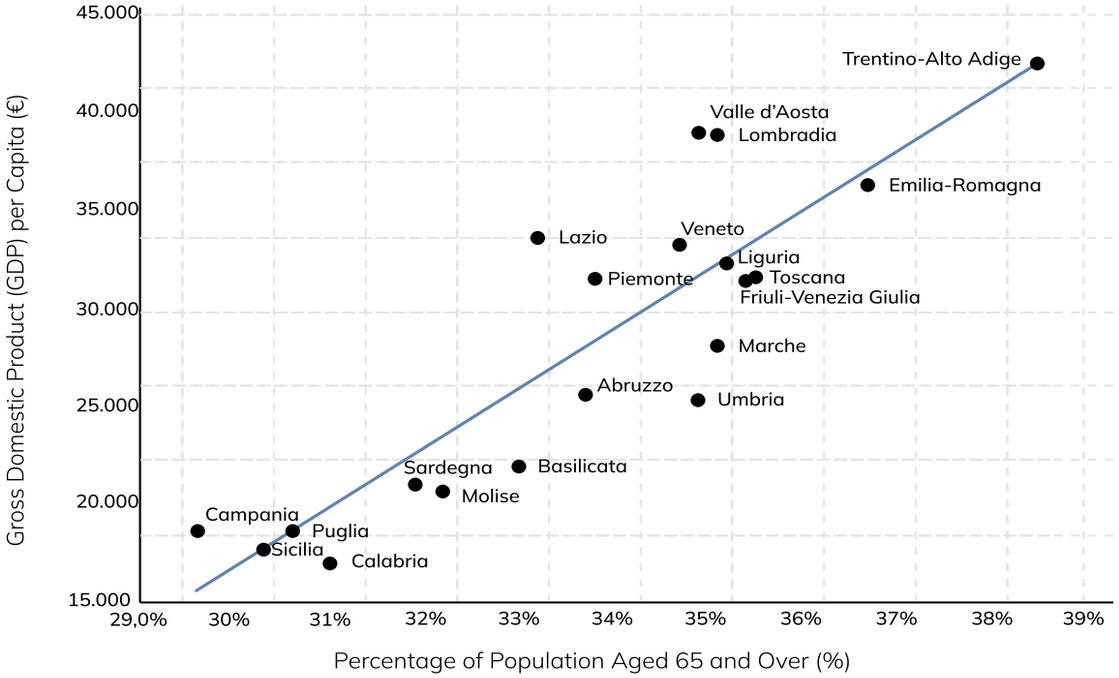


Figure 11- Scatter Plot of Percentage of Population Aged 65 and Over versus GDP per Capita by Italian Region. (Istat). Source: Istat elaborations.

Active aging also has a strong social component. Many older Italians play critical roles in their families, especially by **providing care for grandchildren and offering financial and emotional support to their adult children.** Grandparents, in particular, have become a cornerstone of the family structure in Italy, ensuring intergenerational solidarity. **This dynamic has mitigated some of the impacts of the economic crisis in Italy,** where many families rely on the pensions and savings of their elderly relatives for support.

The roles of elderly individuals in family life, broken down by age groups and family structures from 2007 to 2018, are represented in *Figure 12.*

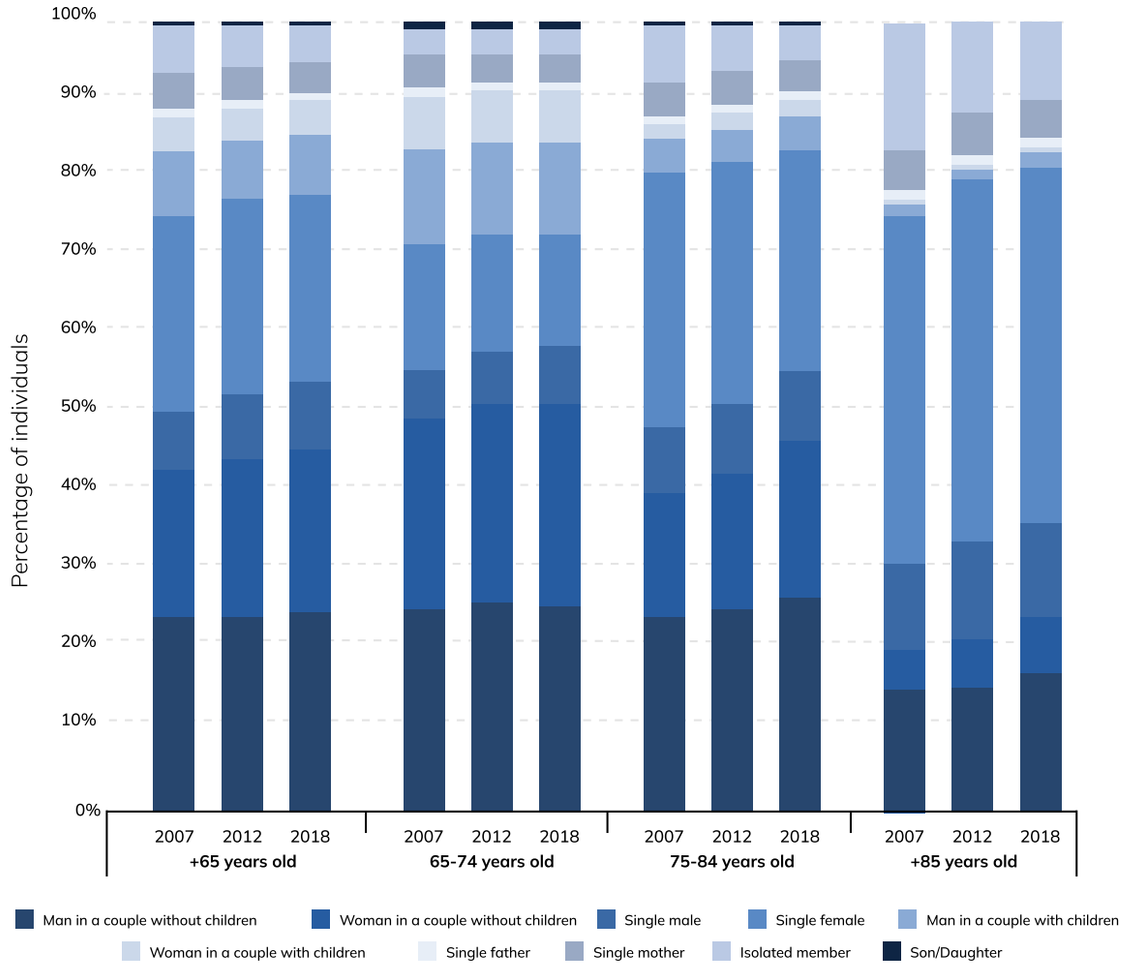


Figure 12- Composition of individuals aged 65 and over by age group and family role for the years 2007, 2012, and 2018 (percentage composition). Source: Istat elaborations.

Furthermore, active aging policies promote lifelong learning and continuous engagement with society. Italy has seen **growing participation of older adults in educational programs,** volunteer activities and civic engagement. As older individuals maintain their intellectual and physical abilities through such activities, they can contribute to their communities in meaningful ways, enriching both their lives and society as a whole.

Although, the increasing proportion of elderly people brings challenges. The economic burden of **healthcare and long term care for older adults is rising.** In 2018, nearly 30% of the elderly population lived with chronic illnesses, and a significant portion faced limitations in daily activities. The increasing demand for health services and long term care highlights the need for comprehensive policy responses that e**nsure the sustainability of the health care system** and improve the quality of life for elderly people. The geographical distribution of families with at least one elderly member, from 2007 to 2018, is shown in *Figure 13.*

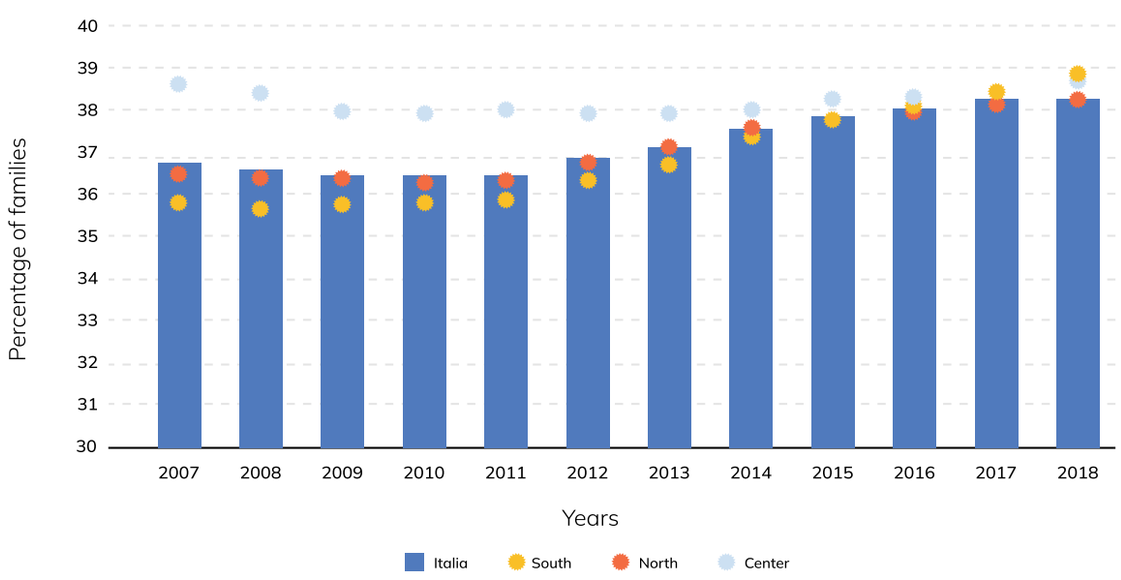


Figure 13- Percentage of families with at least one person aged 65 and over by geographic region, 2007-2018 (percentage of total families). Source: Istat elaborations.

Taking into account the statistics from 1960 to 2019, the percentage of people aged 65 and over in Italy increased significantly, rising from 9.3% in 1960 to 23.2% by 2019 (Istat, 2020). T**he projections for the period from 2020 to 2060 indicate that this trend will continue,** with the elderly population expected to reach approximately 33-35% by 2050 and potentially 37% by 2060 (Istat, 2020). A graphic *(Figure 14)* was created to illustrate the historical and **projected growth of the elderly population aged 65 and over in Italy from 1960 to 2060,** making clear the ongoing and future impacts of aging on Italian society.

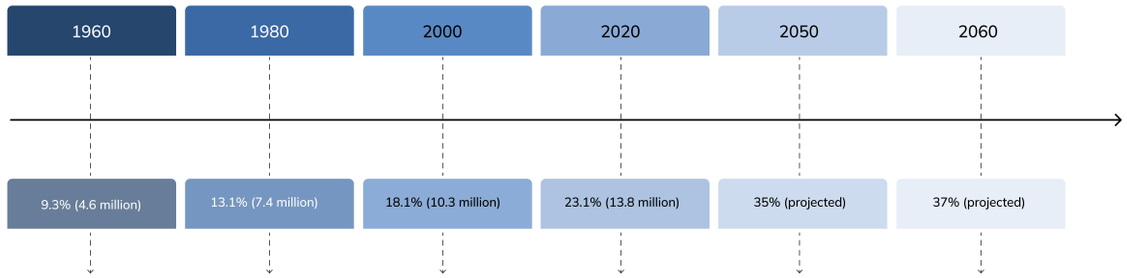


Figure 14- Population aged 65 and over in Italy: Historical data 1960-2018 and projections to 2060. Created by Sofia Izquierdo

Overall, the concept of active aging is crucial for addressing the challenges posed by Italy's aging population. By fostering policies that promote the health, participation, and security of older adults, Italy can turn demographic challenges into opportunities, allowing the elderly to continue contributing to society while maintaining their dignity and independence.

2.2.3
PSYCHOLOGICAL IMPACT OF ACTIVE AGING

The psychological well-being of older adults is closely tied to their **ability to remain active and engaged in meaningful activities.** The study "Active Aging in Very Old Age and the Relevance of Psychological Aspects" (2017) elaborated by Constança Paúl, Laetitia Teixeira and Oscar Ribeiro, examines the factors contributing to active aging among older adults, particularly focusing on those aged 75 and above.

The analysis revealed that psychological aspects, including **happiness, optimism, quality of life and low levels of psychological distress and loneliness,** play a dominant role in promoting active aging in this age group. In contrast, the health component, which was previously more relevant for younger seniors, becomes secondary.

The exploratory factor analysis, demonstrated that for **individuals 75 and older, psychological factors explain 12.9% of the variance in active aging,** whilst health explains 12%, cognitive performance 9.6%, and biological factors such as handgrip strength and lung capacity only 7.4% (Paúl, Teixeira, & Ribeiro, 2017).

The findings depicted in *Figure 15* emphasize the **multifaceted nature of active aging, particularly in individuals 75 and older.** The psychological component is shown to have the most significant influence, underscoring the importance of mental well-being in promoting an engaged and active lifestyle. In conjunction with these results, the following points highlight the c**ritical role that cognitive stimulation and emotional well being play in the aging process.**

Cognitive Stimulation

Regular engagement in intellectually stimulating activities, such as visiting museums, can help **maintain cognitive function in older adults.**

Emotional Well-being

Participation in cultural activities provides older adults with a **sense of purpose and belonging.** Museums can offer opportunities for social interaction, which is crucial for combating loneliness and depression.

Physical Health

Active participation in cultural experiences also has physical health benefits. The simple act of moving through a museum, even at a leisurely pace, **can contribute to physical fitness and mobility**

Self-Identity

For many older adults, maintaining a **sense of identity and autonomy is crucial,** allowing them to engage with content that resonates with their life experiences and perspectives.

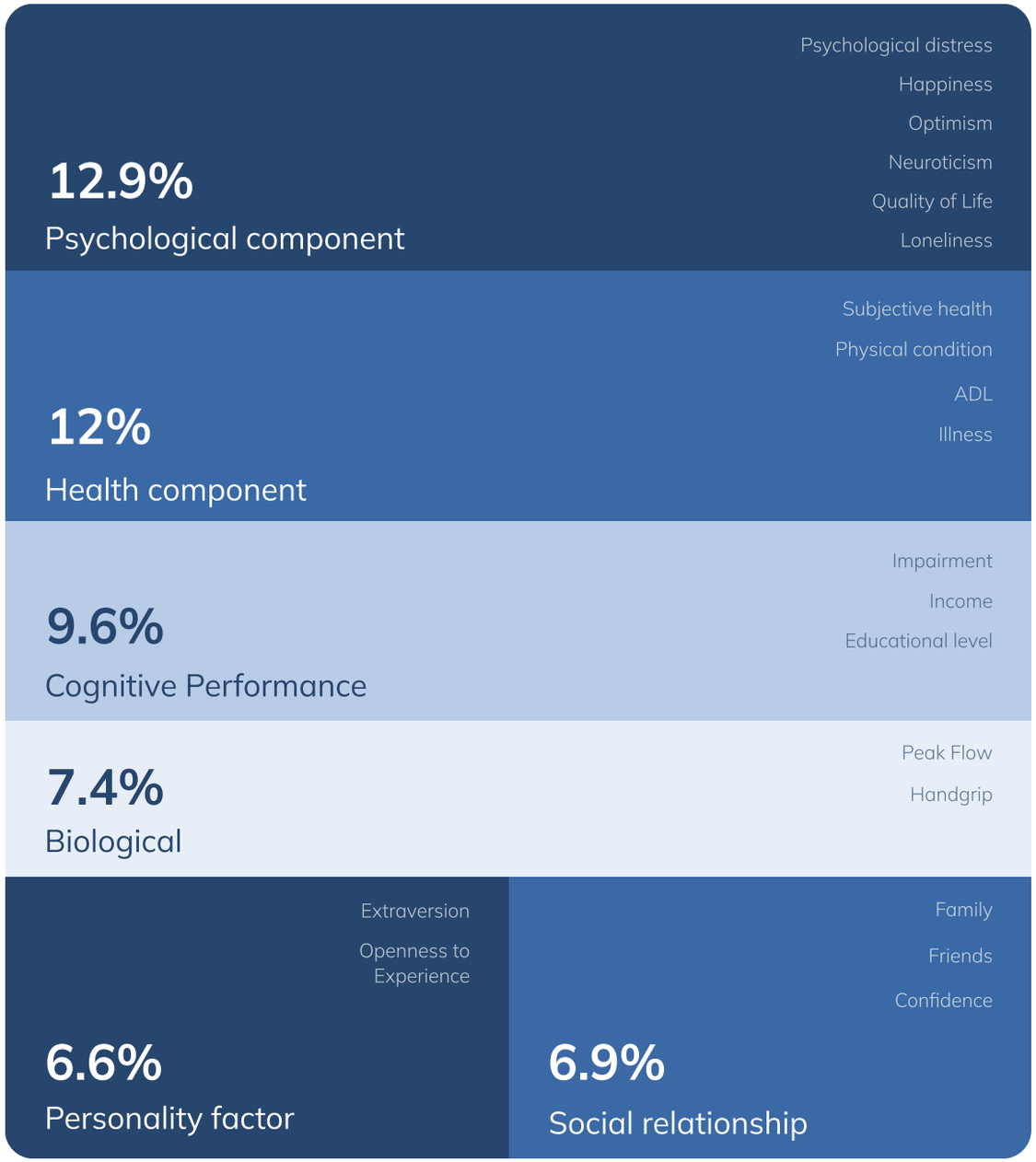


Figure 15- A hierarchy of influence on active aging in individuals 75+: psychological (12.9%) leads, followed by health (12%), cognitive (9.6%), biological (7.4%), social (6.9%), and personality (6.6%) (Paúl, Teixeira, & Ribeiro, 2017

2.2.4
SILVER ECONOMY

The silver economy, which refers to the **economic activity associated with the elderly population,** is emerging as a vital force shaping future markets. This demographic segment is rapidly growing, **both in Italy and globally, due to increasing life expectancy and declining birth rates.** The rising life expectancy in Italy is demonstrated by the survival curves for different ages across various timeframes *(see Figure 16)*, showcasing how mortality has decreased over the years and projecting future trends.

By 2050, it is projected that **one in three people worldwide will be over the age of 50,** with those over 65 outnumbering those under 15 in many developed countries, including Italy. In Italy, the Silver Economy is particularly significant. The country already **has one of the highest median ages in Europe,** and by 2100, the median age is expected to reach 53.6 years. The over-65 population currently makes up 23% of the total, a figure that will continue to rise, **reaching over 16 million by 2030.**

This demographic shift presents both challenges and opportunities, particularly in sectors such as **housing, healthcare, and crucially, culture.** As the global population ages, the silver economy is growing in importance, creating opportunities in various sectors while addressing challenges related to demographic shifts. **The global silver economy is projected to be worth $15 trillion by 2030** (Intesa Sanpaolo Innovation Center, 2023), underscoring its substantial role in both the economic and social fabric of modern societies.

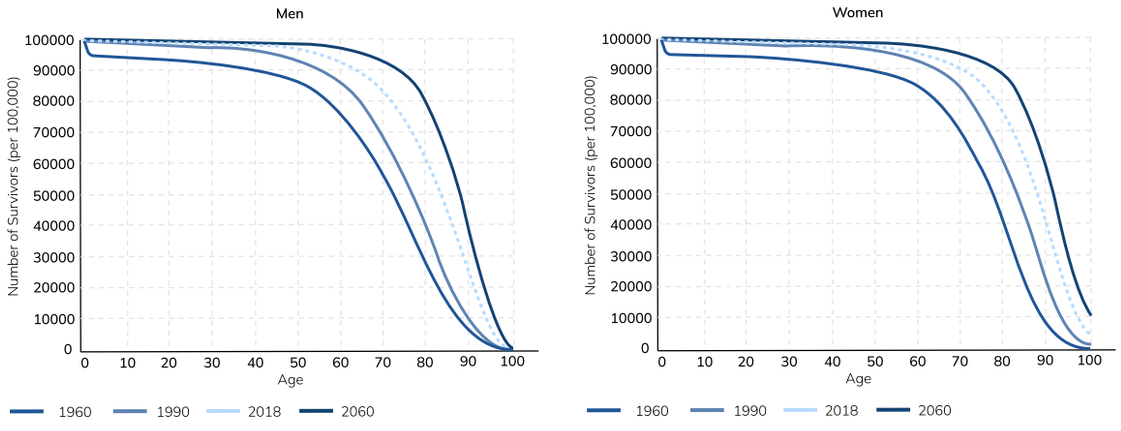


Figure 16- Survival curves at different ages by gender in Italy for the years 1960, 1990, 2018, and projected for 2060 (median scenario). Source: Istat elaborations.

From an economic perspective, the silver economy offers immense potential due to the purchasing power of older adults. In Europe alone, **by 2025, people over the age of 50 are expected to account for 50% of consumer spending,** representing a large and growing market for goods and services tailored to the aging population (Intesa Sanpaolo, 2023). This demographic controls significant wealth and has distinct consumer needs, especially in sectors such as healthcare, housing, transportation and financial services.

Investment in products and services catering to older adults, such as healthcare innovations, assistive technologies and age-friendly urban designs, is not only economically beneficial but also socially responsible. The European Commission has identified the **silver economy as a key driver for future economic growth,** with businesses and governments recognizing its capacity to support job creation and foster economic resilience (Rome Business School, 2023). The rise in life expectancy has also led to **extended participation in the workforce,** with more older individuals either staying employed or engaging in entrepreneurship, further contributing to economic activity.

Beyond the economic impact, the silver economy plays a crucial social role by enhancing the quality of life for older adults. As societies age, ensuring that the elderly are integrated into social and economic systems becomes a key priority. Services aimed at improving health, accessibility and overall well being **enable older adults to maintain independence** and lead fulfilling lives. Social initiatives, such as age friendly communities and public spaces, are growing in importance as they support the aging population's social inclusion, combat isolation and promote active aging (Intesa Sanpaolo, 2023). Also, the silver economy **emphasizes intergenerational solidarity.** By supporting initiatives that bridge the gap between younger and older generations, societies can foster a more inclusive environment where aging is seen not as a burden but as an opportunity for growth. Older adults, with their wealth of knowledge and experience, can play a critical role in mentoring and educating younger generations, further enriching social cohesion.

Despite its potential, the silver economy also presents challenges, particularly in adapting to the specific needs of the elderly population. These include creating policies that **address the strain on healthcare systems, increasing access to affordable care and ensuring financial security for retirees.** Nonetheless, the challenges are also opportunities for innovation, with companies and governments investing in digital health solutions, senior housing and mobility services that cater specifically to the needs of older adults (Rome Business School, 2023).

The Potential of the Silver Economy in the Cultural Sector

The Silver Economy offers a wealth of opportunities for the cultural sector in Italy. By addressing the challenges of accessibility, both physical and cognitive, museums can create more inclusive environments that not only attract older adults but also enhance their overall experience. In doing so, they not only tap into a significant economic resource but also fulfill their mission of serving as spaces for lifelong learning and cultural enrichment for all members of society.

Intergenerational Benefits

Engaging the silver demographic in cultural activities also has broader societal benefits. Older adults often play key roles in their families, such as caring for grandchildren or contributing financially. By making museums more accessible and appealing to them, **cultural institutions can help bridge generational gaps and promote family visits,** thereby increasing overall attendance and engagement.

Sustainability of Cultural Institutions

As the population ages, the silver demographic will become an increasingly important audience for museums and cultural institutions. By investing in this group now, museums can ensure their long term sustainability by cultivating a loyal and growing audience base.

Economic impact

The spending power of the silver demographic is substantial. In Italy, the added value attributable to sectors influenced by the Silver Economy is estimated at €43.4 billion. **Older adults are not just passive consumers; they are active participants in cultural activities** and are willing to invest in meaningful experiences.

Enhanced Cultural Engagement

By tailoring museum experiences to meet the needs of older adults, **cultural institutions can foster greater engagement.** This includes providing accessible information, creating interactive exhibits that cater to varying cognitive abilities and offering programs that resonate with their life experiences and interests.

Bridging the Digital Divide for Elders in Museums: Insights from Paolo Pelleri

As society ages, particularly in countries like Italy and Japan, the **integration of older adults into the digital world becomes a crucial element** of maintaining their engagement with culture and education. Museums, in particular, hold the potential to offer enriching experiences for older adults, but many are hindered by the challenges of navigating modern technology. This chapter explores the relationship between technology and the elderly through *an interview with Paolo Pelleri,* an instructor specializing in teaching smartphone and computer skills to seniors.

The technological leap over recent decades has left many older adults feeling alienated, as Pelleri emphasizes: “In Italy, we have an enormous digital divide among seniors. **Many don’t even know how to send an SMS, let alone navigate a smartphone.”** This gap is particularly evident in environments like museums, where interactive technology is increasingly integrated into the visitor experience. Pelleri notes that although technological solutions, such as augmented reality or AI, are becoming common in museums, **they are rarely designed with seniors in mind, resulting in poor adoption among older visitors.**

This issue is not limited to Italy. In Japan, a country with the highest proportion of elderly citizens, similar challenges are faced. Japan’s initiatives around **“Creative Ageing”** aim to shift the narrative of ageing away from decline towards continuous personal growth through art and cultural engagement. However, this initiative also recognizes the specific challenges faced by the elderly, such as the **need for specialized care and the increase in social isolation, which technology could potentially help mitigate.**

Designing Technology for Accessibility

Pelleri identifies one of the key barriers for elderly interacting with technology as the complexity of current devices: “The problem is that **many seniors use older models of smartphones or none at all. The technology is not designed for them.”** This sentiment underscores the importance of creating technological solutions that are intuitive, easy to use and compatible with a wide range of devices.

Successful examples, like the “Creative Ageing” (2023) initiative from Tokyo Metropolitan Art Museum, demonstrate the potential of such solutions. This program promotes positive ageing through art, making the interaction between elders and technology more

meaningful and less intimidating. These initiatives highlight the importance of making technology not only accessible but also a tool for ongoing personal development, **rather than a source of frustration.** The challenge, however, goes beyond designing user friendly technology. As Pelleri's experience shows, teaching seniors to use these tools requires a tailored educational approach. **"When I teach older adults, I change my tone, my language.** You have to take a step back and meet them where they are," Pelleri explains. This suggests that museums, if they wish to cater to older audiences, need to **offer educational programs or staff support** to help seniors navigate digital exhibits.

In Japan, the caregiving burden often falls on other elderly individuals, which exacerbates isolation and limits opportunities for cultural engagement. **Integrating education into museum visits could help alleviate some of this isolation** by encouraging seniors to venture out, engage with their peers, and use technology to enhance their experience.

The broader societal implications of integrating technology into elder focused museum experiences are profound. As the world's population continues to age, **museums that ignore the needs of older adults may lose a significant portion of potential visitors.** Pelleri notes that many older adults have simply "stopped going to museums because they feel out of place and unable to keep up with technological changes." This disconnect not only limits their access to culture but also exacerbates feelings of exclusion.

In contrast, projects like the Creative Ageing initiative highlight how art and culture can serve as tools for positive ageing. By designing technology that is approachable and ensuring adequate support for elders, museums can help bridge the digital divide.

The relationship between technology and elders in the context of museums is complex, but it is also filled with opportunity. As Pelleri's experience illustrates, the right approach to teaching and supporting older adults can make a substantial difference in their engagement with technology. Coupled with accessible design, as seen in initiatives like Creative Ageing in Japan, **museums have the potential to become inclusive spaces where older adults feel comfortable**, empowered, and connected to the world around them. The future of museum technology must consider these factors, ensuring that it caters to all generations and fosters lifelong cultural engagement.

Economic impact

Older adults **use smartphones for diverse purposes, support connectivity and information.** Common activities include staying in touch with family and friends through **WhatsApp, watching videos, and using health related apps** that help them manage medical needs. These activities foster social interactions and empower seniors to maintain their health and independence, with many relying on apps for medication reminders and health consultations (Puthenkudy Varghese, 2018) (Walton, 2021).

In September 2018, La Repubblica (2018) reported that smartphones had become highly popular among Italy's "silver generation," replacing traditional pastimes with social media activities on platforms like Facebook, Twitter, and Instagram. The article noted that **older Italians, particularly those in the "young elderly" category, now have apps for nearly every need.** In the study, chatting was the most common app use, with **87% of Italian participants using WhatsApp,** a notably high rate compared to Germany (76%) and France (27%), and 40% using Facebook Messenger. Despite these benefits, challenges remain. Research reveals a risk of excessive reliance on smartphones, potentially diminishing real life physical and social activities. Additionally, the elderly are vulnerable to online scams and misinformation, often due to limited digital literacy skills that hinder them from navigating security settings or recognizing suspicious content. Addressing these risks through family involvement and digital literacy programs can help seniors navigate digital spaces more safely (Pang, 2021). This evolving digital engagement among Italy's elderly is reshaping social dynamics, suggesting that **technology adoption, when coupled with proper support, can significantly enhance the quality of life for older adults.**

An elderly man, student of UNITRE using a smartphone during a musuem visit. Taken by Author 2024

DATA COLLECTION

This chapter, offers a detailed examination of **museum attendance in Turin,** focusing specifically on age related **visitation trends, with a particular emphasis on elderly visitors**. The analysis integrates comprehensive museum visitation data segmented by age, highlighting patterns of engagement among elder attendees an often underrepresented demographic in museum studies.

Beyond statistical insights, the chapter draws on **an array of qualitative data collected through interviews and field research,** involving **direct contact with museum professionals, elderly visitors and scholars.** This combined approach, utilizing both digital and in person methodologies, adds depth to the understanding of museum accessibility and visitor experiences in Turin. By incorporating perspectives from diverse stakeholders, the chapter constructs a well rounded **view of how museums currently serve, and could further support, an aging population.** The findings offer a foundational context for addressing future directions in museum inclusivity and accessibility for elder audiences.

3.1

MUSEUMS IN TURIN

Turin, Italy, is renowned for its rich cultural heritage and extensive network of museums that span various disciplines, including art, history, science, and technology. For this thesis, a **territorial analysis was conducted to assess the museum sector in the city,** with particular focus on accessibility, services provided, and audience engagement, particularly with the elderly population. The results of this analysis are detailed through **the classification and mapping of museums,** providing valuable insights into how these i nstitutions contribute to Turin's cultural landscape.

According to the February 2024 report from the Osservatorio Culturale del Piemonte, the metropolitan area of **Turin boasts a total of 55 active museums** (Osservatorio Culturale del Piemonte, 2024), including prominent institutions such as the Museo Egizio and the Museo Nazionale del Cinema. The region of Piedmont, which includes Turin and its surrounding provinces, **counts a total of 115 museums, spanning various categories such as historical, artistic, and scientific collections.** These museums form a critical part of the cultural landscape of both the city and the region, reflecting a rich diversity of themes and historical narratives. The analysis of museum visits in the metropolitan area of Turin and the broader Piedmont region from 2022 to 2024 reveals a significant increase in attendance.

242,882

Museum visitors in 2022 (Osservatorio Culturale del Piemonte, 2024)

373,871

Museum visitors in 2023 (Osservatorio Culturale del Piemonte, 2024)

531,492

Museum visitors in 2024 (Osservatorio Culturale del Piemonte, 2024)

55.6%

Increase in Visitors to Turin's Museums in 2024

The analysis of museum visits in the metropolitan area of **Turin and the broader Piedmont region from 2022 to 2024 reveals a significant increase in attendance.** The total number of visitors grew from 242,882 in 2022 to 373,871 in 2023, reaching 531,492 in 2024, **reflecting a 55.6% increase over this period.** The Museo Egizio consistently ranked as the most visited institution, with 95,532 visitors in 2024, while the Museo Faà di Bruno, a niche museum, recorded only 47 visitors. The average number of visitors per museum also rose substantially, from 6,672 in 2023 to 9,663 in 2024. **This surge in attendance is likely linked to the lifting of restrictions following the COVID-19 pandemic, which began in 2020.** Museums that had previously been closed or experienced reduced capacity due to health measures saw a resurgence in public interest, as evidenced by the sharp rise in visits to institutions like the Museo Nazionale del Cinema, which experienced an increase from 34,466 visitors in 2022 to 79,300 in 2024. This trend suggests a hypothesis: **after the pandemic related closures, there was a renewed desire for cultural engagement,** driving up museum attendance as people sought to reconnect with public spaces and cultural experiences.

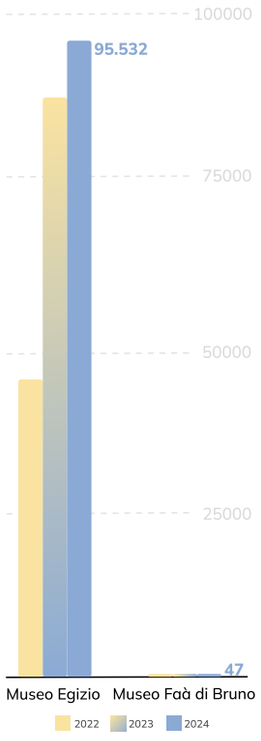


Fig 17 - Most visit and less visit musuems in 2022, 2023 and 2024 (Osservatorio Culturale del Piemonte, 2024)

This chapter will outline the key findings of the territorial analysis, focusing on the characteristics of museums in Turin, their geographical distribution, and the extent to which they cater to diverse audiences, including older adults and special needs visitors. The data and mapping efforts used in this analysis are documented in the annexed database as *"Appendix A - Database museums"* and the mapping document *"Appendix B - Museum Mapping"*, both of which categorize and map museums based on various factors.

Appendix A, is a comprehensive database of **museums located in the Metropolitan Area of Turin, the City of Turin, and the region of Piedmont,** covering museums affiliated with the **"Abbonamento Musei" membership program.** This resource includes detailed information about 115 museums, organized across several key columns: **museum name, description, contact details, and mapping categories**. Additionally, it highlights accessibility features, such as free or reduced entry for seniors, individuals under 26, and people with disabilities. The database also provides information on discounts and various services, including virtual tours, audio guides and cafeteria, **offering a thorough view of how each museum accommodates diverse visitor needs.**

The museum landscape in Turin is vast and diverse, encompassing a wide array of institutions that reflect the city's historical and cultural importance. From the famous Museo Egizio, housing the second largest collection of Egyptian antiquities in the world, to the modern Museo Nazionale dell'Automobile, the variety of museums in Turin offers something for every visitor.

Mapping categories

- Sports
- Art
- Castles and structures
- Automobile
- Cinema, radio and photography
- Enviornmental
- Gastronomic
- History
- Science and Tecnology
- Religious

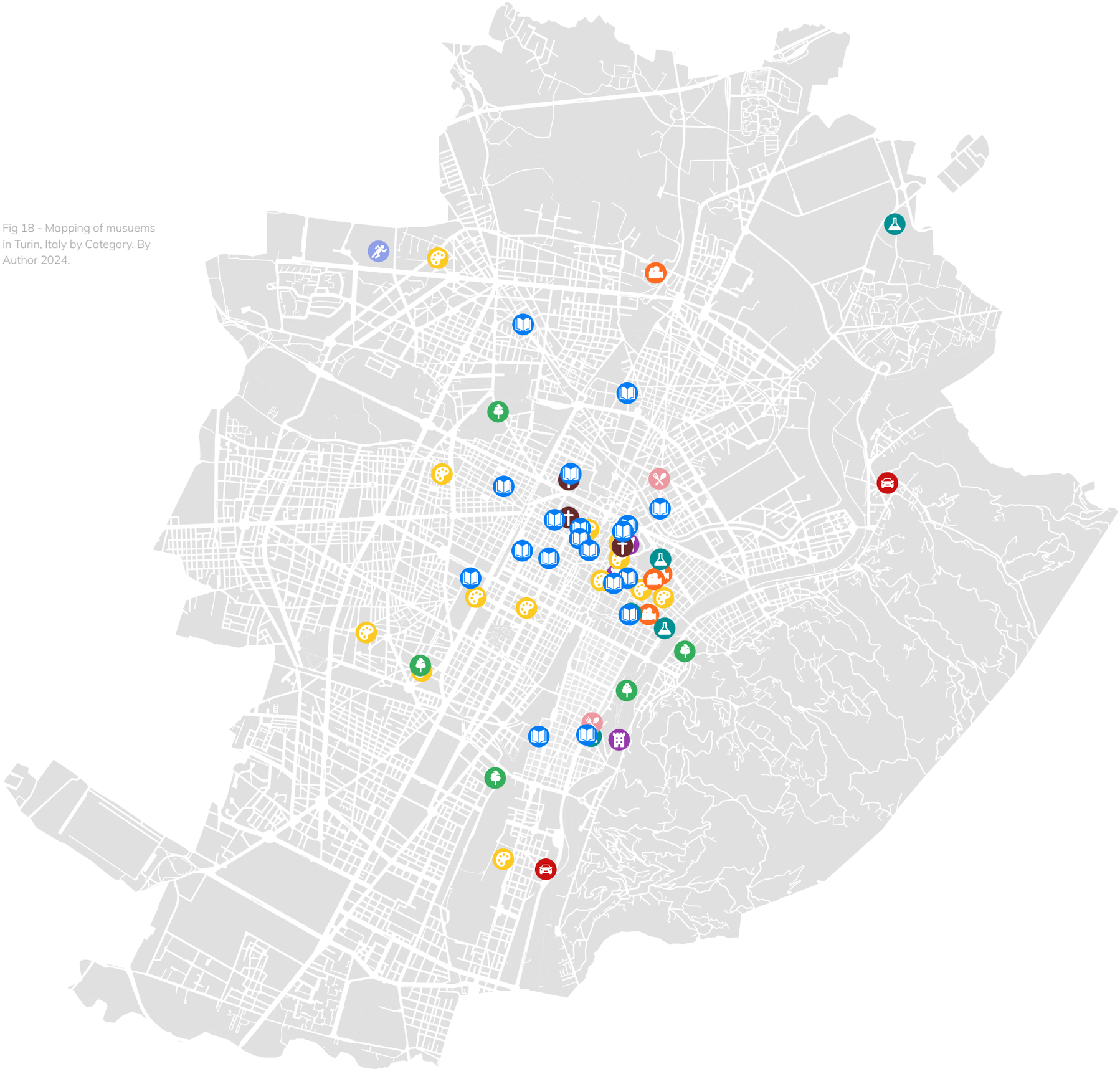


Fig 18 - Mapping of musuems in Turin, Italy by Category. By Author 2024.

Turin's museums can be broadly categorized into the following types, **which were identified through the database and mapping process.** The following maps correspond to the City of Turin; *Appendix B*, shows the museums in the Metropolitan City of Turin:

- Sports
- Art
- Castles and structures
- Automobile
- Cinema, radio and photography
- Enviornmental
- Gastronomic
- History
- Science and Tecnology
- Religious

Sport

In the cultural context of Turin, sport facilities play a role in preserving and celebrating the history and achievements of sports teams and athletes. **These facilities engage with fans and the public by offering historical artifacts, memorabilia and interactive exhibits** that connect sports with local and national culture.

- Olimpic museum Turin 2006
- National Mountain Museum 'Duca degli Abruzzi' CAI - Turin
- Juventus museum

Piedmont area

- Fondazione Centro Conservazione e Restauro "La Venaria Reale"

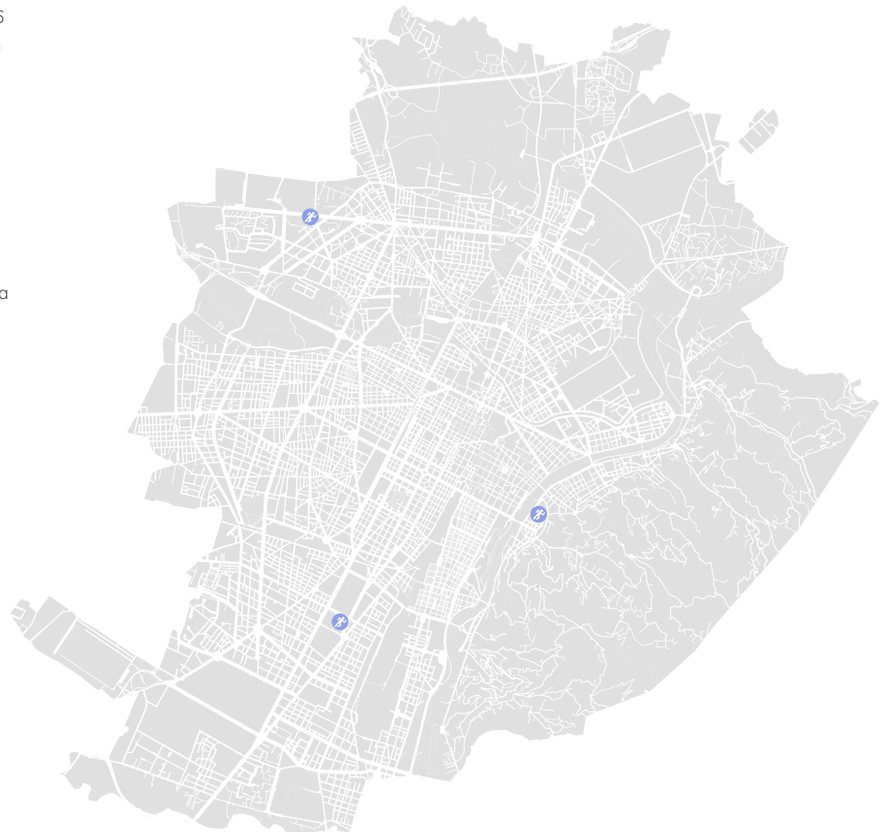


Fig 19 - Mapping of Sports musuems in Turin, Italy. By Author 2024.

Art

Art museums house collections of contemporary, classical and decorative arts, **showcasing works across different periods and artistic movements.** These institutions focus on preserving and exhibiting paintings, sculptures, ceramics, and other art forms.

- Fondazione 107
- MAU - Museum of Urban Art
- Fondazione Merz
- OGR - Officine Grandi Riparazioni
- MAO - Museum of Oriental Art
- Fondazione Sandretto Re Rebaudengo
- Gallerie d'Italia - Torino
- GAM - Galleria Civica d'Arte Moderna e Contemporanea
- Museo Diocesano di Torino
- Palazzo Madama
- Academia Albertina
- Museo di Arti Decorative
- Pinacoteca Giovanni e Marella
- Agnelli

Piedmont area

- Museo Etnografico della Novalesa
- Museo d'Arte Religiosa Alpina di Melezet
- Piscina Arte Aperta
- MACAM - Museo d'Arte Contemporanea all'Aperto di Maglione
- Museo Diffuso di Arte Sacra della Valle di Viu`

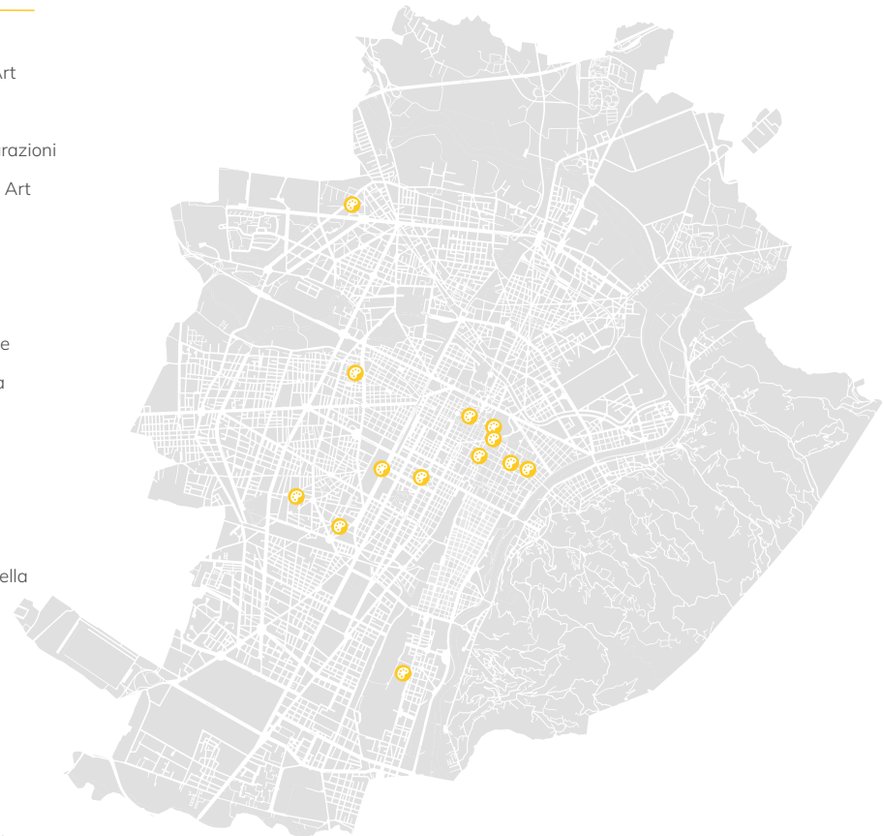


Fig 20 - Mapping of Art musuems in Turin, Italy. By Author 2024.

Castles and structures

Castles and historical structures in the region **are preserved as part of Italy's architectural heritage.** These structures are integral to understanding the region's feudal and royal past.

- Borgo Medieval
- Palace Carignano
- Palacio Real de Turín

Piedmont area

- Castillo de Moncalieri
- Memoriale Cavour
- Pabellón de caza de Stupinigi
- Sant'Antonio di Ranverso Abbey
- Castello di Rivoli Museo d'Arte Contemporanea
- Appartamenti Reali
- Castillo de Venaria
- Piazza Cardinale delle Lanze
- Castello Cavour di Santena
- Castillo de Agliè
- Exilles
- Fortaleza de Fenestrelle
- Castello della Contessa Adelaide
- Forte Bramafam
- Resti delle Tombe Primitive dei Savoia

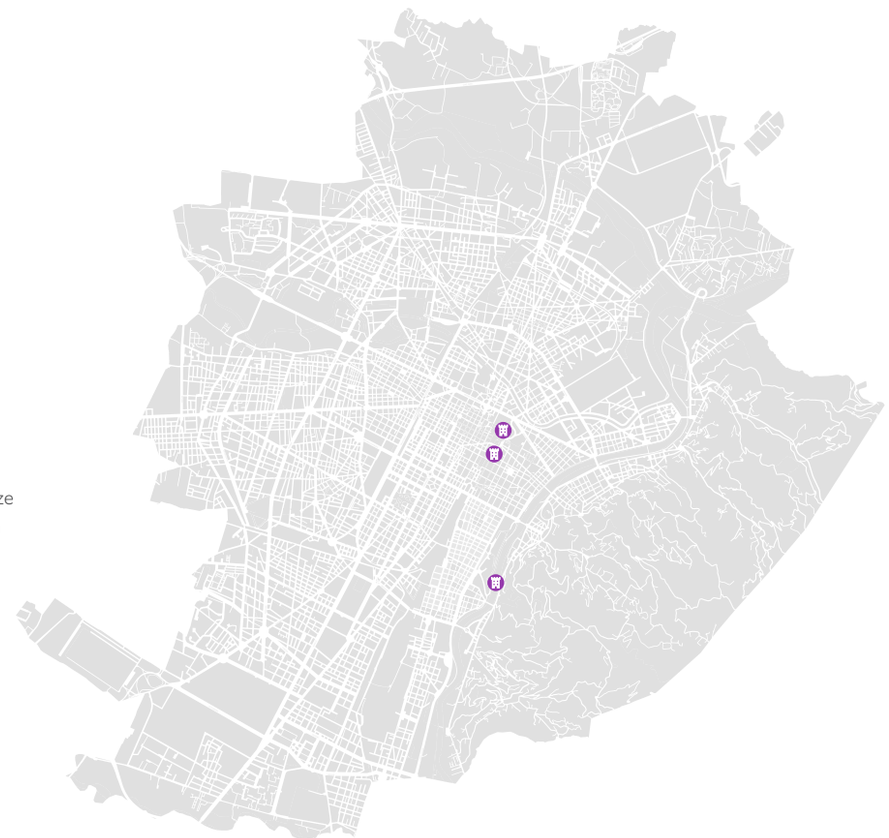


Fig 21 - Mapping of Castes and Architectural Structures musuems in Turin, Italy. By Author 2024.

Automobile

Turin, renowned for its rich automotive heritage, is home to some of the most iconic automobile museums in the world. This map highlights the key locations that showcase the city's connection to the automotive industry,

- Museo Nazionale dell'Automobile
- Museo del Viaggio in Movimento - Mu.Vi.Mov

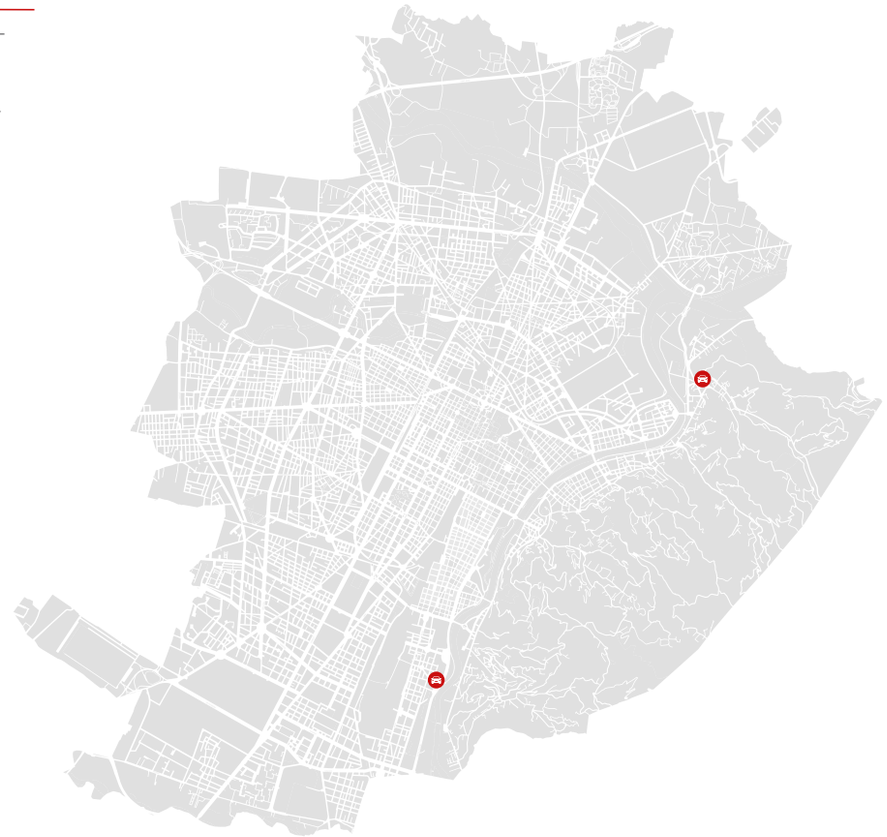


Fig 22 - Mapping of Automobile musuems in Turin, Italy. By Author 2024.

Cinema, Radio and Photography

Museums dedicated to cinema and photography in Turin provide insight into **the history and evolution of visual storytelling**.

- Museo Nazionale del Cinema
- Museum of Radio and Television RAI
- CAMERA - Centro Italiano per la Fotografia
- MUFANT - Museo lab del fantastico e della fantascienza di Torino

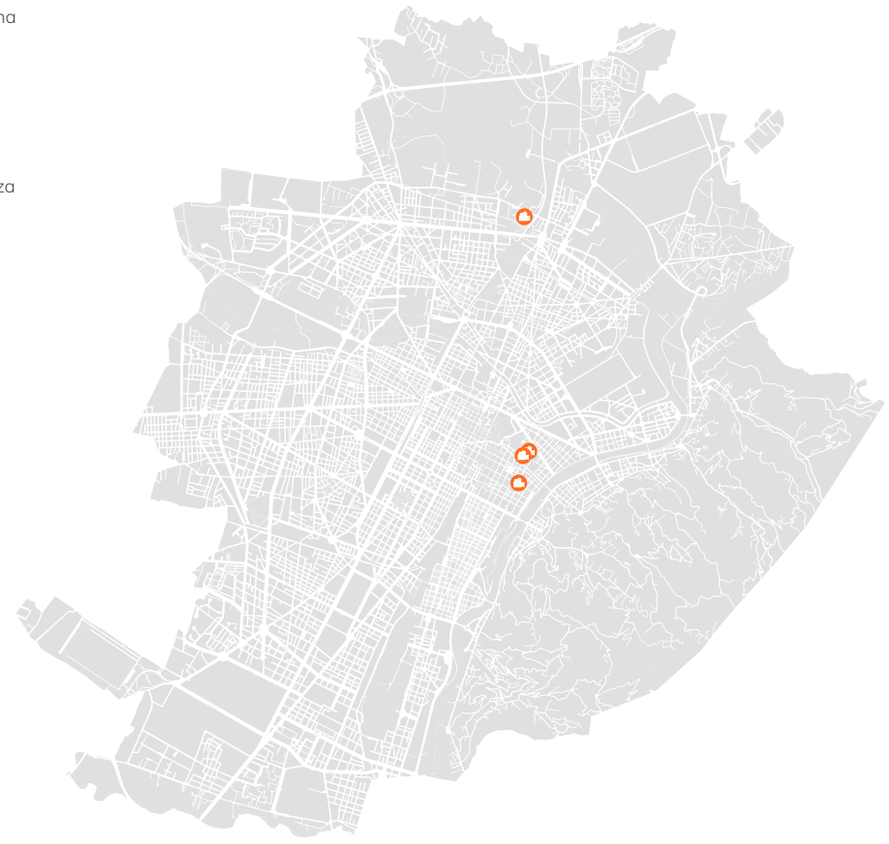


Fig 23 - Mapping of Cinema, Radio and Photography musuems in Turin, Italy. By Author 2024.

Environmental

Environmental museums are dedicated to educating and showcasing the public about the **natural world and composition.**

- MACA - Museo A come Ambiente
- Museo Nazionale della Montagna “Duca degli Abruzzi” CAI - Torino
- Orto Botanico
- PAV - Parco d’Arte Vivente
- EUT - Ecomuseo Urbano Torino

Piedmont area

- Ecomuseo del Freidano
- Ecomuseo della Resistenza “Carlo Mastri”
- Ecomuseo delle Guide Alpine Antonio Castagneri
- Ecomuseo Anfiteatro Morenico di Ivrea
- Ecomuseo delle Miniere e della Val Germanasca - ScopriMiniera & ScopriAlpi

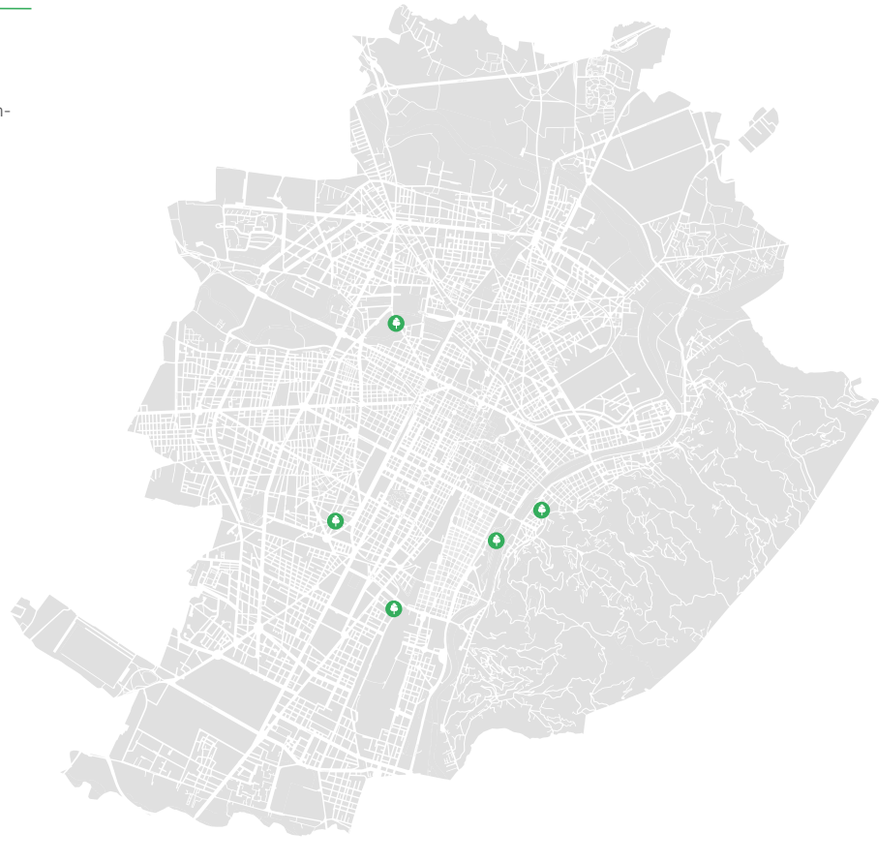


Fig 24 - Mapping of Enviornmental musuems in Turin, Italy. By Author 2024.

Gastronomic

Turin's food museums offer an immersive experience that showcases the **region's rich culinary traditions.**

- Museo Lavazza
- Museum of Fruit Francesco Garnier Valets

Piedmont area

Casa Martini

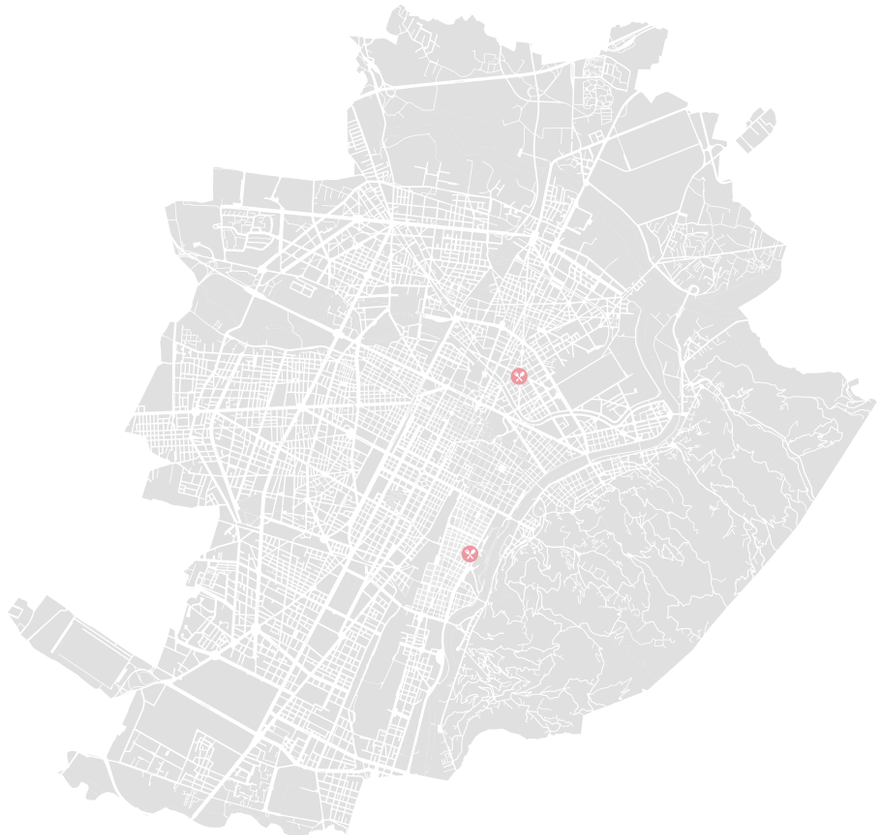


Fig 25 - Mapping of Gastronomic musuems in Turin, Italy. By Author 2024.

History

Historical museums focus on **documenting and presenting local, national, and global history.** They often house artifacts and exhibits that cover significant historical events or periods. These institutions play a vital role in preserving cultural memory and providing educational insights into the past.

- Historical Documentation Center
- MEF - Ettore Fico Museum
- Royal Tombs - House of Savoy
- Don Bosco's Rooms
- Italgas Historical Archives
- Francesco Faà di Bruno Museum
- Museum of Antiquities of Turin
- Museum of the Resistance
- Sabauda Gallery
- Reale Mutua Archive Museum
- Museum of Saving
- Pietro Micca Civic Museum and the
- Siege of Turin 1706
- National Museum of Artillery
- Egyptian Museum of Turin
- Museum of Italy Unification
- Le Nuove Museum
- Villa della Regina
- Cesare Lombroso Museum
- La Stampa Space

Piedmont area

- Museo del Grande Torino
- Mostra Archeologica Di Chieri
- Museo del Paesaggio Sonoro
- Casa Lajolo
- Museo Storico dell'Arma di Cavalleria
- Museo Valdese
- Museo Laboratorio della Preistoria
- Museo Civico Alpino Arnaldo Tazzetti

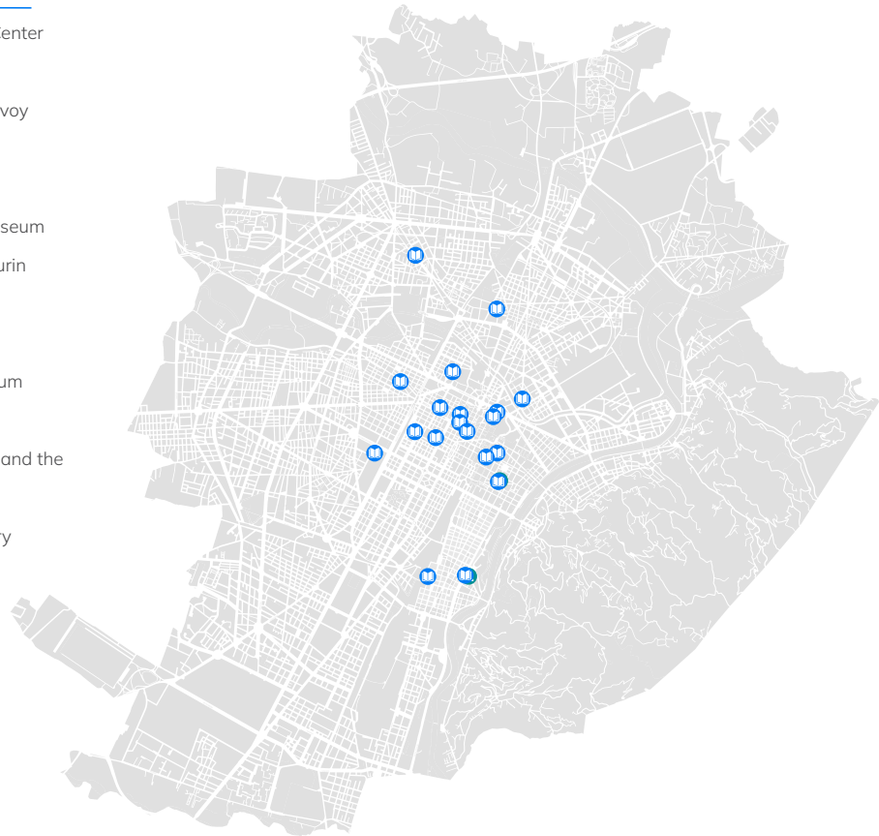


Fig 26 - Mapping of History musuems in Turin, Italy. By Author 2024.

Scientific and Technology

These museums emphasize advancements in science and technology, offering **interactive and educational exhibits that encourage exploration**.

- Technical Institute Amedeo Avogadro
- Museo Regionale di Scienze Naturali
- Italia Arte Di Folco Guido - Museo MIIT
- Museum of Natural History “Don Bosco”
- Museo de Anatomia Humana Luis Rolando
- Workshop of Scripture

Piedmont area

- Infini.to Planetario di Torino
- MU-CH | Museo della chimica
- Civic Museum of Natural History in Carmagnola
- Laboratorio-Museo Tecnologic@mente
- Museo della Plastica Cannon-Sandretto

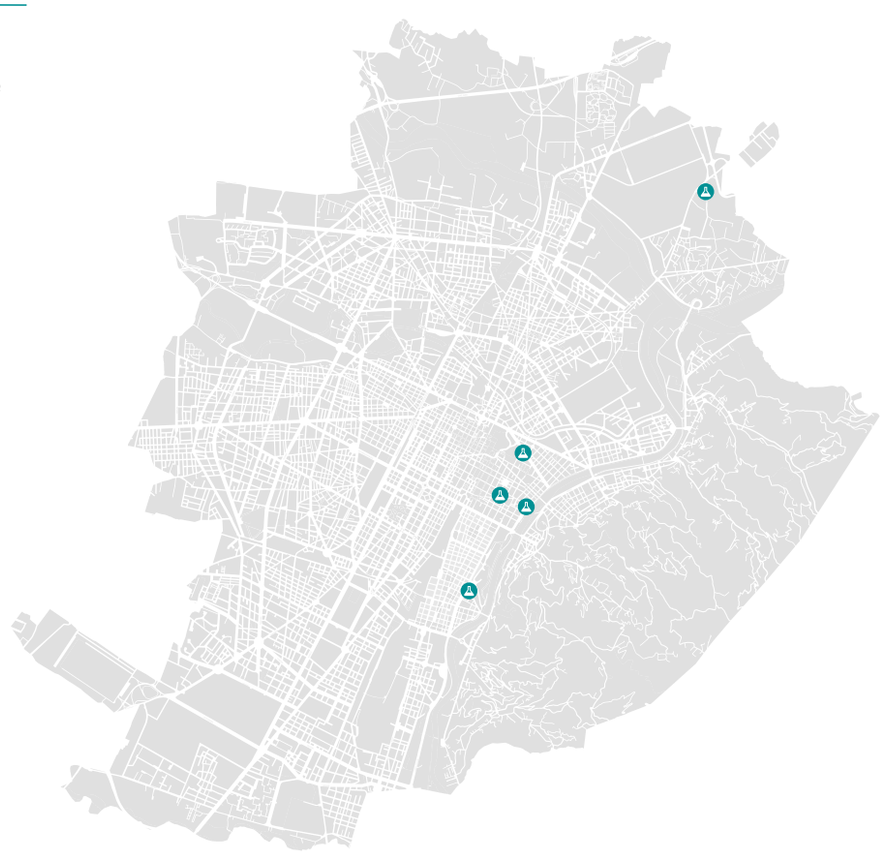


Fig 27 - Mapping of Scientific and Tecnologies musuems in Turin, Italy. By Author 2024.

Religious

Turin is rich in religious history and offers many sacred sites with museum experiences. This map highlights religious institutions in the city where visitors can explore religous heritage.

- Cappella della Sacra Sindone
- Museo De La Sabana Santa
- Casa Madre de Don Bosco

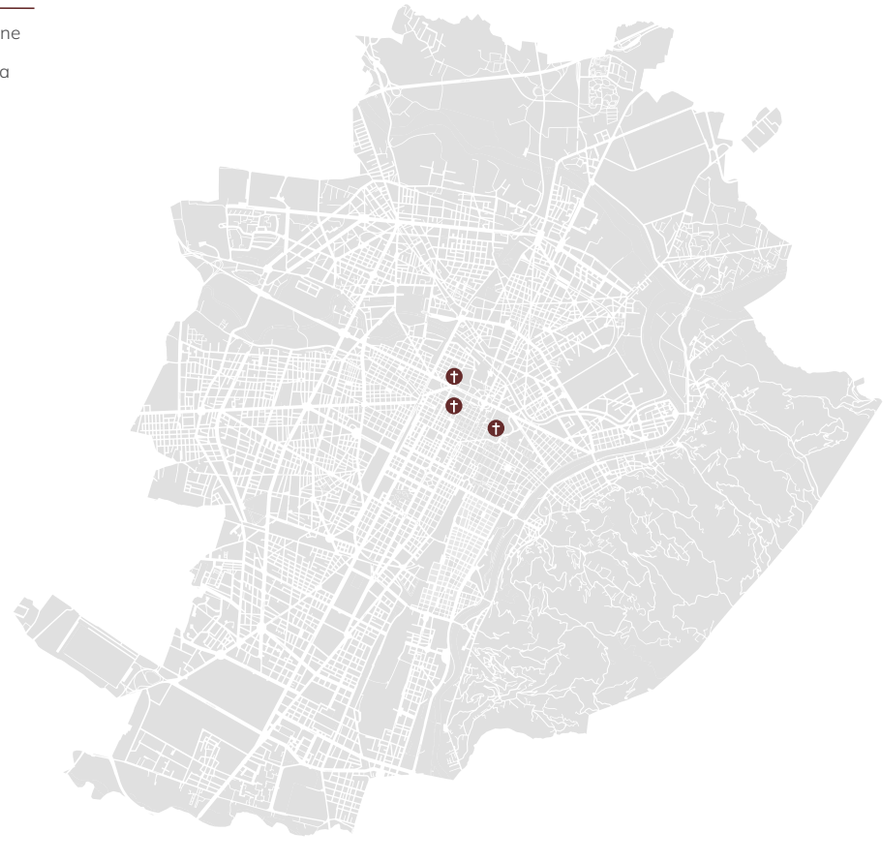
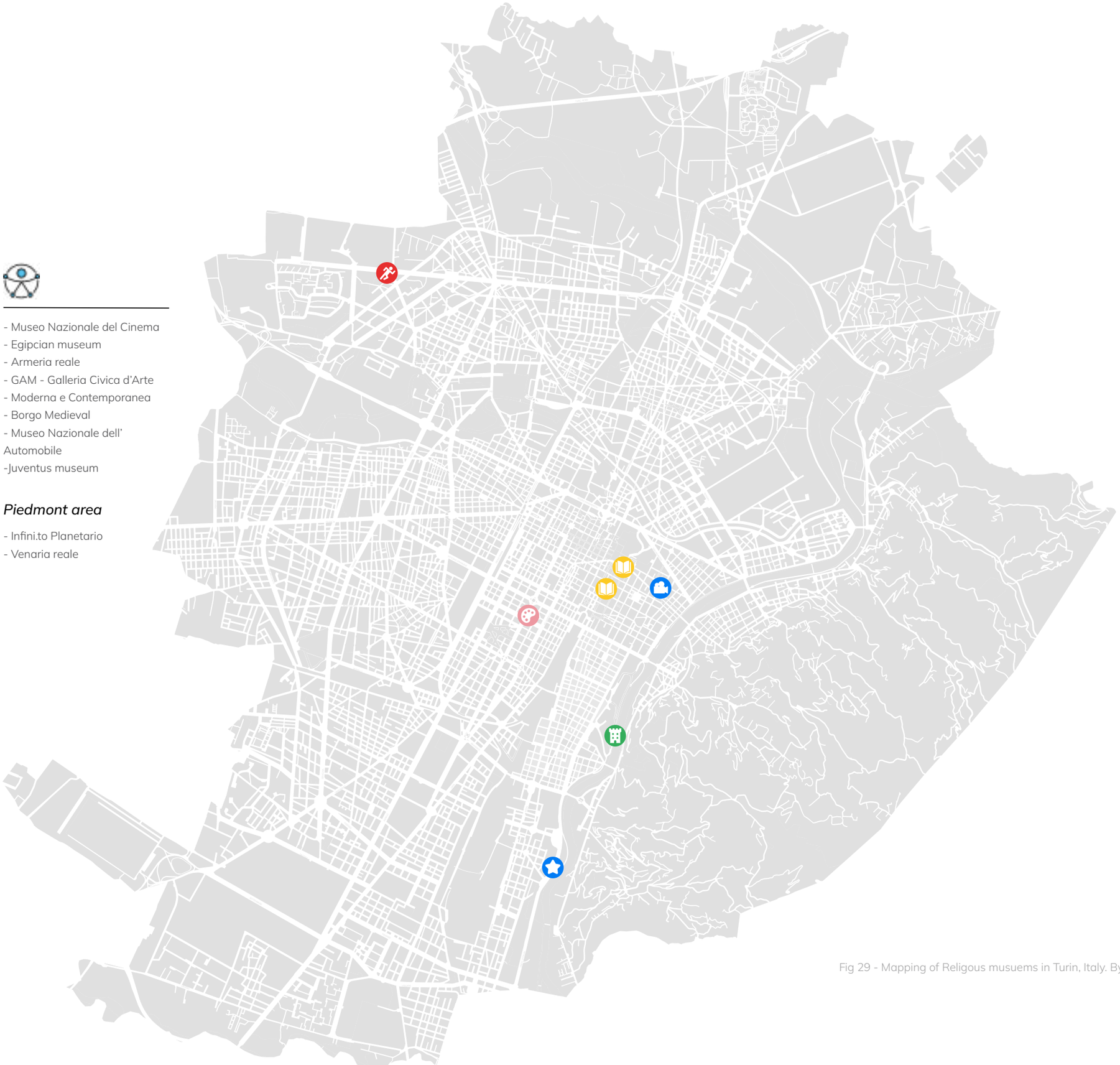


Fig 28 - Mapping of Religous musuems in Turin, Italy. By Author 2024.



- Museo Nazionale del Cinema
- Egipcian museum
- Armeria reale
- GAM - Galleria Civica d'Arte
- Moderna e Contemporanea
- Borgo Medieval
- Museo Nazionale dell' Automobile
-Juventus museum

Piedmont area

- Infini.to Planetario
- Venaria reale

Fig 29 - Mapping of Religous musuems in Turin, Italy. By Author 2024.

Accesibility seal

The *Figure 29,* illustrates the museums in Turin that prominently **address inclusivity on their websites.** These institutions have a**dopted the new symbol of accessibility, which was designed by the Graphic Design Unit of the UN Department of Public Information in New York.** This logo, represented by a circular figure with open arms, symbolizes global inclusivity for individuals with disabilities. The circular form conveys the idea of global reach and interconnectedness, while the human figure reflects a harmonious relationship between people in society. **The logo is a powerful symbol of hope and equality,** promoting the idea of equal access for all individuals, regardless of physical abilities.

The Accessibility logo was created with the goal of **raising awareness about disability related issues** and is used to signify products, services, and places that are "disability-friendly" or accessible. In this context, the museums identified in the figure, such as Museo Nazionale del Cinema, Museo Egizio, and GAM - Galleria Civica d'Arte Moderna e Contemporanea, are leaders in **promoting inclusivity through their accessibility initiatives,** ensuring that all visitors can enjoy their cultural offerings. This effort represents a critical step towards creating more inclusive public spaces that welcome individuals of all abilities.

Over 60 Entrance

The museums in Turin that offer either free or reduced entrance fees for elderly individuals aged 60 and above. According to the data, out of the 120 museums in the Metropolitan Area of Turin *(Appendix A)*, **70 museums offer a reduction in price or free entrance for elders,** with only 1 museum offering free entrance exclusively for elders. The smallest price elderly visitors must pay is €1, while the highest reduced price is €17. On average, the reduction for elderly visitors is approximately 27.4%. In addition, an interesting result from the data is that **several museums provide enhanced accessibility features for elders,** such as assisted pathways and audio guides. These efforts reflect a broader aim to ensure that museums are not only affordable but also physically and cognitively accessible for elderly visitors, encouraging their full engagement with cultural heritage.

From the 120 museums, approximately 58%, in the Metropolitan Area of Turin **offer a reduction in price or free entrance for elderly visitors.**

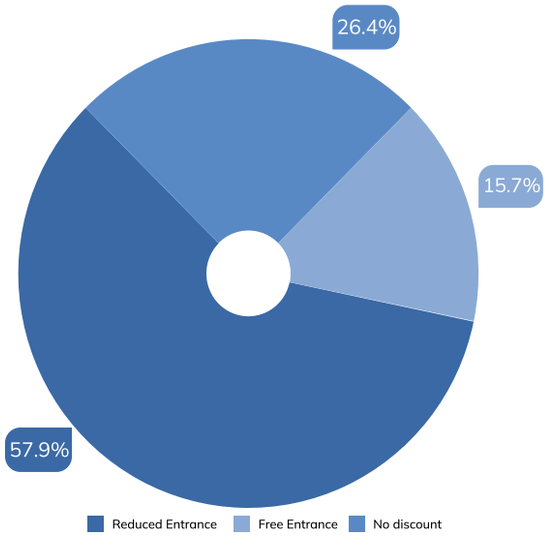


Fig 30 - Percentage Of Museums Offering Discounts For Elders Visitors in Turin. (Appendix 1) By Author 2024

Examples of museums with notable elder specific concessions include the Museo Pietro Micca, which showcases Turin's historical defense systems, and the Museo di Anatomia Umana, offering a unique glimpse into scientific history.

Among the museums with the **highest reduced prices, the Museo Egizio,** renowned for its vast collection of Egyptian artifacts, charges €17, while the Museo Nazionale del Cinema, located in the iconic Mole Antonelliana, offers a reduced rate of €12. These two major attractions demonstrate that even though they have higher reduced rates, their cultural significance justifies the cost. Conversely, museums like the **Museo di Antropologia Criminale and the Museo della Frutta offer lower reduced prices at €3 and €5,** respectively, making them affordable options for elderly visitors.

On the other hand, several important cultural institutions in Turin do not provide any discount or free entrance for elders. For instance, the Museo Nazionale della Montagna, which focuses on mountain ecology and traditions, and the Museo d'Arte Orientale (MAO), showcasing Asian art, do not offer any concessions for elderly visitors. Similarly, the Pinacoteca Giovanni e Marella Agnelli, housing a prestigious art collection, and the Museo della Radio e Televisione, tracing the history of broadcast media, also do not offer discounts for the elderly.

This highlights the variability in pricing policies across Turin's museums *(Figure 31)***,** with some prioritizing accessibility for older visitors, while others maintain full-price entry regardless of age.

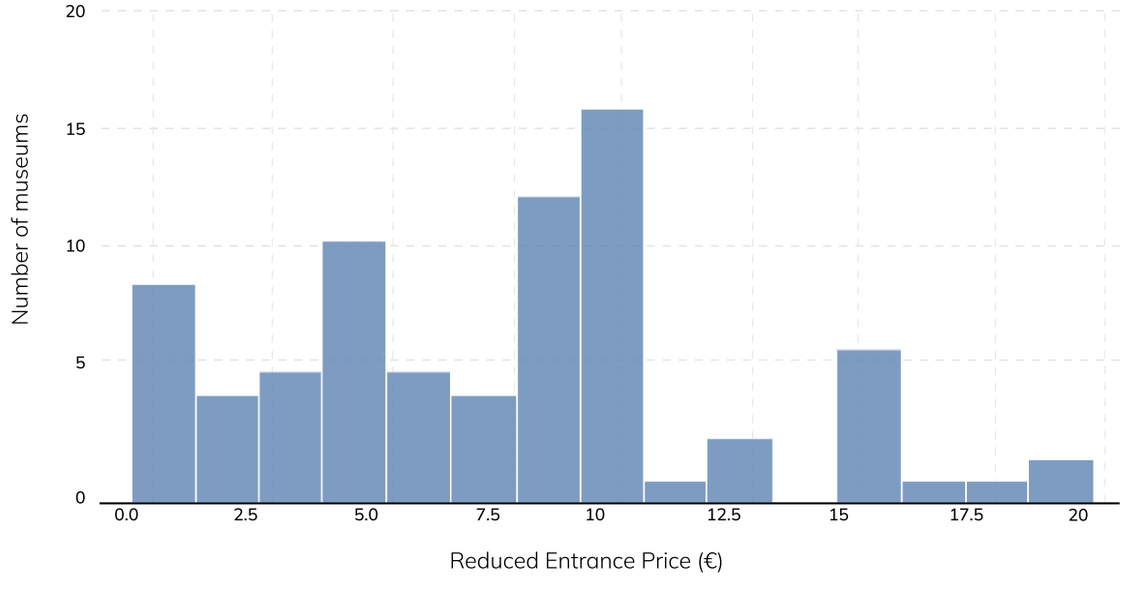


Fig 31 - Distribution Of Reduced Entrance Prices For Elderly Visitors (Appendix 1) By Author 2024.

Unider 26 Entrance

From the data presented in the *Appendix A*, it is clear that many museums in Turin **support younger visitors by offering free or reduced entrance fees** for individuals under the age of 26. Out of the surveyed museums, **89 provide either discounted** or free admission specifically for young visitors, although none of these currently offer free entry exclusively for this age group. The smallest amount young visitors are required to pay is €1, while the highest reduced fee reaches €17. **The average discount for this age group is about 27.4%,** which significantly broadens access to cultural experiences for the city's younger population, fostering early engagement with Turin's heritage.

Some examples of museums in Turin that offer reduced entrance for individuals under 26 include the Museo Egizio, which provides a reduced rate of €8, and the Museo Nazionale del Cinema, where under 26 visitors can enjoy a reduced price of €10. The Galleria Sabauda and Palazzo Madama also offer reduced rates of €7 and €10, respectively, making these key cultural landmarks more accessible to young visitors. Moreover, the Museo di Anatomia Umana offers entrance at a reduced fee, contributing to the engagement of young people with scientific and cultural heritage.

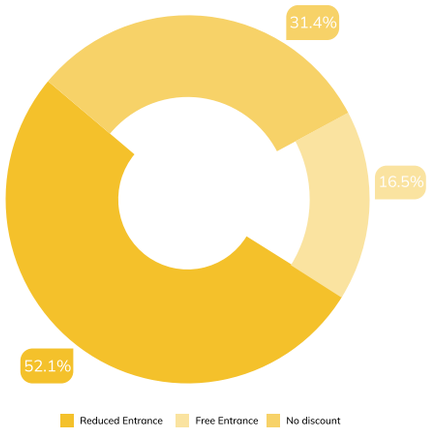


Fig 32 -Percentage of Museums Offering Discounts for Under 26 Visitors. (Appendix 1) By Author 2024

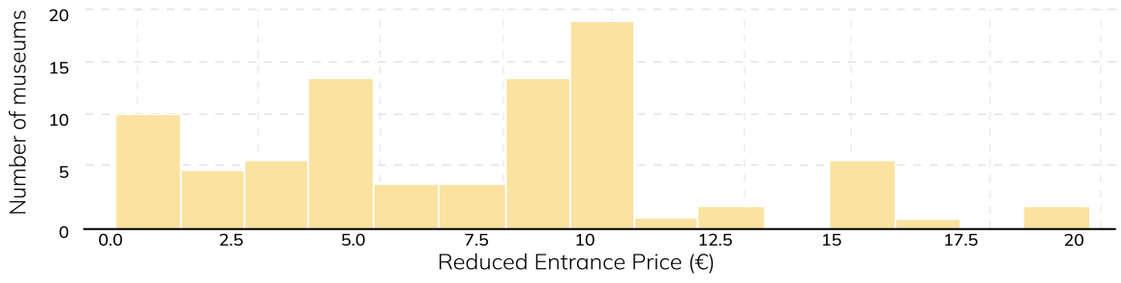


Fig 33 - Distribution Of Reduced Entrance Prices For Visitors Under 26. (Appendix 1) By Author 2024.

Disabled People Entrance

According to the data, accessibility in Turin's museums for individuals with disabilities is extensive. **Out of the 120 museums, 72 offer free entrance to people with disabilities, demonstrating a strong commitment to inclusivity.** Additionally, several museums provide further accommodations, such as audio guides (available in 14 museums) and assisted pathways (available in 21 museums), ensuring that visitors with disabilities can navigate and enjoy the museums comfortably. This widespread support underlines the importance of creating equitable cultural experiences for all community members.

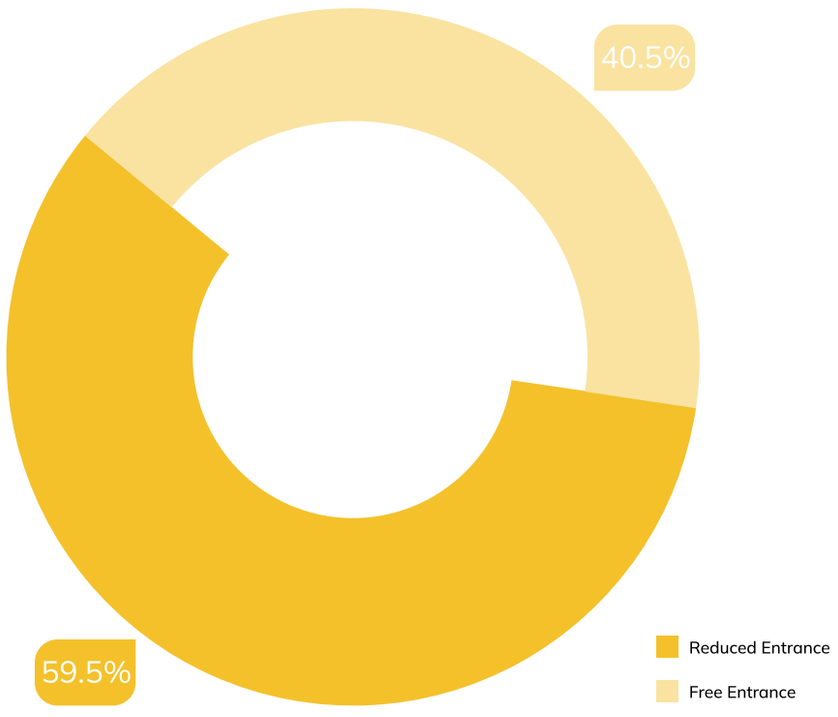


Fig 34 - Percentage of Museums Offering Free Entrance to Disabled Visitors. (Appendix 1) By Author 2024.

Among the museums offering free entrance to disabled visitors, notable examples include Museo Nazionale del Cinema, Museo Egizio, and the Museo dell'Automobile". These museums, in addition to free entry, often provide enhanced accessibility features, ensuring that disabled individuals can enjoy the exhibitions fully. Other examples include the Juventus Museum and Museo di Antropologia Criminale, which are also committed to inclusivity for disabled visitors.

Additional Services Features

In addition to exploring pricing structures for different visitor categories, this study also examined whether museums in Turin offer various services that enhance the visitor experience: **virtual tours, accessibility features, audio guides, assisted pathways, refreshment areas, and bookshops.** These services were selected for analysis due to their significant role in creating inclusive, comfortable, and enriching museum experiences for all visitors, particularly for elderly, disabled, and younger audiences

Virtual tours

Enable remote or less mobile individuals to experience exhibits from afar, providing access to museum content without physical presence.

Accesibility features

Include facilities such as **ramps, elevators, and accessible restrooms,** making the museum environment welcoming and manageable for all visitors with physical disabilities.

Audio guides

Offer in depth insights into collections, enhancing visitor engagement and **understanding of exhibits through auditory information.**

Assisted pathways

Designated **routes that guide visitors with mobility challenges,** ensuring smooth and supportive navigation through the museum.

Refreshment areas

Provide **comfortable spaces for rest and refreshments,** supporting longer visits by offering a place to relax.

Bookshops

Extend the cultural experience beyond the exhibits, allowing visitors to explore related topics and **continue learning through books.**

Appendix A also provides insight into the accessibility features offered by museums in Turin. Out of the total museums surveyed, 21 provide virtual tours (17.5%), 64 offer enhanced accessibility features (53.3%), 21 have audio guides available (17.5%), 27 feature assisted pathways (22.5%), 23 have a refreshment area (19.2%), and 42 museums include a bookshop (35%). These features are essential in ensuring that museums cater to diverse visitor needs, providing not only financial accessibility but also physical and cognitive support to enhance the overall museum experience for all visitors.

Several museums in Turin offer multiple accessibility features, catering to a wide range of visitor needs. For instance, Museo Lavazza and the Reggia di Venaria Reale provide all six services: virtual tours, accessibility, audio guides, assisted pathways, a refreshment area, and a bookshop. Additionally, Castello di Miradolo and Fondazione Sandretto Re Rebaudengo each offer at least four of these services, further enhancing the visitor experience with amenities such as refreshment areas and accessible pathways.

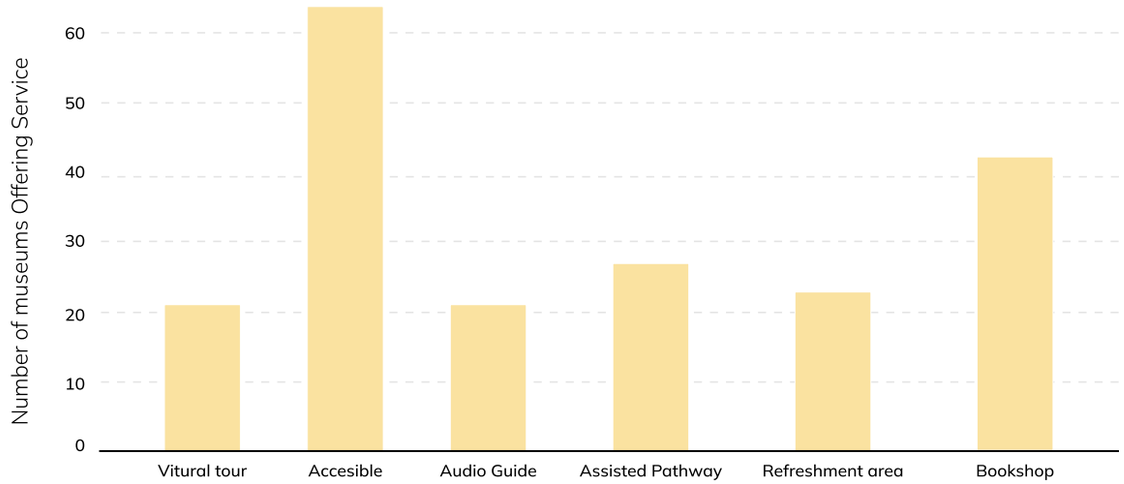


Fig 35 - Availability Of Services In Turin Museums. (Appendix 1) By Author 2024.

Museum membership: Abbonamento Musei

The Abbonamento Musei for individuals over 65 offers an affordable way for seniors to access a vast network of museums across Northern Italy. This subscription is valid in the regions of Piedmont, Lombardy, Valle d'Aosta, and beyond, depending on the selected package. The Associazione Abbonamento Musei was developed with key cultural partners, including the Regione Piemonte, Città di Torino, Fondazione CRT, Regione Lombardia, Comune di Milano, Valle d'Aosta, and the Museo Nazionale del Risorgimento Italiano.

Seniors benefit from three main subscription options: Piemonte e Valle d'Aosta for €52, Lombardia e Valle d'Aosta for €42, and Formula Extra (which covers multiple regions) for €80. With these subscriptions, **individuals over 65 can enjoy unlimited, free access to many renowned museums.** In Turin, for example, subscribers can visit the Museo Egizio, Museo Nazionale del Cinema, Galleria Civica d'Arte Moderna e Contemporanea (GAM), Museo dell'Automobile Carlo Biscaretti di Ruffia, Museo di Antropologia Criminale Cesare Lombroso, and Museo di Anatomia Umana, among others.

The Abbonamento Musei works by offering a physical or digital card that grants seniors entry to hundreds of museums and cultural sites across these regions without additional entrance fees. In total, the card provides access to approximately 500 museums, including major cultural institutions in Turin, Milan, Aosta, and other cities. **In Turin, 71 museums participate in the Abbonamento Musei network,** offering seniors access to a diverse range of cultural experiences without additional entrance fees. These museums are included within the subscription's benefits, allowing visitors over 65 to explore art, history, and science throughout the year. With this extensive network, the Abbonamento Musei provides an ideal option for seniors who are passionate about engaging with Turin's cultural heritage. *Appendix A* lists all the museums in Turin included in the Abbonamento Musei package.

> "3 regions
> 490 museums
> 213.000 members
> 365 days of culture
> and beauty"

(Abbonamento musei, 2024)

Analyzing data provided by Associazione Abbonamento Musei, it becomes evident that the **number of subscriptions purchased by seniors has grown steadily in recent years.** In 2020, a total of 15,286 subscriptions were sold to individuals over 65. Despite the challenges posed by the pandemic, 2021 saw an increase to 17,642 subscriptions, and this growth trend continued with 27,372 subscriptions in 2022. By 2023, the number of subscriptions reached 35,079, and by October 2024, 33,197 subscriptions had already been recorded, demonstrating a consistent upward trajectory in interest (Associazione Abbonamento Musei, personal communication).

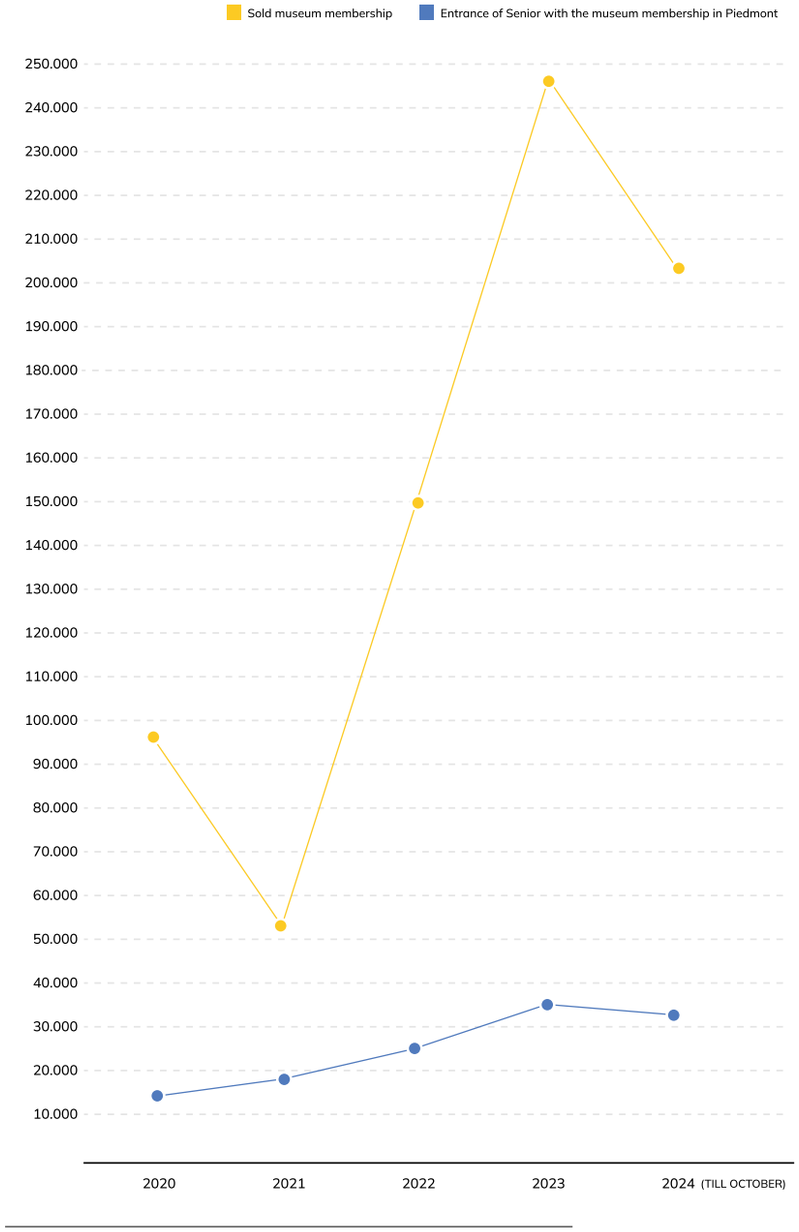
Figure 36 illustrates this trend, emphasizing how the **Abbonamento Musei has become an increasingly popular means for seniors to participate in cultural activities.** The consistent increase in subscription numbers highlights the effectiveness of the association's outreach and the value that seniors place on accessible cultural experiences.

This trend can be attributed to several factors. The affordability of the subscription, coupled with the extensive list of participating museums, has made the Abbonamento Musei a highly attractive offer for seniors. Moreover, the cultural partners involved have worked to create a welcoming atmosphere for elderly visitors, making museums more accessible and enjoyable. **This includes offering services such as accessible pathways, seating areas, and tailored guided tours,** which ensure that seniors can fully enjoy their visits without facing physical barriers.

The Abbonamento Musei not only provides access but also focuses on enhancing the museum going experience for seniors. Many of the participating institutions have implemented initiatives to make visits more comfortable and enriching for older visitors. For instance, **accessibility features such as elevators, seating areas, and clear signage are prominently available in numerous locations.** Additionally, tailored programs, such as thematic guided tours and interactive experiences, cater specifically to the interests and needs of older audiences.

The data also reveals regional trends in the usage of subscriptions. Most of the museums in the network are located in the major cities of Turin, Milan, and Aosta. However, smaller museums in more rural areas have also seen increased visitation, suggesting that **seniors are not only interested in well known cultural landmarks but are also eager to explore lesser known sites.**

Fig 36 - Entrance of Senior with the museum membership and sold musuem membership from 2020 till october 2024 By Author 2024.



Senior Cards Sold Growth

+15.4% 2021

+55.1% 2022

+28.1% 2023

Entries by Senior Cards in Piemonte Growth

-22.2% 2021

+119% 2022

+56.3% 2023

Hypothesis of Average Entries per Card

5.77 2020

3.89 2021

5.49 2022

6.69 2023

* All the data was given by Abbonamenti musei (2024).

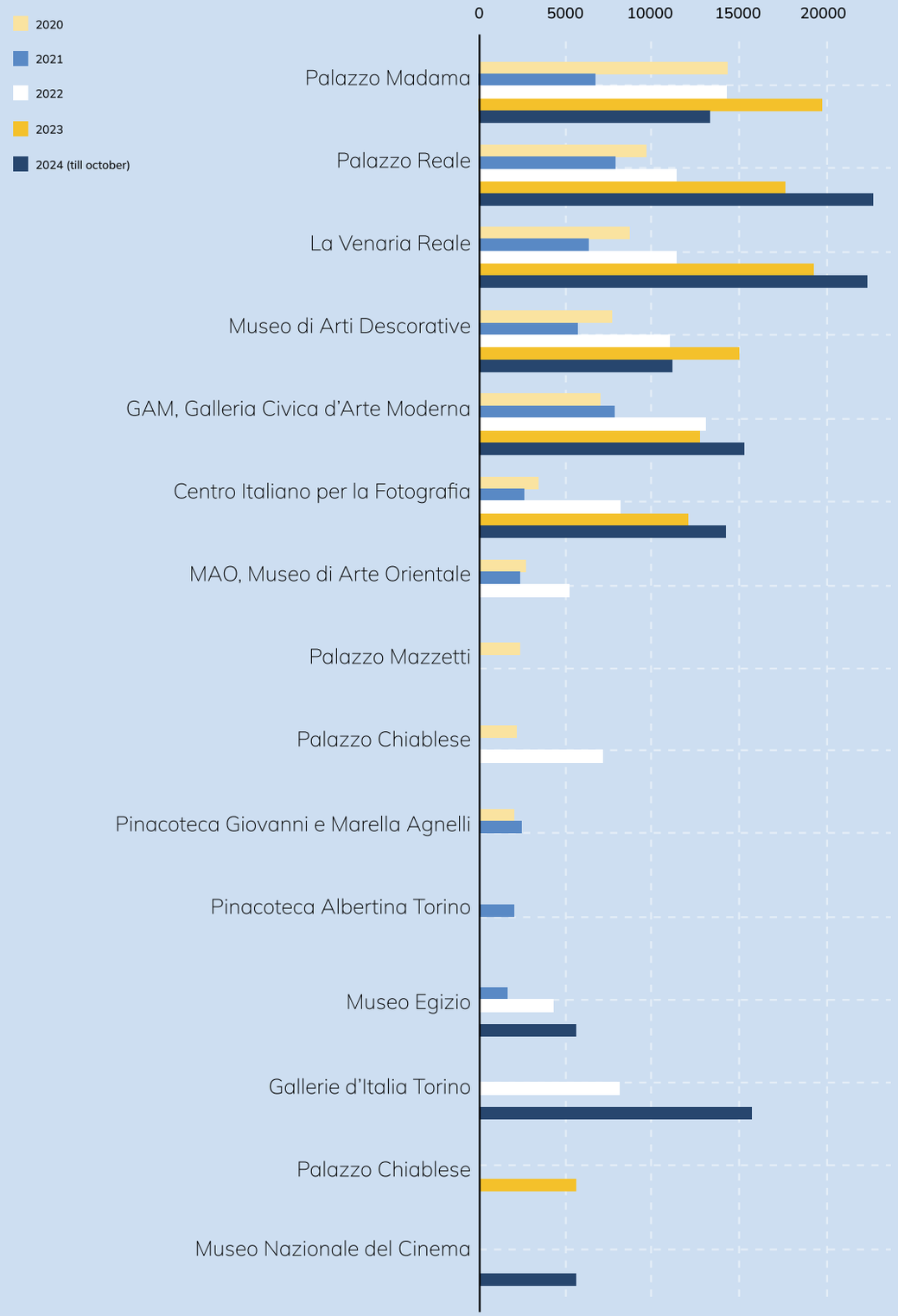
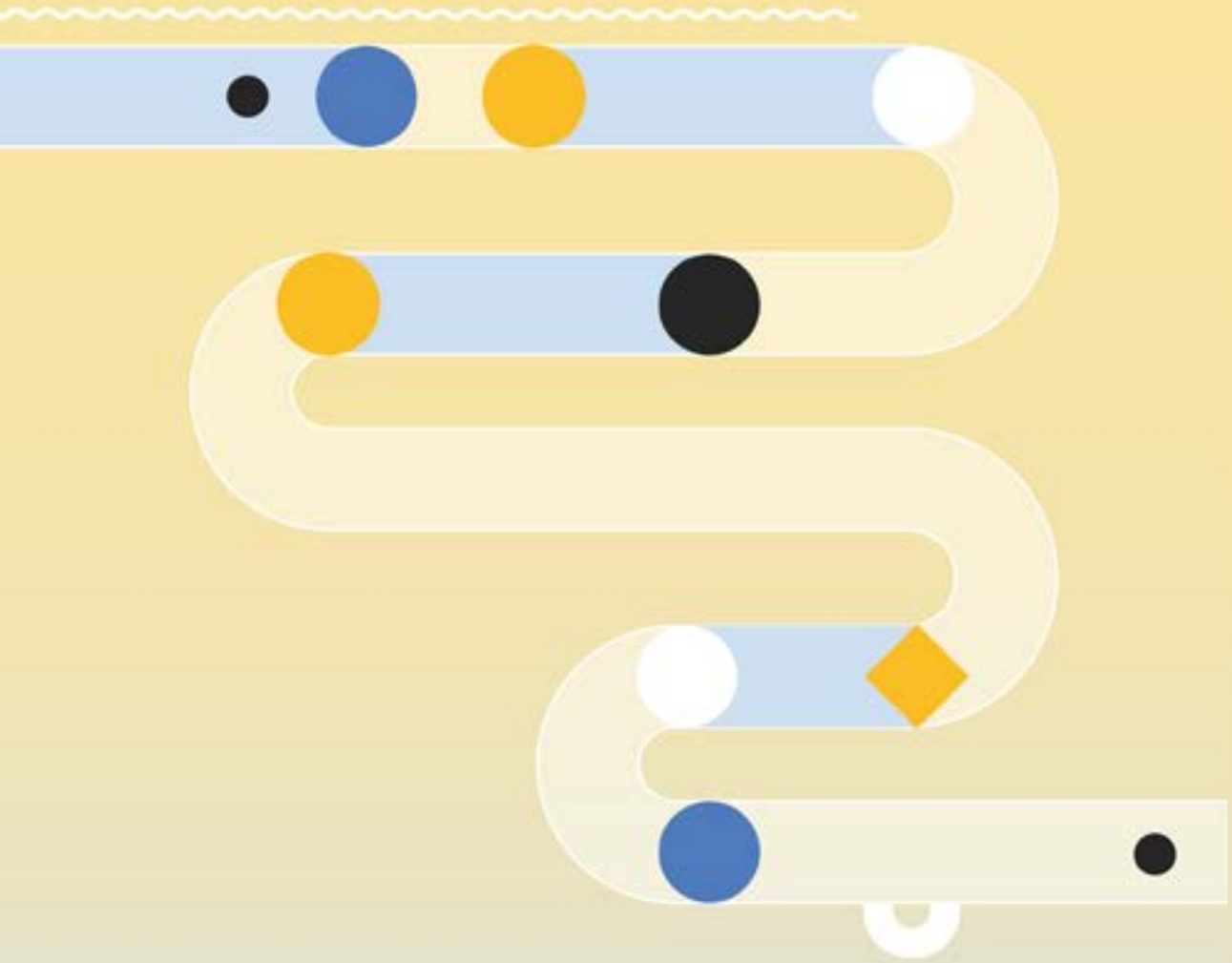


Fig 37 - Top 10 Most Visited Museums by Senior Cardholders in Piemonte for each year from 2020 to 2024 (up to October). By Author 2024.

3.2

MUSEUMS AS A SYSTEM



A museum is a system. Museums, as institutions that serve a diverse public, must operate as adaptable systems. A museum is more than a collection of objects; it is a **dynamic entity** where every department and team works within larger societal systems, which often pose barriers to equality. According to the book MuseumEtc: 10 Must Reads on Inclusion (2021), museums are often seen as warehouses of irrelevant and meaningless objects rather than places of meaningful learning. This highlights the **need for museums to shift** towards inclusivity and ecological approaches, considering visitors not just as individual social units but as part of a holistic world. The design of museums, therefore, should account for **various types of visitors,** including those with disabilities. The way exhibits are displayed, the accessibility of buildings, and the materials used in publicity all affect how welcome disabled visitors feel in these spaces.

Digital exhibits
Touch screens
QR codes
Virtual tour
AR
Wayfinding System
Digital navigation
Mobile apps
Physical navigation
Assitive Tech
Hearing aids
Captioning
Sign language
Policies for inclusivity
Board of directors
Energy and waste
Recycling programs
Efficient lighting
Partnership
Donations
Fundings
(Educators)
Curators
Visitor service
Ticketing
Info desk
Security
Support
Feedback
Surveys
Reviews
Social media
Shop and cafe
Souvenirs
Beverage
Food
Entry and exit
Ticket booth
Online tickets
Cultural partners
Community outreach
Programs for families
Programs for elders
Programs for schools
Collabs
Educational institutions
Marketing
Marketing material
Online platforms
Newsletter
Wayfinding
Physical signage
Pathways
Digital guides
Maps
Exhibit Spaces
Exhibit flow
Display layout
Interactive areas
Building
Structural design
Accesibility
Collections
Rotating exhibits
Digital content
Physical objects
Labels
Interactive elements
Description
Multimedia content
Interactive learning tools
3D models
Animations
Videos
User preference
Learning methods (visual, audio)
Thematic
Audience
General visitors
Social groups
Special users needs
Families
Accessibility needs
(Cognitive)
Physical
(Sensory)
Learning Space
Study rooms
Libraries
Area for reflection
Guided Tours
Audio-guides
In-person tours
Self guided options
Workshops
Educational programs
Lectures
Interactive events

Legend

- Not cured components
- Components

Interaction Hubs
Network Integration
Learning Ecosystem
Operational Backbone
Structural Framework
Shaping scope

Figure 38 illustrates this system through a **centric diagram,** where different components are arranged to reflect their relative importance and contribution to the museum's operations. **The concentric structure of the diagram underscores the interconnectedness of these elements, with the most critical components placed closer to the center,** symbolizing their foundational role in museum experience planning. Each level in the diagram represents a varying degree of importance, **creating a layered system that supports both the physical and experiential dimensions of a museum.**

Legend and Color Classification

The legend in *Figure 38* highlights several layers, which correspond to the distinct categories or ecosystems within the museum. These ecosystems are visually classified by different colors to distinguish between key groups like **"Operational Backbone," "Learning Ecosystem," "Structural Framework," and "Network Integration."** Each color serves as an organizational tool, helping to identify the function and role of components at a glance. For example, components related to staff and management might appear in one color, while digital technology and visitor engagement tools may be in another, emphasizing their different roles in museum operations.

The core elements and their **categorization create a comprehensive understanding of the museum not just as a space for exhibits, but as a dynamic environment** that accommodates physical structures, visitors' needs, technology, and management.

Physical Infrastructure

At the heart of the museum system lies its Physical Infrastructure, **which forms the backbone for everything else that follows.** This level includes the **Building and Layout, which covers the structural design,** accessibility elements such as elevators, ramps, and entrances, and key amenities like restrooms. **The Exhibit Spaces represent the physical locations where interaction occurs,** dictating the flow of visitors and how exhibits are arranged to facilitate engagement. **Signage and Wayfinding further aid in navigation,** providing essential directional guidance through maps, digital guides, and physical signs that help visitors move smoothly through the museum space.

These physical elements are positioned near the center of the diagram because they provide the **essential foundation that supports the museum's functionality.**

Visitors

Moving outward, the next key component is **Visitors, segmented by their characteristics and preferences.** This component addresses the **Audience Segmentation of the museum's visitors,** recognizing that different groups, such as families, school groups, elderly individuals, and people with disabilities, bring unique needs and expectations. **User Preferences, including interests in various topics** like art, history, or science, are critical in shaping the museum's offerings. The emphasis on **Accessibility Needs, encompassing physical, cognitive, and sensory accommodations,** ensures that museums are inclusive spaces for all individuals, aligning with modern standards of equity and accessibility. The visitor component forms a pivotal interaction point between the physical infrastructure and the dynamic aspects of the museum system, such as technology and staff.

Technology Integration

Technology Integration represents a growing part of modern museums, enabling an enhanced visitor experience through **Digital Exhibits like virtual tours, augmented reality, and touchscreen interfaces. Assistive Technologies such as hearing aids, captioning, and sign language** interpreters also play a vital role in ensuring inclusivity. **Wayfinding Systems, both digital and physical,** help visitors navigate the space more effectively, often through mobile apps that offer real time guidance.

Technology occupies a level in the diagram that connects visitors and exhibits, symbolizing its role in enhancing both interaction and access.

Staff and Management

The Staff and Management category includes key personnel such as **Curators, who are responsible for selecting and organizing the content displayed,** and **Educators, who design and deliver workshops, tours, and other educational materials. Visitor Services ensure smooth operations through ticketing, security, and accessibility support.** These individuals form the operational and managerial structure of the museum, integrating every element of the visitor experience, from entry to exit. This category is situated centrally in the diagram to reflect its critical role in facilitating all other functions.

Exhibits and Content

One of the primary elements of any museum is its Exhibits and Content. This category includes **Artifacts and Collections, both physical and digital, that visitors come to experience. Interpretation and Labels provide** the necessary

context, while **Multimedia Content, such as videos, 3D models, and interactive learning tools,** enhance visitor engagement. These elements are essential to the educational mission of museums and form the core of what the museum offers to its audience. This content-based layer, located closer to the center, illustrates the museum's essential purpose: to educate, inspire, and engage.

Public Interaction Points

The Public Interaction Points cover aspects such as Entry and Exit Points (ticket booths, online reservations), Visitor Feedback (surveys, reviews, social media), and commercial areas like Shops and Cafeteria. These interaction points represent how visitors engage with the museum before, during, and after their visit, providing touchpoints for feedback and enhancing the overall experience.

These elements are located in an outer layer of the diagram, indicating their importance in shaping the external facing aspects of the museum.

External Systems and Networks

The museum doesn't operate in isolation, which is where **External Systems and Networks come into play.** These include Cultural Partnerships with other museums and educational institutions, **Community Outreach programs, and Social Media and Marketing.** This network integration allows the museum to extend its influence beyond its physical walls, reaching broader audiences and fostering collaborations. These external relationships, positioned in the outermost layer, are essential for the museum's expansion and longterm sustainability.

Learning and Engagement

Educational programming forms a core mission for many museums, as represented by the **Learning and Engagement component. Workshops and Events offer educational opportunities, while Guided Tours and Learning Spaces such as libraries and study rooms provide a more structured learning environment.** These elements encourage both casual visitors and serious learners to deepen their understanding of the museum's content. This component underscores the museum's role as a learning institution, bridging the gap between exhibits and the public.

Governance and Policies

The Governance and Policies element includes the museum's **Board of Directors, Funding and Budgeting**, and the policies that guide inclusivity and accessibility.

These components ensure that the museum operates smoothly and aligns with broader goals of equity, sustainability, and community engagement.

This foundational layer supports the entire system, ensuring operational and financial sustainability.

Sustainability and Environmental Interaction

Finally, the museum's interaction with the environment is represented through its **Sustainability and Environmental Interaction practices, such as Energy Use and Waste Management, Sustainability in Exhibits, and Environmental Education.**

These practices align with modern expectations for green operations and promote ecological awareness among visitors. Positioned in the outer layer of the diagram, this component reflects the museum's role in fostering a responsible interaction with the environment.

Despite the detailed planning of various components in the current museum system, it becomes evident that these elements, as shown in *Figure 38*, are not enough to develop an ideal museum experience for everyone. While the system covers essential areas such as physical infrastructure and exhibits, it falls short in creating a fully inclusive and engaging environment for all visitor types, limiting its ability to provide a seamless and satisfying experience for diverse audiences.

Actual planning of the experience

Digital exhibits
Touch screens
QR codes
Virtual tour
AR

Wayfinding System
Digital navigation
Mobile apps
Physical navigation

Assitive Tech
Hearing aids
Captioning
Sign language

Policies for inclusivity

Board of directors

Energy and waste
Recycling programs
Efficient lighting

Fundings
Partnership
Donations

Feedback
Surveys
Reviews
Social media

Shop and cafe
Souvenirs
Beverage
Food

Entry and exit
Ticket booth
Online tickets

Cultural partners
Collabs
Educational institutions

Community outreach
Programs for elders
Programs for schools
Programs for families

Marketing
Marketing material
Online platforms
Newsletter

Audience
General visitors
Special users needs
Social groups
Families

Accesibility needs
(Cognitive)
Physical
(Sensory)

User preference
Learning methods (visual, audio)
Thematic

Multimedia content
Interactive learning tools
3D models
Animations
Videos

Learning Space
Study rooms
Libraries
Area for reflection

Labels
Interactive elements
Description

Collections
Rotating exhibits
Digital content
Physical objects

Guided Tours
Audio-guides
In-person tours
(Self guided options)

Workshops
Educational programs
Lectures
Interactive events

Wayfinding
Physical signage
Pathways
Digital guides
Maps

Exhibit Spaces
Display layout
(Exhibit flow)
Interactive areas

Building
Structural design
Accesibility

(Educators)
Curators

Visitor service
Ticketing
Info desk
Security
Support

Legend

Not cured components

Components

Interaction Hubs
Network Integration
Learning Ecosystem
Operational Backbone
Structural Framework
Shaping scope

One significant shortcoming lies in the Interaction Hubs. Though entry and exit points like online reservations and ticket booths streamline the logistical aspects of a visit, they do little to address the deeper engagement needs of a variety of audience segments. Simply ensuring that visitors can enter and leave efficiently does not translate into an enriching experience. **Moreover, the Signage and Wayfinding elements, such as maps, pathways, digital guides, and physical signage, may offer basic navigational assistance but are often too simplistic to accommodate the specific needs of visitors with sensory, cognitive,** or physical impairments. These tools, while functional, do not provide enough individualized support to ensure that **all visitors can independently navigate the museum in a meaningful way.**

In terms of **Exhibit Spaces, the focus on interactive areas, exhibit flow, and display arrangement is primarily designed for the average visitor, failing to account for those who might require different modes of interaction.** Although there are accessible features like elevators, ramps, and restrooms, these do not compensate for the fact that the overall building and layout often remain too rigid, preventing a truly fluid and dynamic visitor experience for everyone, especially those with more **complex accessibility needs.** The structural design, while adhering to basic accessibility codes, still does not allow for a fully inclusive experience.

When considering the Artifacts and Collections, the presentation of physical objects, digital content, and rotating exhibits may engage some visitors, but they are far from adequate for others. The static nature of physical objects and the reliance on **traditional labels require more interactive or multisensory forms of learning.** The inclusion of digital content and rotating exhibits does not bridge this gap, as these elements are often underutilized or not designed with a diverse audience in mind.

The Multimedia Content; including videos, animations, 3D models and interactive learning tools, while innovative, **often caters only to tech-savvy visitors or those with the time and patience to explore these tools.** This approach leaves behind visitors who may find these **digital tools overwhelming or who require simpler, more intuitive forms of interaction.** Similarly, Digital Exhibits such as virtual tours, touchscreens, augmented reality, and QR codes can enhance the experience for some but remain inaccessible or cumbersome for others, particularly those who are not comfortable with technology or who have limited access to personal devices. **The Structural Framework of the museum, though seemingly solid, also presents challenges.** Entry and exit points, ticket booths, and reservations systems are focused on efficiency rather than enhancing the visitor's emotional or intellectual connection to the museum. **This infrastructure, while functional, lacks the adaptability needed to cater to a variety of visitor experiences,** often treating the museum visit as a transaction rather than an opportunity for meaningful engagement.

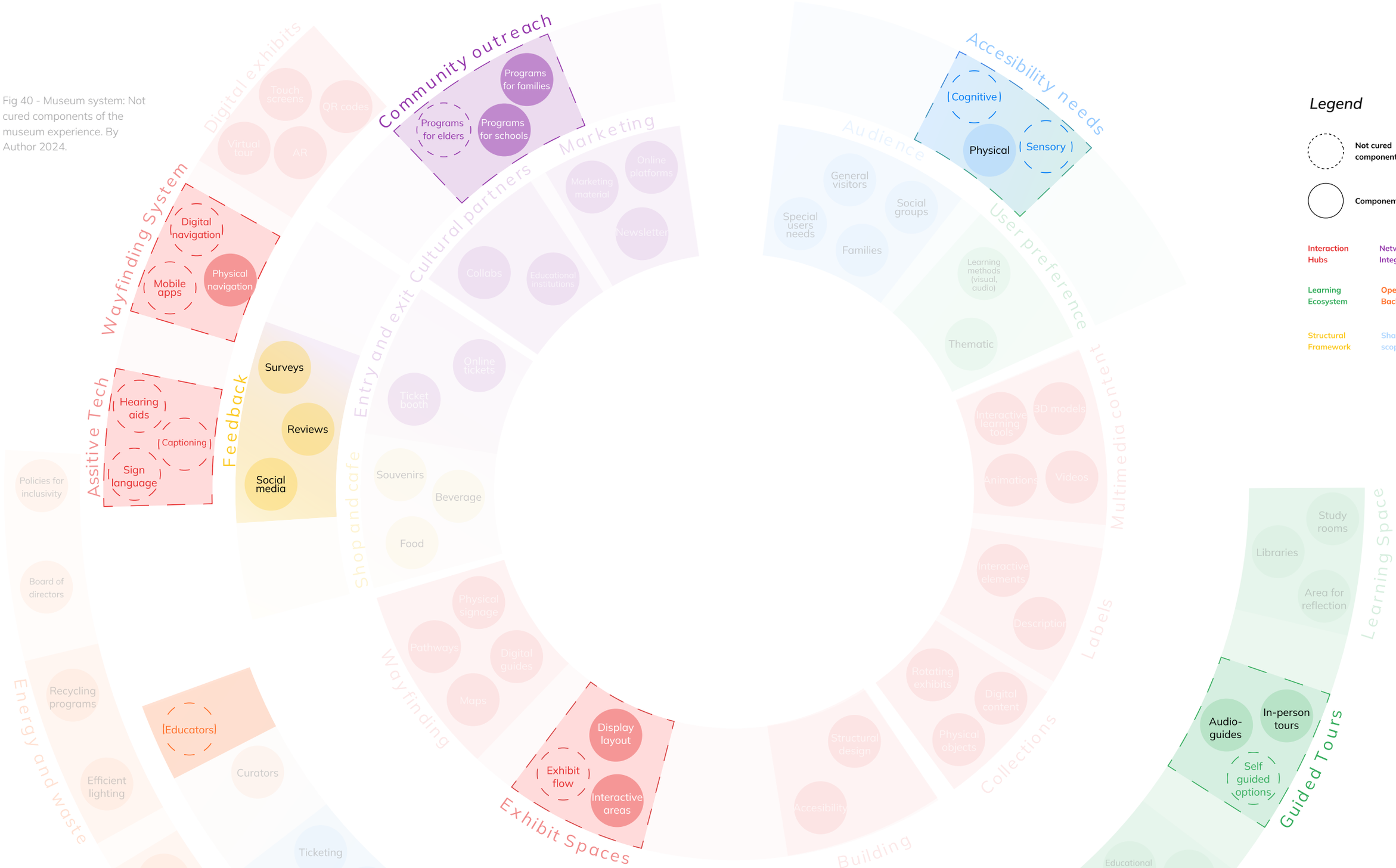
The Shaping Scope component, intended to address Audience Segmentation, does little more than categorize visitors into broad groups such as general visitors, families, school groups, and people with special needs. This segmentation lacks the nuance **necessary to design truly personalized experiences for each group.** As a result, key segments of the audience, particularly those with unique cognitive or sensory needs, are often underserved. **Even the curators, who play a crucial role in shaping the content, are limited in how they can adapt exhibits to accommodate all audience types,** further hindering the museum's ability to offer an inclusive experience.

The Learning Ecosystem, while it offers guided tours, audio guides, in person tours, and self guided options, is still not diverse enough to meet the educational needs of all visitors. These modes of learning are helpful but often too rigid in their design, **leaving out those who may require alternative forms of interaction or more personalized learning tools.**

The reliance on traditional tours and guides **fails to acknowledge the varying paces and learning styles of different visitors.**

The components missing from the current museum experience, which are essential to creating a more inclusive and accessible environment, are illustrated in *Figure 39.* **These missing components address the gaps left by the existing system and correspond to vital elements that focus on enhancing the visitor experience for all.** Assistive Technologies such as hearing aids, captioning, and sign language interpreters are crucial for visitors with sensory disabilities, ensuring that they can fully engage with exhibits and content without barriers. Similarly, Wayfinding Systems, including digital navigation aids and mobile apps, offer more precise and tailored guidance for visitors with cognitive or physical challenges, making navigation more intuitive and supportive.

Fig 40 - Museum system: Not cured components of the museum experience. By Author 2024.



Legend

- Not cured components
- Components

- Interaction Hubs
- Network Integration
- Learning Ecosystem
- Operational Backbone
- Structural Framework
- Shaping scope

The presence of Educators also plays a pivotal role in bridging the gaps in visitor engagement. By providing real time guidance, **they can personalize the experience, ensuring that exhibits, particularly interactive areas and the overall exhibit flow, are fully explained and accessible to all types of learners.** Additionally, **Visitor Feedback systems, through surveys, reviews, and social media engagement, enable the museum to continuously adapt and evolve** based on direct input from its diverse audience, ensuring that the institution remains responsive to visitor needs.

Community Outreach, such as specialized programs for elders, along with enhanced Guided Tour options, particularly self guided tours, offer a more tailored and independent way for visitors to explore the museum, catering to those who prefer a slower or more personalized pace. Finally, the emphasis on **Accessibility Needs, including cognitive and sensory considerations, ensures that all visitors can engage meaningfully** with the exhibits and the museum environment, regardless of their specific abilities. Together, these components, currently missing but outlined in *Figure 40*, are key to filling the gaps in the museum experience and ensuring it is fully inclusive and engaging for every visitor.

3.2.1
MUSEUMS FOR EVERYONE

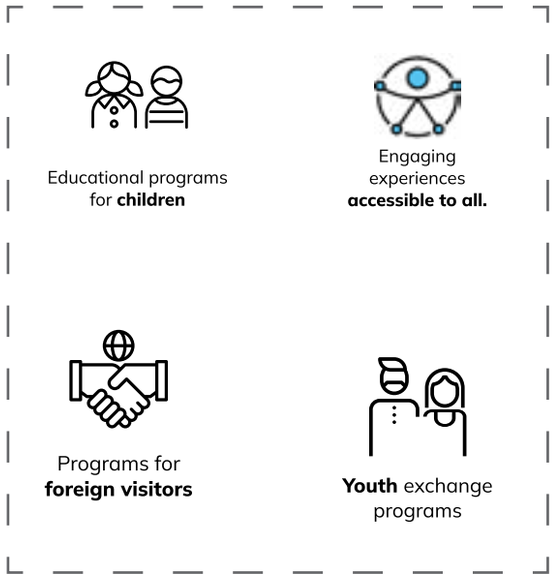
In line with systemic design practices, museums must consider how their entire ecosystem, from physical spaces to staff interactions, contributes to accessibility and inclusivity. The CECA ICOM banner “Un musée pour tous!” emphasizes that **accessibility does not need to be overly complex to implement effectively.** It provides practical strategies for ensuring inclusivity in museum environments. Based on an online study with 72 professionals from 4 continents, the banner offers simple, cost-effective solutions to help museums become more welcoming to all visitors, especially those with disabilities. Suggestions range from providing **folding chairs and wheelchairs, to implementing sign language interpreters, priority entrances and ensuring that signage is readable with large fonts and contrasting colors.** These recommendations are directed toward museum staff, curators, and managers, aiming to foster universal access and inclusion. The poster serves as a reminder that, while access and inclusion are critical to serving diverse audiences, **the solutions can often be simple and highly impactful** (ICOM CECA, 2024).

Fig 41 - Poster titled “Accessibilité universelle - le musée inclusif,” outlining strategies to enhance museum accessibility and inclusion for all visitors. (ICOM CECA, 2024).

A growing idea in the field of museum design is **universal design,** which refers to creating products and environments that can be used by all individuals to the fullest extent, without requiring modifications. According to the National Institute on Disability and Rehabilitation Research, **universal design is built on seven key principles:** equitable use, flexibility in use, simple and intuitive operation, perceptible information, tolerance for mistakes, minimal physical effort, and sufficient space and size for ease of usage (Connell et al., 1997).

Building on the insights from CECA ICOM's "Un musée pour tous!" and the importance of accessibility in museums, another crucial element is the integration of digital wayfinding systems. **Museums often present large maze like spaces with labyrinthine connections,** making it difficult for visitors, especially those unfamiliar with the layout, to find their way through various exhibits. Furthermore, museums house complex programs, which include distinct spaces for exhibits, storage, conservation, and public interaction. These factors underscore **the need for innovative solutions that enhance the visitor experience,** while also ensuring accessibility for all.

Services offered by musuems in Turin

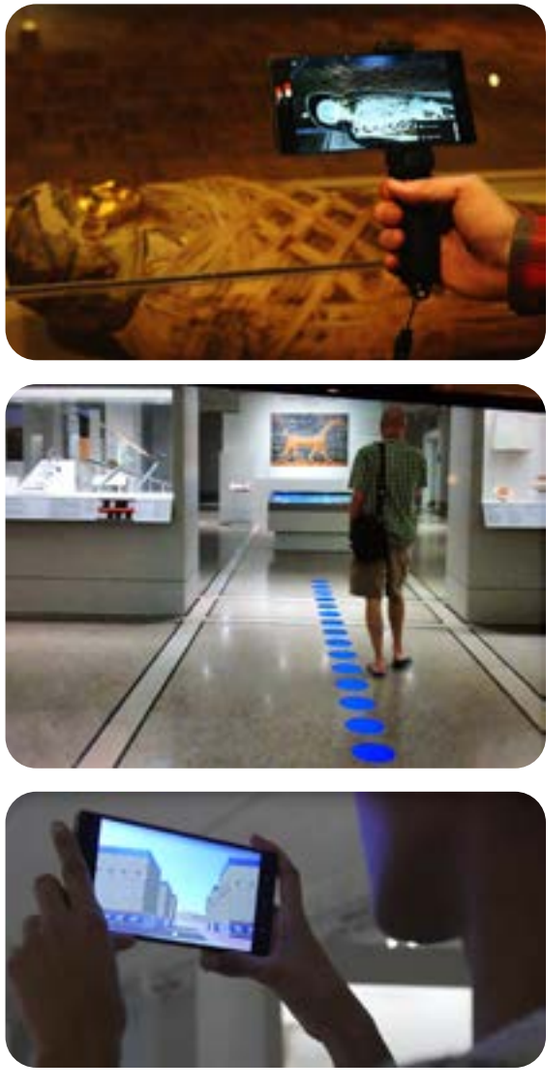


But...

What about elders?

A prime example of such an innovative solution is the Lumin project developed by Andrea Montiel De Shuman, Digital Experience Designer at the Detroit Institute of Arts (DIA) (Wolke, 2021). **Lumin is a groundbreaking digital wayfinding and augmented reality tool** designed to help visitors navigate the museum's complex and often labyrinthine galleries. Lumin not only assists visitors in finding their way, but also transforms the way they interact with art. "Your brain transports you to Babylonia," explains De Shuman, highlighting how the immersive nature of Lumin provides visitors with "a moment of enlightenment about art", far surpassing traditional audio guides in terms of engagement.

The Lumin project began with a clear focus on learning outcomes, rather than merely instructing visitors. De Shuman recalls, "we wanted to engage, rather than instruct so that people aren't intimidated; they are encouraged." This philosophy placed the visitor at the center of the experience, allowing them to explore the museum at their own pace while providing a seamless way to connect with the art. The results of Lumin's implementation speak for themselves: **77% of visitors found the wayfinding feature helpful in exploring the labyrinthine galleries of the museum,** and 9 out of 10 visitors reported that Lumin helped them engage more deeply with the art.



Images illustrating digital wayfinding in museums, including floor markers, augmented reality interactions, and artifact details revealed through smartphone use (Wolke, 2021).

When it comes to using new technology,

“people are willing to try new things,”

noted Andrea Montiel De Shuman, Digital Experience Designer at DIA. **“As long as you make it meaningful, it doesn’t have to be perfect.”** This sentiment is echoed by Sylvain Denoncin, CEO of Okeenea and creator of the wayfinding app Evelity, which focuses on universal accessibility. Denoncin, a universal design expert, explained during the interview how Evelity (Evelity, n.d.) **aims to guide the navigation of people with disabilities without asking about the specific type of disability.** The app was originally developed for the metro system, specifically to assist blind users in navigating complex spaces. Nevertheless, Evelity’s application has since expanded, including use cases in museums. Denoncin emphasizes that Evelity doesn’t classify users based on their disabilities; instead, it works with doctors and labs to understand how people with different needs move through spaces (S. Denoncin, Evelity, February 7, 2024). He stressed:

“they’re not disabled, it’s the environment that makes them disabled”

highlighting the app’s focus on inclusive design. In museums, **Denoncin believes that the user interface should be inverted: rather than focusing on navigation first, museums should prioritize the content visitors are there to engage with, followed by navigation.** This approach aligns with Evelity’s mission to create spaces where the environment adapts to the user’s needs, rather than expecting users to adapt to the environment. By focusing on inclusivity and ease of use, Evelity helps visitors of all abilities navigate public spaces like museums in a way that feels intuitive and accessible.

3.2.2
MUSEUM INCLUSIVITY: CASE STUDIES

Museums have long been spaces that cater to a particular demographic, often excluding socio economically disadvantaged groups. David Fleming argues that these exclusions are not accidental but deliberate, **stating that museums have excluded such groups "not by accident but by design"** (Fleming, 2002). Historically, museums have been structured to **meet the needs and interests of educated, middle class, and economically privileged individuals.** This approach was not only a strategy to ensure financial viability but also a reflection of the elitism entrenched in museum leadership. Fleming especially criticizes the role of curator-directors in museum practices for not prioritizing inclusive museum practices since they have personally benefited from their social status within the hierarchical organization.

As a result, many museums still bear the marks of these exclusionary practices. The authoritative, Eurocentric discourse that **museums are spaces for the culturally "refined" remains pervasive,** even though it is rarely openly discussed or challenged. In response to this legacy, some museums have begun to rethink their role in society, placing a renewed focus on inclusivity. By embracing diverse audiences and making their spaces more accessible, these museums are challenging the traditional model and making strides toward a more inclusive future. **The following case studies highlight museums that have implemented practices to be more inclusive,** utilizing various technologies and strategies to engage visitors from all walks of life.

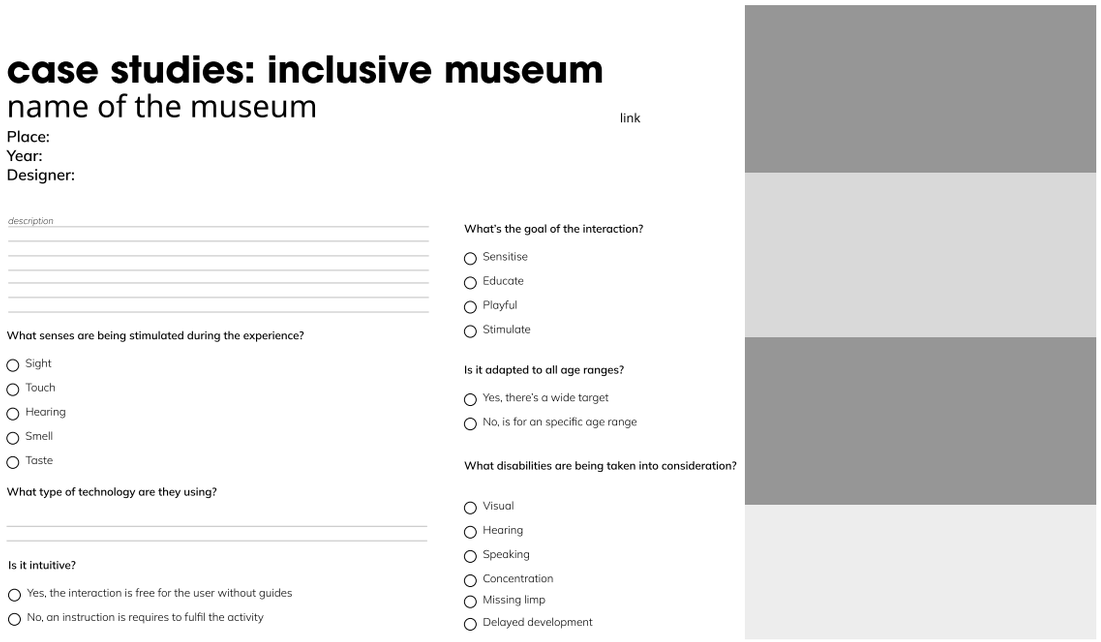
The case studies of inclusive museums are analyzed using a structured framework *(Figure 42)* that evaluates how the museum experience is designed to accommodate diverse visitor needs. Each case study begins with key details, including the museum's name, location, year of design, and the designer responsible for its development. **The description section offers an overview of the museum experience,** focusing on the inclusivity of the design and how visitors engage with the exhibits.

To assess the sensory engagement, the framework identifies **which senses, sight, touch, hearing, smell, or taste, are stimulated during the experience.** The type of technology used, such as interactive screens, virtual reality, or tactile models, is also examined to understand how it enhances accessibility. The intuitiveness of the interaction is another critical factor, determining whether the **experience allows for free exploration or requires instructions.**

The framework also considers whether the interaction is adapted to a wide age range or targets specific groups. Essentially, the case studies evaluate how well the museum addresses various disabilities, including **visual, hearing, speaking, concentration, mobility (e.g., missing limb), and cognitive (e.g., delayed development) challenges.** By focusing on these aspects, the framework ensures a comprehensive evaluation of each museum's efforts toward inclusivity, making the experiences accessible and meaningful to a broader audience.

Scheme for the case study analysis

The following scheme was used for analysis all the case studies found during the research.



case studies: inclusive museum

name of the museum

link

Place:
Year:
Designer:

description

What senses are being stimulated during the experience?

- ◯ Sight
- ◯ Touch
- ◯ Hearing
- ◯ Smell
- ◯ Taste

What type of technology are they using?

Is it intuitive?

- ◯ Yes, the interaction is free for the user without guides
- ◯ No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- ◯ Sensitise
- ◯ Educate
- ◯ Playful
- ◯ Stimulate

Is it adapted to all age ranges?

- ◯ Yes, there's a wide target
- ◯ No, is for an specific age range

What disabilities are being taken into consideration?

- ◯ Visual
- ◯ Hearing
- ◯ Speaking
- ◯ Concentration
- ◯ Missing limp
- ◯ Delayed development

Fig 42 - Framework to evaluate each case study for inclusive museums. By Author, 2024.

Tattile Omero - Mole Vanvitelliana, Ancona (1993, Aldo Grassini, Daniela Bottegoni)

Tattile Omero is a museum designed to be experienced primarily through touch, making art accessible to everyone, including those with visual impairments. The museum features **150 works, including plaster and resin replicas of classical masterpieces, architectural models, and contemporary sculptures.** To enhance the tactile experience, **visitors can wear a blindfold, allowing them to fully immerse themselves in the sensation of touch.** This innovative approach to art creates a space where visitors can engage with works in a way that is unique and sensory driven. Entry to the museum is free, although the use of a blindfold costs 2 €, and access to the design collection costs 5 €. The museum is an exemplary model of inclusivity, offering an enriching educational experience for all visitors, regardless of their abilities.

case studies: inclusive museums

tattile Omero

link

Place: Mole Vanvitelliana, Ancona
Year: 1993
Designer: Aldo Grassini, Daniela Bottegoni

description Museum experienced through the sense of touch, making art accessible to everyone. Within the museum, there are 150 works, including plaster and resin replicas of classical masterpieces, architectural models, and original contemporary sculptures. To make the experience more immersive, visitors can also wear a blindfold that allows everyone to feel sensations they have never experienced before. The entrance is free, but the blindfold has a cost of 2 € and to access to the design collection 5 € are needed to be payed.

What senses are being stimulated during the experience?

- ✹ Sight
- ✹ Touch
- ◯ Hearing
- ◯ Smell
- ◯ Taste

What type of technology are they using?

Big models to touch

Is it intuitive?

- ✹ Yes, the interaction is free for the user without guides
- ◯ No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

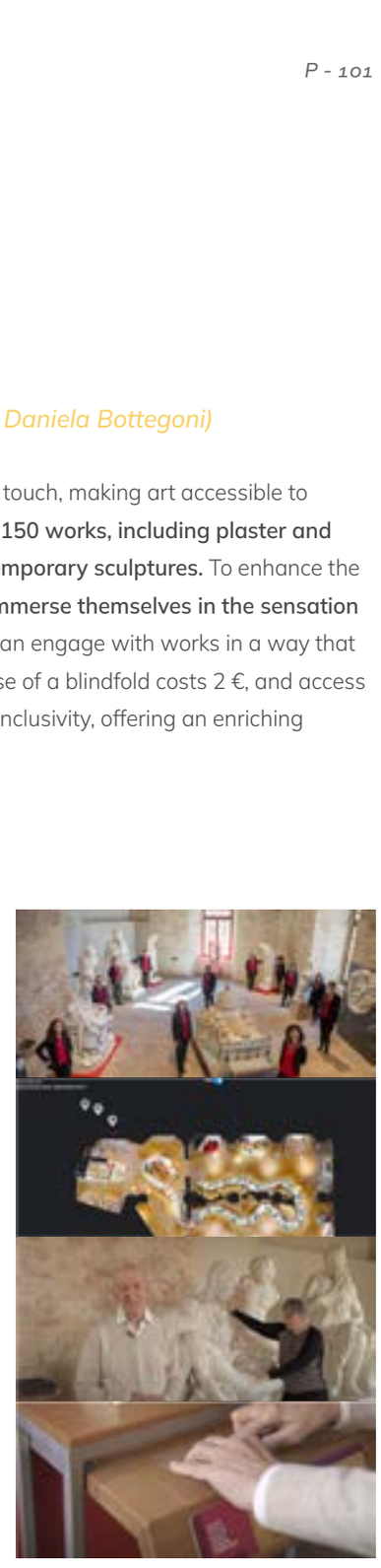
- ✹ Sensitise
- ✹ Educate
- ◯ Playful
- ◯ Stimulate

Is it adapted to all age ranges?

- ◯ Yes, there's a wide target
- ✹ No, is for an specific age range

What disabilities are being taken into consideration?

- ◯ Visual
- ✹ Hearing
- ✹ Speaking
- ✹ Concentration
- ✹ Missing limp
- ✹ Delayed development



The Virtual Museum - Salerno (2018, Stefano Di Tore, Michele Domenico Todino, Lucia Campitiello)

The Virtual Museum in Salerno uses virtual reality to revolutionize the presentation and preservation of archaeological finds. **By offering immersive, interactive experiences, this museum allows visitors to explore the past in a deeply engaging way, forging emotional connections with the artifacts on display. The use of VR not only enhances accessibility** for a broad audience but also contributes to the long term conservation of valuable archaeological discoveries. This technology brings history to life in a manner that traditional exhibits cannot, offering a unique opportunity to experience and appreciate cultural heritage from a new perspective.

case studies: inclusive museums

the virtual museum

link

Place: Salerno
Year: 2018
Designer: Stefano Di Tore, Michele Domenico Todino, Lucia Campitiello

description The use of virtual reality in archaeological museums represents a significant step forward in the presentation, preservation, and research of cultural heritage. The ability to provide immersive experiences, enhance accessibility to artifacts, and contribute to the long-term conservation of archaeological finds makes VR an invaluable resource for the museum and archaeological community. Furthermore, the opportunity to explore the past interactively offers visitors an emotional connection and a deeper appreciation of human history.

What senses are being stimulated during the experience?

- [x] Sight
- [ ] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [ ] Yes, there's a wide target
- [x] No, is for an specific age range

What disabilities are being taken into consideration?

- [ ] Visual
- [x] Hearing
- [x] Speaking
- [ ] Concentration
- [ ] Missing limp
- [x] Delayed development

Museo per tutti – Innocenti Museum, Benozzo Gozzoli Museum, Campatelli Tower and House (2015, Onlus with the support of Fondazione De Agostini)

"Museo per tutti" is an initiative aimed at making museums accessible to people with intellectual disabilities, ensuring their right to engage with culture. **Through specialized pathways and tools, this program enriches the educational offerings of museums and promotes the culture of inclusion.** In particular, the museums have developed sensory maps indicating areas where visitors can experience light, sound, touch, and smell stimulation. **The project also includes easy to read guides, developed using simplified language and Augmentative and Alternative Communication (AAC) symbols,** tailored to each institution's specific needs. This initiative has been implemented in 27 museums, demonstrating its broad impact and commitment to inclusive museum practices.

case studies: inclusive museums

museo per tutti

link

Place: Innocenti museum (Florence), Benozzo Gozzoli Museum (Castelfiorentino), Campatelli Tower and House (San Gimigiano)
Year: 2015
Designer: Onlus con il sostegno di Fondazione De Agostini

description "Museo per tutti – Accessibile alle persone con disabilità intellettiva" garantisce il diritto alla cultura alle persone con disabilità intellettiva, rendendo fruibili musei, beni d'interesse storico-culturale e naturalistici, attraverso percorsi e strumenti specifici che ne arricchiscono l'offerta educativa e promuove la cultura dell'inclusione. 27 museum have been included in this methodology of adapting the museum experience to all.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [x] Hearing
- [x] Smell
- [ ] Taste

What type of technology are they using?

Mechanical models, models to touch, interactive mapping, digital guide

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [x] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being taken into consideration?

- [x] Visual
- [x] Hearing
- [x] Speaking
- [x] Concentration
- [x] Missing limp
- [x] Delayed development

"Museum for All" offers two guides:

- One guide is written in easy-to-read language, a simplified language regulated by the European Union.
- Another guide is created using symbols from Augmentative and Alternative Communication (AAC). The guide is developed with symbols from ARASAAC, the Aragonese Center for Augmentative and Alternative Communication. Some adaptations have been made based on these symbols to personalize the content for each specific institution.

torre e casa campatelli

other three, has developed a
laces where there's light,
re stuff can be touched,
where music can be listened to and where theres a smell stimulation.

link

3.2.3
MUSEUMS IN DIGITAL AGE: CASE STUDIES

"Museums are devoting resources to producing fluid ontologies, flexible knowledge structures capable of adapting to changing interests" (Srinivasan & Huang, 2005). **The creation of fluid ontologies in museums is made possible through the use of digital technologies** (MuseumsEtc, n.d.). The digital age has brought about a profound transformation in museums, forcing a rethinking of their role and objectives. Traditionally focused on collection, documentation, and research, **museums are now evolving into dynamic spaces of engagement and learning.** This shift, driven by **the principles of "New Museology",** has sparked a fundamental reorganization of museum practices, challenging the notion of whether their traditional objectives remain relevant, socially impactful, and ethically sound in today's world.

Museums adopting digital media foster active participation and interaction, turning visitors from passive viewers into active participants. The museum experience becomes a **shared cultural journey,** enhanced by technology that enables visitors to connect with both the objects and each other. **Digital technologies have become key to this evolution,** making museums more accessible, adaptable and interactive.

Besides, many museums are experimenting with open-source digital platforms, encouraging participation from a diverse, global audience. This democratization of knowledge and content creation offers new opportunities for engagement, extending the reach and impact of museums. The use of social web tools and interactive technologies allows museums to foster deeper engagement, **reshaping visitor experiences into more meaningful and participatory activities.** Below, some case studies that position museum experiences in the digital age based on the interactions they're offering to the visitors.

The case studies presented in this chapter are analyzed using a framework to **assess various aspects of the visitor experience and the role of technology in each museum.** Each case study includes **detailed information on the location, year of creation, and designers, providing context for the development and purpose of the exhibit.** The description offers a brief overview of the experience and highlights how visitors interact with the exhibit. **To evaluate the sensory engagement, the analysis identifies which senses are being stimulated** (sight, touch, hearing, smell, or taste) and assesses **the type of technology used, such as touchscreens, augmented reality, or virtual reality.**

The framework also **examines the intuitiveness of the interaction,** determining whether the exhibit allows for free exploration without guides or requires instructions to engage. Further, the framework explores the goals of the interaction, **whether it is designed to sensitize, educate, stimulate, or entertain visitors.** Another key aspect is the inclusivity of the exhibit, with a focus on whether it is adapted to all age ranges or targets specific groups. Lastly, the case studies consider which s**pecial condition , if any, are excluded from the experience,** such as visual, hearing, or cognitive impairments. This structured approach ensures a comprehensive evaluation of each museum's technological implementation and visitor engagement.

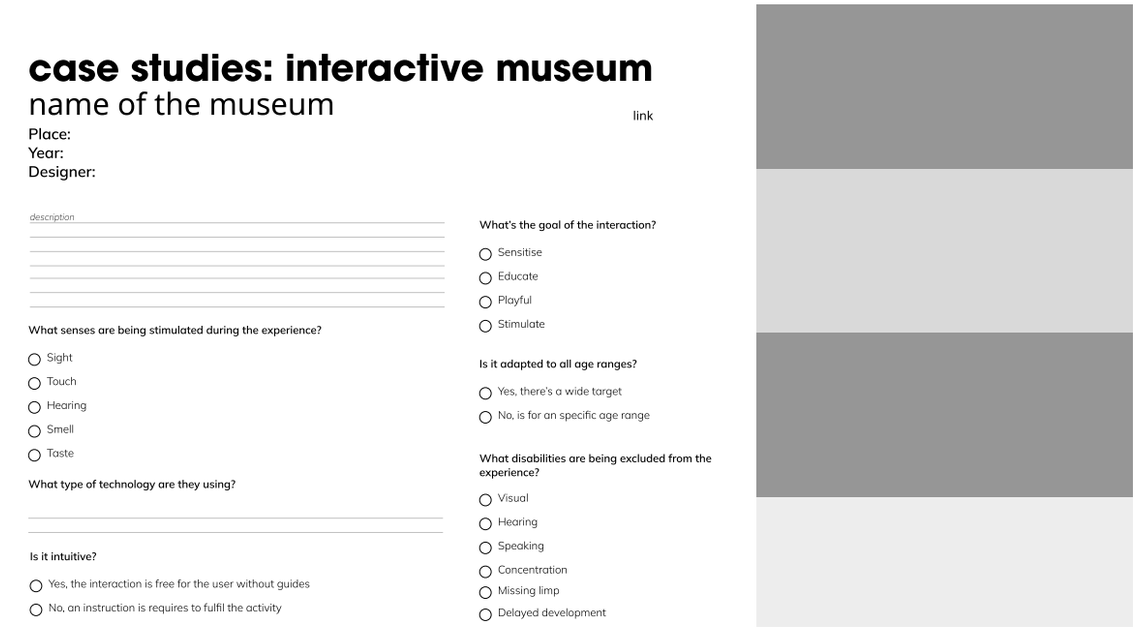


Fig 42 - Framework to evaluate each case study for interactive museums. By Author, 2024.

Borderless - Mori Tokyo (2018, teamLab)

The Borderless Museum in Tokyo offers an experiential art space where the boundaries between the observer and the art dissolve. **This immersive environment allows visitors to interact with digital displays, where their movements influence the surrounding space.** In one notable exhibit, “Aerial Climbing,” bars suspended from ropes move in response to the climber’s actions, creating a collective experience where each visitor impacts the environment. This installation stimulates multiple senses, including sight and touch, and is designed for children aged 4-14, with an emphasis on inclusivity, offering discounts for disabled visitors. **The goal is to foster sensitivity to movement and space while offering a playful, educational experience** through touch screen and scanner technologies.

case studies: interactive museums

borderless- mori tokyo

link

Place: Tokyo
Year: 2018
Designer: teamLab

description Experiential museum conveying the values of immersive and boundary-less art. **Aerial Climbing** is a space where bars are suspended from ropes and float three-dimensionally in the air. When a person climbs one of the bars, he moves the others because they are connected to each other. When a person passes through the bars, he influences the space. For kids from 4-14 years old, and there’s a discount for disables (24 € for adults, 7,50 € for kids and 12 € for disables).

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Touch screen, scanner

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [ ] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there’s a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [x] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [x] Missing limp
- [x] Delayed development

Micromort - Salone del Mobile, Milan (2021, A. Aspesi et al.)

This interactive installation brings attention to the fragility of life by displaying data related to death rates across different nationalities from 2000 to 2017. **Through an interactive “stock exchange” style presentation, visitors can explore mortality statistics across 16 monitors and a specially designed touchscreen.** By visualizing these somber statistics in a format traditionally used for financial markets, **the exhibit engages visitors on an emotional level, sensitizing them to the randomness of death.** The installation is designed to be visually stimulating, with a broad target audience, and it invites users to interact with data through touchscreens powered by Arduino technology.

case studies: interactive museums

micromort

link

Place: Milano, Salone del Mobile
Year: 2021
Designer: A. Aspesi, C. Bacchini, E. Carbone, P. Forino, D. Perucchini, Enzo G. Taboada Fung

description Monolith capable of displaying the toll of death in relation to the nationality of individual victims. The project is presented through an installation that simulates a stock exchange, where it is possible to observe Micromort data from 2000 to 2017 on 16 monitors and interact with them on a specially designed 17th touch screen monitor. The entrance was free.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Touch screen, arduino

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [ ] Educate
- [ ] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [ ] Yes, there’s a wide target
- [x] No, is for an specific age range

What disabilities are being excluded from the experience?

- [x] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [x] Missing limp
- [x] Delayed development

Museum of Tomorrow (2019, Associated Students of the University of California, Berkeley)

This pop-up museum, designed to make abstract concepts like climate change tangible, allows users to interact with CO2 emissions data in a visceral way. By selecting various food items, visitors are surrounded by an amount of air representing the emissions generated by their choices. **The goal is to educate visitors about environmental impacts in an immediate and visual manner, facilitated by virtual reality.** This installation is accessible to a wide range of ages and abilities, offering a free entrance and a straightforward interaction that stimulates critical reflection on personal choices and their global consequences.

WildLife Exhibition - SIAM Center, Bangkok (2018, Three Students of Web Design and Media Interactivity)

In this installation, the simple act of touching a branch causes its shadow to come to life on the wall, blending projection technology with physical interaction. **The installation uses video-beam technology to create a visual and sensory experience that engages visitors by prompting reflections on the relationship between humans and nature.** The exhibit is highly intuitive and playful, making it accessible to a wide audience. The goal is to educate and stimulate awareness about wildlife and the environment through simple, yet powerful, interactions.

case studies: interactive museums

Museum of the Future

link

Place: Berkley
Year: 2019
Designer: Associated Students of the University of California

description Design of a pop-up museum capable of translating themes related to climate change into a tangible and immediate experience. Installation where users can become aware of the CO2 emissions associated with their food choices. By selecting a dish, the user will be surrounded by an amount of air equivalent to the emissions produced by that specific meal. The entrance is free.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Virtual reality

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [ ] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [x] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [x] Missing limp
- [x] Delayed development

case studies: interactive museums

WildLife exhibition

link

Place: SIAM CENTER, Bangkok
Year: 2018
Designer: Three students of Web Design and Media interactivity

description Interactive exhibition aimed at prompting reflection on wildlife. Installation where touching the branches of a "plant" causes its shadow on the wall to come to life and bloom. The uniqueness lies in the projection blending with the shadow, creating distinctive animations. The entrance is free.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [x] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Video-beam, interactive screen

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [ ] Educate
- [ ] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from experience?

- [x] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [x] Missing limp
- [x] Delayed development

Loci Food Lab - Various Cities (2019, Heather K. Julius et al.)

The Loci Food Lab is a mobile, interactive gastronomic experience that explores the future of bioregional foods. Visitors fill out a questionnaire detailing their food preferences, after which a customized snack is prepared for them. **Each snack comes with a detailed receipt of the ingredients used, offering both an educational and sensory experience.** By integrating touchscreens into the ordering process, the Loci Food Lab creates a personalized interaction where visitors learn about food sustainability while engaging directly with the exhibit. The experience is adapted for all age ranges, stimulating the senses of taste and smell, and offering a unique approach to food education.

case studies: interactive museums

Loci food lab

link

Place: London, Berlin, Portland, Dublin, and Edinburgh.
Year: 2019
Designer: Heather K. Julius a Portland, Ben Reade, Molly Garvey e Vilma Luostarinen

description Mobile gastronomic stand for tasting future bioregional foods. Customized snacks are served based on a menu featuring food products from the bioregion. By filling out the questionnaire expressing your preferences, a personalized tasting will be created for you. Along with it, you'll receive a receipt detailing the ingredients used. Has a cost of 17 €.

What senses are being stimulated during the experience?

- [x] Sight
- [ ] Touch
- [ ] Hearing
- [x] Smell
- [x] Taste

What type of technology are they using?

Interactive screen

Is it intuitive?

- [ ] Yes, the interaction is free for the user without guides
- [x] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [ ] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [ ] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

Discovery Green Pea - Turin (2020, Studio ACC, Cristiana Catino & Negozio Blu Architetti Associati)

This interactive exhibition focuses on environmental themes and encourages visitors to discover how they can make their daily lives more sustainable. **One of the highlights of the exhibit is a piezoelectric floor where visitors can jump and dance to generate energy.** The exhibit's playful and educational nature, combined with its use of piezoelectric technology and 3D models, makes it highly engaging for visitors of all ages. Through this exhibition, visitors are encouraged to think critically about energy consumption and sustainability in their
everyday lives.

case studies: interactive museums

Discovery green pea

link

Place: Lingotto, Turin
Year: 2020
Designer: Studio ACC dell'architetto Cristiana Catino e di Negozio Blu Architetti Associati

description Interactive exhibition addressing environmental themes, where visitors can discover how to make their daily lives green and innovative. Piezoelectric floor on which you can jump and dance to generate energy. You can also challenge an opponent to see who is the most productive source! Free entrance.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Interactive screen, Floor Piezoelectric, 3D model

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [x] Educate
- [x] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [ ] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

Glasgow Science Centre - Glasgow (2001, BDP - Building Design Partnership)

The Glasgow Science Centre offers a comprehensive approach to science education through a combination of passive and interactive experiences. **The museum's exhibits range from augmented reality and mechanical models to video-beam displays, providing a variety of ways for visitors to engage with scientific concepts.** The goal is to educate and entertain, making science accessible to all age groups. Tickets are affordable, and the wide range of interactive experiences ensures that the museum is suitable for families, students, and seniors alike.

case studies: interactive museums

glassglow science center

link

Place: Glasgow, Clyde Waterfront Regeneration
Year: 2001
Designer: BDP. (Building Design Partnership)

description Museum composed of three main structures, each capable of offering a different approach to science, ranging from passive activities such as watching documentaries to more interactive experiences. Adults need to pay 15 €, children 12,6 € and students and +60 need to pay 12,60 €.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Interactive screen, Video-beam, mechanical models, augmented reality

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [x] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [ ] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

Wine Museum - Priocca (2019, Disko and Studio Capellino Architettura)

In this immersive museum experience, visitors are taken on a journey through the history of viticulture, guided by the voice of Homer. **The exhibit allows visitors to step back in time and experience the traditional wine pressing process through interactive sensory stations.** The integration of video-beam technology and sensory interaction offers a unique educational experience that appeals to both wine enthusiasts and casual visitors alike. The museum also includes wine tastings, making it a fully immersive sensory experience.

case studies: interactive museums

wine museum Priocca

link

Place: Priocca d'Alba
Year: 2019
Designer: Disko and studio Capellino Architettura

description Immersive experience where Homer guides the visitor on a journey to discover the world of viticulture. Going back in time, visitors can enter a vat and perform the same actions as in the traditional wine pressing process, discovering interactively how grapes were once transformed into wine. Entrance with one tasting 10 €, three glasses 20 € and five glasses 25 €.

What senses are being stimulated during the experience?

- [x] Sight
- [ ] Touch
- [ ] Hearing
- [x] Smell
- [x] Taste

What type of technology are they using?

Interactive screen, Video-beam, sensory stations

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [x] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from t experience?

- [x] Visual
- [x] Hearing
- [x] Speaking
- [x] Concentration
- [x] Missing limp
- [x] Delayed development

Leonardo Da Vinci Museum - Milan (1953, P. Portaluppi et al.)

This museum combines traditional displays with interactive workshops dedicated to environmental themes and Da Vinci's inventions. **Visitors can engage with real models and recreate Leonardo's machines through hands-on activities.** Using mechanical models and virtual reality, the museum fosters a deep understanding of science and engineering, allowing visitors to explore the mechanics behind some of Da Vinci's most famous inventions. The museum is designed to be accessible to all ages, with reduced ticket prices for children, students, and military personnel.

case studies: interactive museums

Leonardo Da Vinci museum

link

Place: Milan
Year: 1953
Designer: P. Portaluppi, E. Griffini, F. Reggiori

description Science museum featuring various temporary exhibitions and permanent displays, along with interactive workshops dedicated to environmental themes. Building on the concept of Leonardo da Vinci's machines, each visitor can recreate a machine to perform specific actions. By fitting gears together and setting them in motion, they can lift a weight, inflate a balloon, and much more. Adults pay 10 €, reduced tickets 7.5 €, schools 4.5 € and children, military and teachers enter for free.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [ ] Hearing
- [ ] Smell
- [ ] Taste

What type of technology are they using?

Interactive screen, Video-beam, real models, virtual reality, mechanical models

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [x] Playful
- [ ] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [x] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [x] Missing limp
- [x] Delayed development

Museum of Communication - Bern (1990, Jacqueline Strauss)

The Museum of Communication in Bern offers a distinctive and engaging experience focused entirely on the subject of communication. Visitors are immersed in interactive exhibits that allow them to participate in various activities, such as sending messages via letter shoots, recording videos at film karaoke stations, or even competing in a hacking contest. **The museum stimulates multiple senses, including sight, touch, hearing, and taste, utilizing interactive screens, virtual reality, mechanical models, and video-beam technology.** Designed for a wide audience, the museum provides an intuitive experience that encourages playful and educational exploration, making it an inclusive environment for all age ranges.

case studies: interactive museums

museum of communication

link

Place: Bern, Switzerland
Year: 1990
Designer: Jacqueline Strauss

description Communication is similar to love: we all join in but none of us really know how it works. The only museum in Switzerland fully devoted to the subject of communication. With ten interactive experiences at the Museum of Communication, visitors can Send a message by letter shoot, Record the best video at film karaoke, Immortalise themselves on a postage stamp, Compete in a hacking contest, See the first-ever Swiss computer, Meet a robot, Children's tours with Ratatösk and Culinary delights.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [x] Hearing
- [x] Smell
- [x] Taste

What type of technology are they using?

Interactive screen, Video-beam, real models, virtual reality, mechanical models, virtual reality

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [x] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded fr experience?

- [ ] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

Cité de l'Espace - Toulouse (1997, SEMECCEL)

Cité de l'Espace is a highly interactive museum that focuses on space exploration, fittingly located in Toulouse, the heart of the European aerospace industry. **Spanning over five hectares of gardens, the museum showcases replicas of spacecraft and allows visitors to step inside an exact copy of the Mir space station.** Through a blend of real models, virtual reality, and interactive screens, visitors can gain insight into life without gravity, offering both an educational and immersive experience. The museum stimulates multiple senses, including sight, touch, and hearing, and provides an engaging experience adapted for a wide audience.

case studies: interactive museums

cité de l'espace

link

Place: Toulouse, France
Year: 1997
Designer: SEMECCEL

description is a highly interactive museum about space flight, appropriately located in the centre of the European aerospace industry: Toulouse. The museum's five-plus hectares of gardens are filled with replicas of space crafts. It is possible to travel both space and time at this interactive museum by stepping inside an exact copy of the Mir space station. This Russian space station was in orbit between 1986 and 2001, and its interior gives a great insight to what it's like to live without gravity. Tickets from 21.5 €.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [x] Hearing
- [x] Smell
- [ ] Taste

What type of technology are they using?

Interactive screen, Video-beam, real models, virtual reality, mechanical models, virtual reality

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [x] Sensitise
- [x] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded from the experience?

- [ ] Visual
- [ ] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

NEMO Science Museum - Amsterdam (2010, Géke Roelink and Rutger Hamelynck)

NEMO Science Museum is dedicated to making complex scientific and technological concepts accessible to a broad audience. **Visitors are engaged through a variety of interactive displays that include real models, mechanical systems, and virtual reality installations.** Designed to educate, stimulate, and entertain, NEMO provides an intuitive experience where visitors can freely explore without the need for guided instruction. The museum is designed for all age ranges and emphasizes playful learning, making it a key educational hub that stimulates the senses of sight, touch, and hearing.

case studies: interactive museums

NEMO science museum

link

Place: Amsterdam, Netherlands
Year: 2010
Designer: Géke Roelink, Rutger Hamelynck

description NEMO brings the importance of science and technology to the attention of a wide audience. We present complex subjects in a fun and accessible way. This is done at the well-known NEMO Science Museum, in schools and online. In this way, we help build a smart society. Tickets 17,50 €.

What senses are being stimulated during the experience?

- [x] Sight
- [x] Touch
- [x] Hearing
- [x] Smell
- [ ] Taste

What type of technology are they using?

Interactive screen, Video-beam, real models, virtual reality, mechanical models, virtual reality

Is it intuitive?

- [x] Yes, the interaction is free for the user without guides
- [ ] No, an instruction is requires to fulfil the activity

What's the goal of the interaction?

- [ ] Sensitise
- [x] Educate
- [x] Playful
- [x] Stimulate

Is it adapted to all age ranges?

- [x] Yes, there's a wide target
- [ ] No, is for an specific age range

What disabilities are being excluded fro experience?

- [x] Visual
- [x] Hearing
- [ ] Speaking
- [ ] Concentration
- [ ] Missing limp
- [ ] Delayed development

3.2.4
ARTIFICIAL INTELLIGENCE CASE STUDIES

Artificial intelligence (AI) has increasingly become a significant tool in the cultural heritage and museum sectors, offering innovative ways to engage with the past. While once considered too futuristic for these traditionally static institutions, AI has brought new opportunities to museums by providing interactive experiences, enhancing accessibility, and aiding in the preservation of cultural heritage.

From reconstructing artwork to creating personalized visitor journeys, **AI's ability to handle large datasets and offer predictive insights has made it an invaluable resource in cultural and creative sectors.** Despite concerns over the "black-box" nature of AI systems and the complexity of its technology, museums are gradually overcoming these challenges by employing AI to transform visitor engagement, enhance collections management, and expand accessibility (Pasikowska-Schnass & Lim, 2023).

By leveraging AI for activities such as digitization and visitor tracking, museums can now offer a more dynamic, interactive, and inclusive experience, ensuring cultural heritage remains relevant for future generations.

The European Union, recognizing the potential of AI in cultural institutions, has actively invested in digitization efforts and has set targets for the 3D digitization of cultural heritage sites and monuments. These efforts aim to preserve the richness of Europe's cultural heritage while offering new opportunities for growth in sectors like tourism and research. In addition, **AI is seen as an essential tool in making museum collections more accessible to wider audiences,** including individuals with disabilities, ensuring that museums play a role not just as economic assets but as social and educational institutions (European Parliamentary Research Service, 2023).

Following this introduction, some case studies of museums that have successfully integrated AI into their structures, showcasing the diverse ways in which AI is shaping the future of museum experiences.

National Art Museum of the Republic of Belarus - Republic of Belarus

This museum implemented a basic AI-driven Q&A service **through a Facebook Messenger chatbot to provide information about the museum's artifacts.** Although the chatbot had limited conversational skills, it was designed to answer basic questions, improving visitor interaction by providing immediate access to information. Still, its limited conversational capabilities restricted the depth of the experience.

AI Contribution: Provided a basic Q&A service through a Facebook Messenger chatbot.

Description: The chatbot offered basic information about museum artefacts but had limited conversational skills.

Anne Frank House - Amsterdam, Netherlands

At the Anne Frank House, AI was used to guide visitors through a structured narrative about Anne Frank's life. **The chatbot maintained control over the path visitors took through the exhibits,** ensuring that they followed a specific journey while exploring the museum. This AI integration helped ensure a focused and educational experience for visitors.

AI Contribution: Guided visitors through Anne Frank's life using a controlled narrative path.

Description: The chatbot guided users through a structured journey about Anne Frank and the museum's exhibits, ensuring control over the narrative.

Museo di Arte Moderna e Contemporanea di Trento e Rovereto Italy

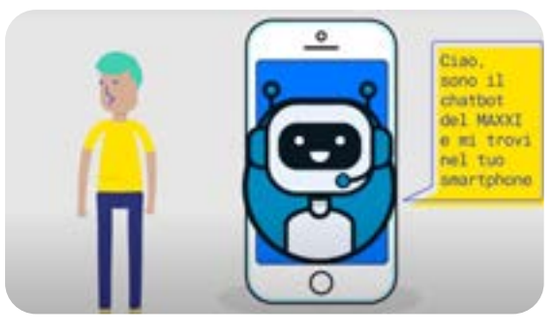
Martmuseum used AI to create a gamified treasure hunt within its exhibits, allowing visitors to explore the museum through non-linear, interactive narrative tours. **This added layer of interactivity was designed to engage visitors more deeply with the museum's content** by making their exploration feel like a personal adventure.

AI Contribution: Used gamification and AI to create a treasure hunt and non-linear narrative tours.

Description: The chatbot facilitated a structured exploration of the museum's content.

National Museum of the 21st Century Art - Rome, Italy

This museum integrated multimedia content and guided navigation using AI chatbots, **enhancing visitor engagement by providing interactive multimedia pathways through the museum's exhibits.** Visitors were able to explore the museum's collection with guided interactions that enriched their experience.



AI Contribution: Provided multimedia content and guided navigation through exhibits.

Description: The chatbot enhanced visitor engagement through multimedia interactions and guided pathways.

House Museum of Milan - Milan, Italy

At this museum, AI gamified the visitor experience through an interactive "Di Casa in Casa" adventure game, engaging visitors in a non-linear exploration of the exhibits. **This narrative-driven game created a more dynamic and interactive museum visit** by encouraging deeper engagement through dialogues and choices.

AI Contribution: Used gamification and AI to create a treasure hunt and non-linear narrative tours.

Description: Engaged visitors through an interactive "Di Casa in casa" adventure game and narrative dialogues.

Catal Hoyuk Neolithic Site - Catal Hoyuk, Turkey

AI at this Neolithic archaeological site provided meaningful conversations about historical life. **By provoking thoughtful dialogue and encouraging emotional engagement,** the chatbot enabled visitors to reflect more deeply on life during the Neolithic period, making history feel more personal and alive.

AI Contribution: Used AI to provoke thoughtful conversations and emotional engagement about historical topics.

Description: The chatbot engaged visitors with meaningful dialogues on Neolithic life, encouraging deeper reflection.

Refik Anadol's MoMa Project

In this project, artist Refik Anadol used AI to create "machine hallucinations" based on a dataset of images from MoMa's collection. **His work explored how AI could dynamically reinterpret art and generate new perspectives,** offering a glimpse into the future of digital art interpretation.

AI Contribution: Utilized AI to create "machine hallucinations" that dynamically reinterpret artworks from MoMa's collection.

Description: Offered visitors a glimpse into the future of digital art interpretation by generating new perspectives on classic artworks.

I-Muse – Torino, Italy

The I-Muse project is a collaborative effort between the University of Turin and the Politecnico di Torino, with support from the Compagnia di San Paolo Foundation, as part of the first edition of the "Artificial Intelligence" grant. Developed by Synesthesia, this mobile app aims to transform visitor experiences at eight major museums in Turin, including the Reggia di Venaria Reale, Museo Egizio – Torino, Palazzo Madama.

AI Contribution: visitor journey by integrating AI, to gurantee accessibility, personalization, and engagement within the museum setting.

Description: Provides an interactive and immersive museum experience, enabling users to navigate collections with personalized.

Culture Chatbot Project - France

This project used Natural Language Understanding (NLU) and machine learning techniques to deliver human-like conversations that were connected to knowledge graphs. **Visitors engaged in tailored chatbot interactions in multiple languages,** enhancing their understanding of the museum's content in a personalized and accessible way.

AI Contribution: Used NLU and ML techniques to deliver human-like conversations connected to knowledge graphs.

Description: Aimed to enhance visitor engagement through tailored chatbot interactions in multiple languages.

Akron Art Museum - Cleveland, US

The museum used a chatbot named "Dot" to guide visitors through interactive, friendly tours. **Dot's charismatic nature and guided tour dialogue** enhanced the visitor experience by making the exploration of the museum both enjoyable and informative.

AI Contribution: Provided a guided tour dialogue, engaging visitors with a friendly and interactive chatbot.

Description: Dot, the chatbot, enhanced visitor experience with its charismatic guided tours.

Minne Atairu's "Igún"

This AI-driven work reimagines what cultural output from the Benin era could look like by using a dataset of looted bronze artworks. **The AI-generated images offered a futuristic interpretation of Benin's historical art,** creating a bridge between past and present cultural expressions.

AI Contribution: Generated images reimagining cultural outputs from the Benin era using a dataset of looted bronze artworks.

Description: Created a bridge between past and present cultural expressions through a futuristic interpretation of Benin's historical art.

Oxia Palus - Van Gogh Project

Oxia Palus used AI to reconstruct hidden figures in a Van Gogh painting, **providing new experiences by merging art history with advanced technology.** This project allowed visitors to rediscover artwork and appreciate the layers of creativity hidden beneath the surface.

AI Contribution: Utilized AI to reconstruct hidden figures in a Van Gogh painting.

Description: Merged art history with advanced technology, allowing visitors to rediscover artwork and appreciate the layers of creativity beneath the surface.

Tom White's "Perception Engines"

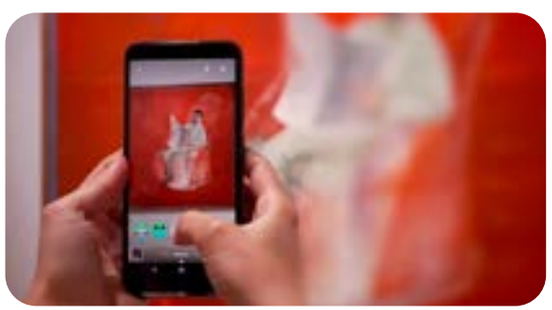
This work delves into how neural networks can generate abstract representations from real-world objects. **White's exploration of AI-generated abstraction invites viewers to reflect on how machines "perceive"** the world and produce creative outputs that diverge from traditional human artistic interpretations.

AI Contribution: Employed neural networks to generate abstract representations from real-world objects.

Description: Invited viewers to reflect on how machines "perceive" the world and produce outputs that diverge from human interpretations.

Ask Mona Studio - France

Ask Mona Studio utilized a chatbot to provide scripted interactive experiences, offering visitors multimedia-guided responses as they explored museum exhibits. **This controlled yet interactive system allowed visitors to engage with the museum content in a more structured manner,** enhancing their overall experience by integrating a dynamic conversation with multimedia elements.



AI Contribution: Provided a scripted interactive experience, with chatbots giving multimedia guided responses.

Description: Delivered a controlled yet interactive museum experience through a series of chatbots.

3.3

CURATING PEOPLE NOT OBJECTS

This chapter explores **the evolving role of museums as inclusive spaces, shifting from object-centered** curation to audience centered engagement. It highlights how curators and educators can collaborate to address the needs of diverse audiences, particularly the elderly, through inclusive design and empathetic practices. **By examining the intersection of accessibility, education, and cultural representation,** this chapter positions museums as dynamic environments that foster active participation, learning, and social connection for all visitors.

3.3.1
CURATORS ARE NOT CURATING

Museum theorist, Gretchen Jennings, advocates for a transformative approach in **museum practice where cultural institutions actively "listen" to their audiences, promoting the concept of an "empathetic museum"** (Jennings, 2013). The empathy framework emphasizes the importance of experiencing feelings alongside others, rather than merely on their behalf. **This framework encompasses five key characteristics: a civic vision, commitment to community, timeliness, responsiveness, and institutional self-awareness.** Jennings elaborates on "responsiveness" within museums as "strong connections with all of the diverse aspects of the community, in terms of race, ethnicity, gender, sexual orientation, disability, and socioeconomic status" (Jennings, 2015). **Together, these characteristics reinforce the role of museums as socially aware and democratic institutions within their communities.**

> "Today, museums are shifting the focus to the visitor experience. Visitors now cocreate and cocurate their journey with the museum, and that process is upending the way museums and exhibits are designed" (Walhimer, Mark, 2020)

However, these experiences often prioritize spectacle over genuine connection and understanding. **As a result, they cater to a generalized idea of audience preferences rather than addressing the unique needs, identities, and experiences of individuals within the community.** This shift detracts from the museum's role as a space that listens to and engages with people on a personal level. In a recent interview, Julia Zambrzycki, a German designer specializing in museum visitor experiences, highlights key challenges that museums face in integrating modern approaches to audience engagement. While technologies are already widely used in various sectors, museums have been slower in adopting them. Zambrzycki points out that museums often the personalization of experiences that many brands find easier to achieve with targeted audiences. She critiques the typical approach to museum project development, noting that **"when the museum project is built, the experience process is based on the content. There's no evaluation behind the interaction"** (Zambrzycki, March 9, 2024). This highlights a gap in how museums design their experiences, placing content above interaction. Zambrzycki advocates for a shift in priorities, **suggesting that more time and budget be allocated to user research, not just at the start of a project, but throughout its duration,** to create more meaningful, engaging visitor experiences that resonate with diverse audiences.

3.3.2
THE ROLE OF CURATORS AND EDUCATORS

Museums are institutions that both preserve and present history, art, and science to the public. Traditionally, **museum roles such as curators and educators were often understood in a narrow sense, focusing on object management and public education.** However, in today's evolving social landscape, their roles extend far beyond these basic functions. With the increasing need for inclusivity and diversity in public spaces, curators and educators are now at the forefront of **transforming museums into spaces of social justice and inclusion.**

Museum Curators

Curators have long been tasked with managing a museum's collections, determining what objects to acquire, display, and how to present them within the museum space. T**hey ensure the coherence and aesthetic appeal of exhibits, often behind the scenes.** However, in recent years, the role of the curator has become much more public-facing and socially responsible. **Curators now act as ambassadors of the museum, interacting with the press and visitors,** while also making critical decisions that shape the cultural narratives displayed in museum spaces.

The decisions curators are political in nature. As Wendy Ng et al. argue in Activating Diversity and Inclusion: A Blueprint for Museum Educators as Allies and Change Makers, **"Museums are inherently political"** as every choice reflects a particular worldview(Activating Diversity an...). This means curators must critically evaluate their decisions about what objects to exhibit, whose stories are being told, and how these choices reflect or challenge existing power dynamics. By doing so, curators play a crucial role in ensuring that museums do not merely perpetuate privilege but actively include marginalized voices.

For example, curators can transform spaces traditionally centered around Western, elite perspectives by consciously including exhibits that represent underrepresented communities. By inviting collaboration with marginalized groups, they can curate exhibitions that address broader societal concerns, such as racial inequality, gender discrimination, and colonial legacies.

> Curators are no longer the only important voices. That role must now be shared with the public. Instead of art and artifact warehouses, museums are becoming "content warehouses," with the role of providing factual information and context for the visitor to curate.(Walhimer, Mark. 2020)

Museum Educators

While curators primarily manage the objects within a museum, educators are responsible for ensuring that the public fully engages with and understands these objects. **Historically, museum educators provided educational programs, tours, and outreach focused on transmitting historical and cultural knowledge.** Today, however, their role has expanded to include advocacy for social justice and inclusivity within museums.

Museum educators are uniquely positioned to address accessibility, both physical and cognitive, ensuring that museums are welcoming to all. As the Activating Diversity and Inclusion report highlights, museum educators are key players in creating "meaningful experiences across lines of social difference"(Ng, Ware, & Greenberg, 2017). **This means that museum educators must be allies to marginalized communities,** recognizing the diverse needs of visitors and implementing strategies that foster inclusivity. For example, they can adapt tours and programs for visitors with disabilities, ensure content is accessible for non native language speakers, and address the ways in which marginalized communities may feel excluded from traditional museum narratives. **By practicing "active listening", museum educators can critically assess their own biases** and the ways in which museum programs may unconsciously uphold systems of oppression (Ng, Ware, & Greenberg, 2017). They should also **take the lead in promoting diversity within museum education** by ensuring that underrepresented perspectives are not merely tokenized but genuinely integrated into the museum's narrative.

To truly foster diversity and inclusion, curators and educators must work collaboratively. While curators may design the exhibits, educators bring them to life for the public. In this partnership, **educators can provide critical feedback** on how exhibitions may be received by diverse audiences and suggest adaptations that enhance inclusivity. Moreover, **both roles must be engaged in continuous learning and self-reflection** to ensure that they are not inadvertently perpetuating exclusionary practices.

Both curators and educators must act as allies to marginalized communities by challenging the traditional power dynamics present in museum spaces. Is "not about themselves," but about creating opportunities for marginalized voices to be heard and represented (Ng, Ware, & Greenberg, 2017). **This means curators and educators must be willing to step back, listen to community feedback,** and adjust their work accordingly. Whether through exhibit design, education initiatives, both groups play a vital role in transforming museums into spaces that reflect the diversity and complexity of the communities they serve. **Curators and educators in museums serve distinct but complementary roles in shaping the visitor experience.** Curators are responsible for crafting the overall structure and layout of exhibits, creating visually engaging spaces that invite visitors to explore artifacts and concepts they may have never encountered before. Their work is like setting the stage, allowing people to wander through stories they don't yet know. However, it is the educators who make learning within these spaces truly possible. By identifying the diverse needs of all visitors, whether children, seniors, people with disabilities, or non native speakers, **educators ensure that the information presented is accessible and meaningful.** They adapt the content to suit different learning styles and backgrounds, bridging the gap between the objects on display and the knowledge visitors take away.

In this way, curators create the environment for discovery, while educators guide the journey of learning.

3.4

MUSEUM PROBLEM

Museums have always been institutions of learning and preservation, yet recent global events, such as the COVID-19 pandemic, have highlighted **the need for these spaces to evolve. Museums face increasing pressure to prioritize diversity, equity, accessibility, and inclusion (DEAI),** a shift driven by social and economic changes. These challenges are coupled with staff furloughs and an ongoing need for visitor centered experiences, where **museums must embrace a customer experience (CX) approach to meet contemporary expectations.**

Traditionally, museums served as repositories of significant objects, where visitors were passive receivers of knowledge. T**his one directional model, where meaning was imposed on visitors by curators, is now being questioned.** Visitors are increasingly seen as co creators, shaping their museum experiences based on personal histories and identities. **This shift is crucial as museums seek to engage more diverse audiences** by making exhibitions more interactive, inclusive, and tailored to individual experiences.

“Visitors provide content, both during the exhibit and in the online environment. Their identities are shaping the journeys and spaces museums develop.

Museums certainly remain keepers of the objects of culture, but the meaning of those objects is shifting to the visitor. Museums are beginning to recognize that meaning is subjective, and depends on the visitor’s identity, social background, and environment.

That role must now be shared with the public. Instead of art and artifact warehouses, museums are becoming “content warehouses,” with the role of providing factual information and context for the visitor to curate. Museums are starting to ask,

“How can the information we provide become relevant to every visitor?”” (Archer et al., 2014)

In spite of that, the core problem remains: **many museum administrators still focus on logistical concerns, like operational costs and visitation numbers**, while failing to appreciate the emotional and intellectual connections visitors can make with exhibits. This mindset not only diminishes the potential of museums to truly impact their audiences but also reinforces outdated practices that alienate visitors, especially older adults and those with disabilities.

Older adults, a demographic with significant spending power, remain underrepresented in museum programming and planning. **Museums often focus their efforts on younger visitors, overlooking the needs of older adults** who face physical and cognitive barriers. Museums must also tackle issues of engagement and inclusion for seniors by addressing these barriers and providing a more accessible, inclusive experience. This is vital for not only attracting older visitors but ensuring they feel valued and seen in cultural spaces.

The modern museum is thus undergoing one of its greatest transformations since becoming a public institution. To survive in an increasingly competitive cultural sector, **museums need to adopt visitor-centric approaches,** much like other industries, placing emphasis on the visitor experience rather than merely displaying artifacts. This shift involves considering how museum spaces, content and services can be co-created with the audience, **offering a more participatory, engaging, and meaningful experience.**

The silver economy represents a significant untapped opportunity for museums. Institutions must rethink how they can cater to older adults, ensuring accessibility and cognitive engagement. This includes reimagining museum design, such as offering better seating and rest areas, as well as enhancing the way information is presented to meet the learning styles of older visitors. By doing so, **museums not only become more inclusive but also open themselves** to the insights, contributions and participation of this demographic.

In this time of transformation, the key question for museums is not only how to adapt to the evolving needs of their diverse audiences but how to truly place visitors at the heart of their mission. **As museums strive to be more inclusive and engaging,** the challenge remains:

How can museums stop being ignorant institutions?

3.4.1
IDEAL MUSEUM EXPERIENCE

Museums serve as gateways to cultural and educational enrichment, and the evolving needs of diverse audiences demand a rethinking of how these experiences are curated and delivered. By integrating institutional planning, visitor co-creation, audience research, and placemaking, museums can transform into spaces that are not only informative but also deeply personal and transformative. This chapter explores the framework of an **ideal museum experience,** using recent research and practical strategies from various sources to shape a comprehensive approach.

At the core of the ideal museum experience is the idea of transformation. According to Museum Environments (ME), with their Visitor Experience diagram, a transformative experience is all encompassing and **multi dimensional, occurring between people (audience), places (museum), and things (exhibits)** (Museum Environments, n.d.). This transformation involves not just passive consumption but **active engagement, participation, and identification with the content.** Museums must foster connections between curators, educators, exhibits, and visitors, encouraging the latter to not only engage with artifacts but also with civic values and the mission of the museum *(Figure 43).*

This transformative experience is enhanced by the concept of "flow," a state of effortless involvement, where the sense of time is altered and concerns of self disappear. Achieving this flow requires careful planning and integration of multiple components such as audience research, institutional planning, and placemaking. **Engagement, participation, and identity. These verbs describe the goal of what should happen between the parties** *(Figure 43).*

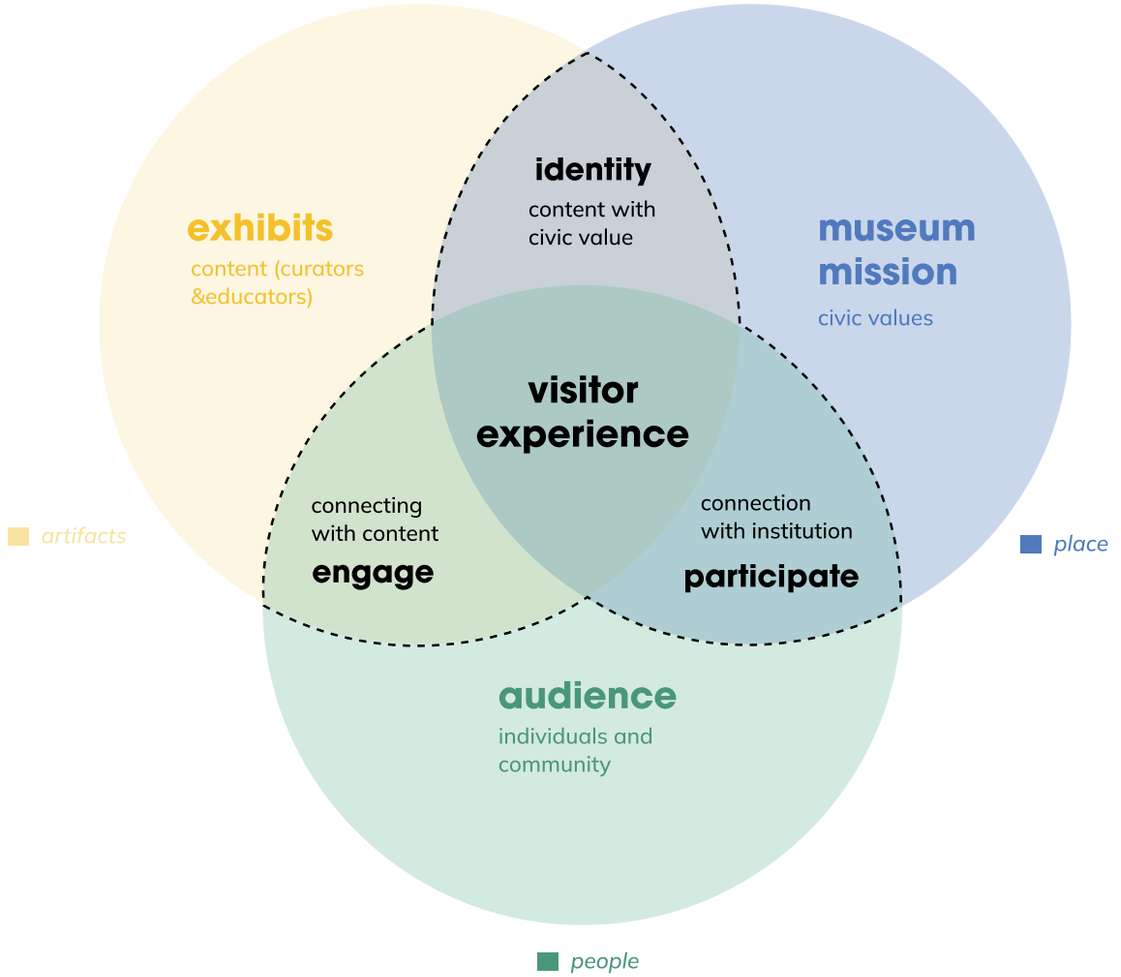


Fig 43 - Diagram illustrating the ideal museum experience, where visitor engagement, participation, and identity converge. (Museum Environments, n.d.)

The transformation to a visitor-centered museum emphasizes connecting objects to the audience, **promoting values such as immersion, cognitive impact, inclusivity, and social relevance.** This concept is visually represented in the diagram as the “Museum Transformative Experience,” (Walhimer, 2021), where multiple factors work together to foster a **holistic visitor experience.**

The five components include Institutional Planning, focusing on the integration of the museum’s mission and values; **Visitor Co-Creation,** which involves community representation and collaboration; **Audience Research,** highlighting the importance of understanding the audience segments; **Visitor First,** prioritizing the use of collections to benefit civil society; and **Placemaking,** which involves creating spaces where museums collaborate with other institutions to serve the community.

At the center is the **Flow Experience,** where visitors achieve an effortless engagement with the museum, feeling in control and deeply involved, enhancing both community and individual benefits. This framework serves to reimagine museums as immersive and socially relevant spaces for everyone (Walhimer, 2021).

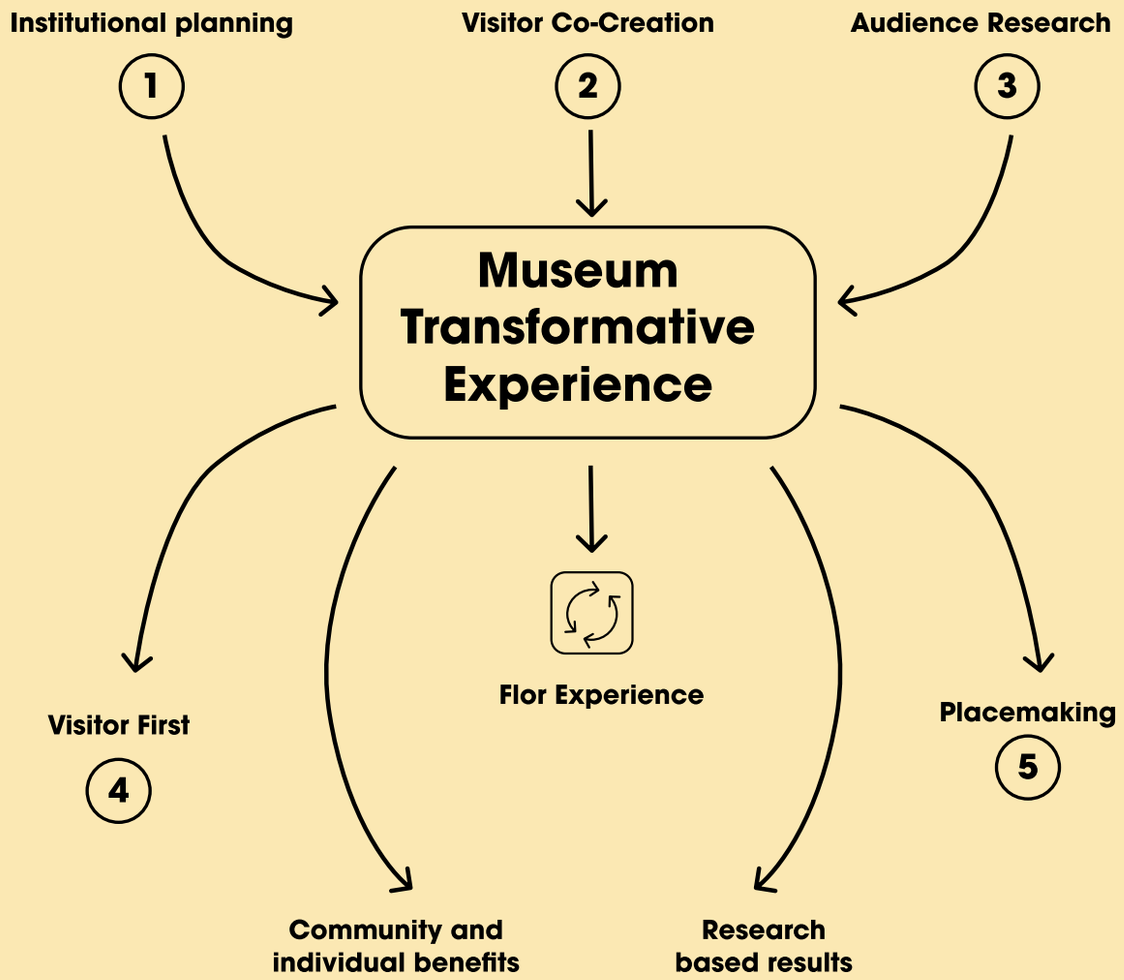


Fig 44 - Museum Transformative Experience Framework. Walhimer, M. (2021). Designing Museum Experiences. Rowman & Littlefield.

Institutional Planning

Planning for an ideal museum experience begins with a clear and integrated mission that **reflects the civic values of society.** Museums are part of a compassionate community and should aim to lead with moral integrity. **A successful experience is one that reflects the museum's values while addressing the community's needs** (Wolke, 2019). For instance, in Planning the Museum Experience by (Museum Environments, n.d.), it is emphasized that museums must strategically plan their exhibits and interactions by identifying audience needs first, before introducing technology or other features.

Visitor Co-Creation

Visitor co-creation is crucial in designing an inclusive museum experience. This entails **involving the community in the creation of exhibits,** as well as gathering input from museum staff, volunteers, and local communities. By reflecting on local and digital communities, museums can ensure that their exhibits are representative of diverse perspectives *(Figure 44).* This collaborative approach also allows for the identification of new ways to engage visitors, making the experience more meaningful and personal.

Museums can also benefit from incorporating usability research tools such as pre and post surveys and interviews. These methods provide insight into visitor experiences and help museums refine their interactive tools (Wolke, 2019).

Audience Research

Audience research is a vital component of creating the ideal museum experience. **It helps in segmenting visitors based on their preferences, needs, and behaviors.** This segmentation allows museums to tailor their content and delivery methods, ensuring that exhibits are accessible and relevant to various audiences. **Research must be continuous,** adjusting as visitor demographics and expectations change (Wolke, 2019).

One of the major challenges identified in museum experiences **is balancing physical and digital wayfinding tools**. According to the insights from Digital **Wayfinding Trends: Lessons Learned from Museums, Healthcare, and Transit Experience,** blending physical and digital elements into one cohesive experience is essential. **Overloading visitors with too much information can lead to confusion and disinterest,** highlighting the need for intuitive, accessible tools (Wolke, 2019).

Visitor First

The visitor-first approach prioritizes the use of exhibits, programming, and collections to benefit society. **Museums must design experiences that promote community benefits, where visitors feel like active participants** rather than passive consumers (Wolke, 2019). Museums should aim to engage visitors in a manner that not only educates but also empowers them to **become advocates of civic values** (Wolke, 2019).

Placemaking

Placemaking refers to the **creation of spaces within museums that encourage interaction, dialogue, and collaboration.** Museums must recognize their roles as more than just repositories of artifacts; **they are also vital touchpoints for civil society**. Collaborations among galleries, libraries, archives, and museums can foster a richer, more inclusive experience. Museums should aim to become centers of community engagement, **where people from different walks of life come together to reflect,** learn, and contribute *(Figure 44).*

The Flow Experience

A key goal for museums is to create what is referred to as the **"flow experience."** Flow, as defined by **Mihaly Csikszentmihalyi, refers to a state of deep involvement where time seems to disappear, and visitors become completely absorbed in their experience.** Museums can achieve this by providing environments where visitors feel in control, effortlessly engaged, and free from distractions *(Figure 44).*

In order to create this flow, museums should aim to "right-size" their technology for the environment, **ensuring that interactive tools do not overwhelm visitors.** Rather than relying solely on apps or digital kiosks, museums should focus on integrating technology that enhances the visitor's journey without detracting from the exhibits themselves (Wolke, 2019).

The ideal museum experience is one that seamlessly blends physical spaces, digital tools, and community engagement. By prioritizing visitor co creation, conducting ongoing audience research, and focusing on placemaking, museums can foster transformative experiences that resonate on both personal and societal levels. Through careful planning and integration of diverse strategies, museums can continue to serve as dynamic and inclusive spaces for all.

3.5

DESIGNING FOR PEOPLE NOT CUSTOMERS

In today’s evolving landscape of museum design, there is a growing recognition that **spaces need to be shaped around the needs and experiences of people, not just treated as transactions with customers.** This distinction is especially important when designing for elders, a demographic often overlooked in mainstream design practices. **Museums are not mere venues of consumption but are intended as spaces of reflection,** learning, and community, where the emotional and cognitive experiences of visitors take precedence over simple consumer behavior.

This chapter delves into the insights gathered from i**nterviews and questionnaires conducted with elders** to understand their unique perspectives on museum visits. By focusing on the needs of elders as people, rather than merely customers, this chapter sheds light on the emotional and physical aspects that matter most to them in a museum setting.

3.5.1
VISITS TO MUSEUMS

During a visit to the **Museo delle Scienze Naturali with a group of 30 elders from UNITRE, Università della Terza Età,** an insightful shadowing experience unfolded, allowing for close observation of their behaviors and interactions with the museum environment. **The group, consisting of people over the age of 65, some attending alone, others with their partners, and one participant accompanied by family,** offered a unique opportunity to explore how older adults navigate and engage with museum exhibitions.

For the first **20 minutes, most of the participants paid close attention to the guide,** listening carefully and following the structured narrative presented. However, as time passed, **the level of attention waned, and many participants began to disengage.** This gradual loss of focus, described by the tour guide as a recurring issue, left only a portion of the group fully attentive by the end of the tour. Interestingly, the disengagement didn't manifest as disinterest in the content itself but rather as a shift in behavior, **participants began exploring the museum in a more spontaneous and less directed manner, a phenomenon known as "playfinding"**. This exploratory behavior often led to moments of **"micro interest,"** where participants briefly acknowledged objects or technological displays with a glance or slight turn of the head, without further interaction or engagement.

An elderly man, student of UNITRE using a smartphone during a musuem visit. Taken by Author 2024

The physical layout of the museum also posed challenges. The captions accompanying exhibits were placed at random, with little thought given to accessibility, **leaving participants with vision difficulties or mobility issues struggling** to engage with the content. Although the captions were short and concise, **the small font size made them difficult to read for many.** This lack of attention to accessibility significantly impacted the participants' overall experience, **as evidenced by comments made during interviews at the end of the visit.**

Group of students of UNITRE during a musuem visit. Taken by Author 2024

Additionally, the museum had only four chairs placed intermittently throughout the exhibit spaces, which proved to be far from sufficient. **Every time participants encountered a chair, they eagerly took the opportunity to rest,** and many expressed a desire to stay seated for longer periods. This clearly indicated that the limited availability of seating was inadequate to meet the physical needs of the group, especially considering the age of the participants. The insufficient number of chairs highlighted a lack of consideration for the physical comfort of older visitors, further detracting from their overall experience.

One participant, an elderly woman, mentioned the **low contrast of the exhibit descriptions, which she found hard to read.** She emphasized that enhancing the readability through better contrast would significantly improve the visitor experience.

She also expressed a desire for **more interactive areas within the museum** where she could engage with the content at a deeper level, such as through workshops or sessions that offer more immersive learning.

Group of students of UNITRE during a musuem visit, man resting in the chair while listening to the guide. Taken by Author 2024

Student of UNITRE during a musuem visit, tilting to read the exhibition description. Taken by Author 2024

Another participant, an elderly man, noted that while the museum's general theme didn't initially appeal to him, **the overall experience felt linear and somewhat uninspiring.** He wasn't particularly curious about the technology but suggested that integrating **more dynamic content,** perhaps by blending historical narratives or personal stories, could have made the visit more engaging.

A third participant appreciated the museum's efforts to make information accessible but **mentioned difficulties with navigating the physical space.** She recommended incorporating more seating areas for breaks, particularly for older visitors who may need to rest while exploring the exhibits. Additionally, **she suggested the use of audio guides with adjustable volume controls,** which could make the museum experience more inclusive for those with hearing impairments.

Another elder highlighted the importance of **social engagement during museum visits.** She enjoyed the sense of community that group activities fostered but felt that such experiences were lacking. She proposed the idea of more organized group discussions or tours led by knowledgeable guides, which could help create a more connected and engaging visit.

Student of UNITRE during a musuem visit, tilting to read the exhibition description. Taken by Author 2024

The tour guide also shared her perspective, noting that s**he frequently loses the attention of about half the group after 15 to 20 minutes.** She attributed this to the lack of interactive elements within the tour, which often became monotonous for the visitors. To counter this, **she suggested incorporating more breaks, interactive sessions, and multimedia elements** like short videos or hands on activities to keep participants engaged and active throughout the experience.

These observations, coupled with feedback from both the elders and the tour guide, illustrate the complexities of creating a museum experience that is truly accessible, engaging, and fulfilling for older adults. The limitations in exhibit accessibility, the challenge of maintaining attention, and the need for more interactive and socially engaging components highlight the importance of designing museums that cater not only to the physical and cognitive abilities of all visitors but also to their diverse interests and social needs.

An elderly man, student of UNITRE using a smartphone during a musuem visit. Taken by Author 2024

An elderly man, student of UNITRE using a smartphone during a musuem visit. Taken by Author 2024

3.5.2
INSIGHTS FROM CASA NEL PARCO AND UNITRE

Building on the research explored in *Chapter 3,* which analyzed the demographic characteristics of the Mirafiori neighborhood, known for its high population of elderly residents, further engagement was conducted to explore the museum experiences of this user segment. **The Casa del Quartiere di Mirafiori, also called Casa nel Parco, provided the setting for a workshop in which elders were invited to participate.** This workshop offered the opportunity to delve into the specific needs and behaviors of this community through tailored questionnaires, much like those developed with students from UNITRE, Università della Terza Età.

The survey, detailed in the document *Appendix C,* was designed to gain insights into the general experiences of participants during museum visits. It covered questions ranging from the last museum they visited to their preferences for museum services and how frequently they engaged with technology like audio guides, physical maps, or QR codes during their visits. The questionnaire sought to uncover not just the physical challenges faced by older visitors, such as fatigue and navigation difficulties, but also their behavioral preferences, such as the choice between self-guided tours and guided tours, and their opinions on the accessibility of supplementary museum materials like videos and interactive screens *Appendix C.*

Following the workshop, the questionnaires were **distributed to both the participants from Casa nel Parco and students from UNITRE.** A total of 23 completed questionnaires were collected and analyzed. The data revealed significant patterns in the museum going habits of elders. For instance, the majority of respondents had visited the Museo delle Scienze Naturali (14 out of 23), while others had recently visited Museo Egizio and GAM (Galleria d'Arte Moderna). These responses highlighted their strong interest in science and history museums over other types of exhibitions.

One of the key findings was related to fatigue. The average score for fatigue experienced during a museum visit was notably high at 4.65 out of 5, indicating that physical exhaustion is a common concern for this demographic. This is corroborated by the frequent desire for more resting spots, as previously noted during the Museo delle Scienze Naturali visit. Respondents also expressed a clear preference for guided tours (average score of 4.3), highlighting the importance of having structured, informative guidance during their visits.

When it came to technology usage, the survey results indicated mixed behavior. **While the usage of physical maps was quite high (average score of 4.0),** the use of interactive screens averaged

Questionario sull'Esperienza Museale

La ringraziamo per il tempo che ci dedica. Le chiediamo gentilmente di rispondere alle seguenti domande riguardanti la sua esperienza generale nei musei.

1. Qual è stato l'ultimo museo che ha visitato?

_____

2. Selezioni la tipologia di museo che preferisce visitare:

☐ Arte ☐ Storico
☐ Scienza ☐ Natura
☐ Altro _____

3. Generalmente, quando va al museo, è accompagnato da:

☐ Famiglia ☐ Amici
☐ Partner ☐ Da solo
☐ Con una guida

4. Preferisce seguire autonomamente il percoroso o utilizzare visite guidate?

(1 = sempre da solo, 5 = sempre con guida)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. Quanto si stanca durante la visita al museo?

(1 = poco, 5 = molto)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6. Quanto ritiene siano comprensibili i video di approfondimento nei musei?

(1 = per niente, 5 = molto)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

7. Quanto frequentemente utilizza la scansione di codici QR nei musei?

(1 = mai, 5 = sempre)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ Non so cos'è il QR

8. Quanto frequentemente utilizza schermi interattivi nei musei?

(1 = mai, 5 = sempre)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

9. Quanto frequentemente utilizza audioguide durante la visita?

(1 = mai, 5 = sempre)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

10. Quanto frequentemente utilizza mappe fisiche durante la visita?

(1 = mai, 5 = sempre)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

11. I musei che ha visitato avevano un percorso da seguire. Dal 1 al 5, indichi il livello di difficoltà nel comprendere il percorso:

(1 = molto facile, 5 = molto difficile)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

12. Le piacerebbe che i musei offrissero servizi aggiuntivi?

☐ No, sono soddisfatto così
☐ Sì, corsi o laboratori
☐ Sì, eventi speciali (es. mostre temporanee)
☐ Sì, attività per anziani (es. incontri)
☐ Sì, esperienze interattive o immersive
☐ Sì, servizi per famiglie (es. aree giochi)
☐ Altro _____

only 2.05, and QR code scanning was almost nonexistent with a score of 1.0. Many respondents were unfamiliar with QR codes, which suggests that technological solutions for enhancing the museum experience might not be as effective for this age group unless they are specifically tailored to their needs. **Audio guides were moderately popular, with an average usage score of 3.8,** suggesting that while technology can enhance the experience, it must be intuitive and accessible for older visitors to adopt it comfortably.

Additionally, participants expressed challenges in following museum paths, with an average difficulty score of 3.7. Many voiced concerns that museum layouts are often confusing, exacerbating their physical fatigue. Clearer signage and better navigation aids are crucial improvements that could enhance their museum experience. **Lastly, respondents rated the comprehensibility of videos shown in museums highly (4.65),** indicating that visual aids are appreciated, but they must be presented in an easily digestible format.

These insights from the workshop participants at Casa nel Parco and the students from UNITRE reinforce the need for more thoughtful design when it comes to museum experiences for elders. The responses from the questionnaire provide valuable insights into how elderly visitors interact with museums, particularly regarding their navigation and engagement within the exhibits. A notable concern is the difficulty many participants face with **understanding and following the museum path, which they describe as labyrinthine and overwhelming in scale.** This reflects the challenge of navigating large, complex museum layouts, exacerbating feelings of disorientation and contributing to the physical and mental fatigue they experience.

The fatigue during visits, with an average score of 4.65, further emphasizes the taxing nature of these extended, confusing paths. Additionally, the minimal usage of QR codes (average score: 1.0), due to unfamiliarity with the technology, highlights a gap in accessible, user-friendly solutions for self-guided exploration. Most participants expressed a preference for either guided tours or visiting alone, with guided tours rated at 4.3 and physical maps at 4.0. This suggests a potential opportunity to offer self-guided tours that combine the structure of guided experiences with the independence of exploring alone, supported by easy-to-read physical maps or intuitive digital tools that do not rely on unfamiliar technology like QR codes.

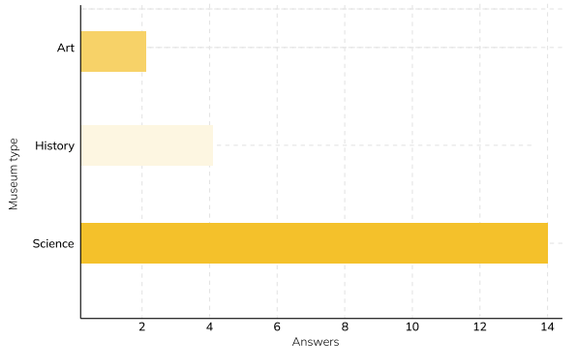


Fig 45 - Preferred Museum Types Among Respondents. By Author 2024

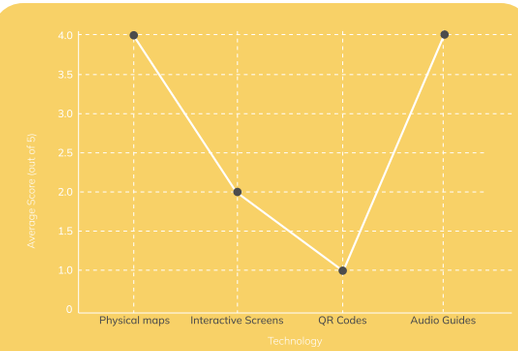


Fig 46 - Technology Adoption Scores. By Author 2024.

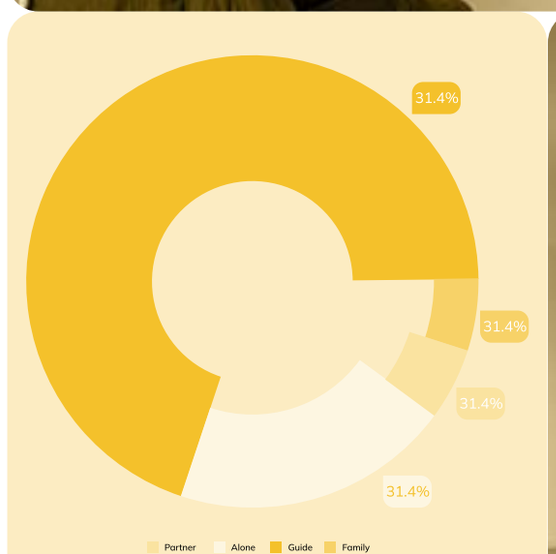


Fig 47 - Companions During Museum Visits: Preferences and Frequencies. By Author 2024

Workshop of the group of Cultura Dietro L'Angolo in Casa Nel Parco. Taken by Autor, 2024.

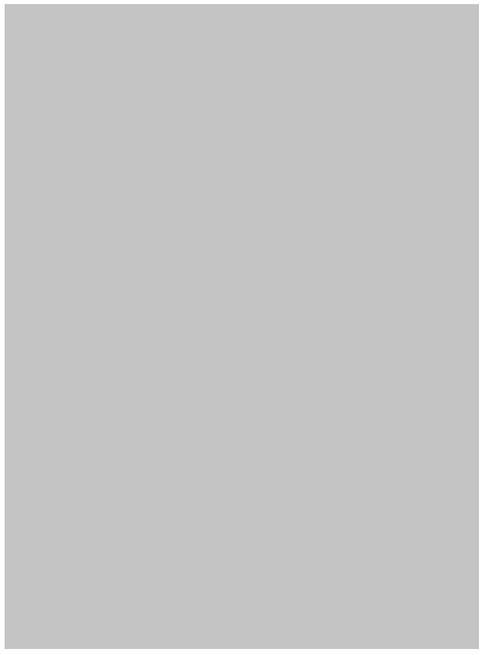
3.5.3
PERSONAS

Based on the interviews conducted and the answers gathered from the questionnaires, three distinct personas were developed to better understand the various types of museum visitors among the elderly population. The creation of these personas was guided by the framework outlined in John H. Falk's Identity and the Museum Visitor Experience and The Museum Experience Revisited by Falk and Lynn D. Dierking. According to John H. Falk, there are five key identities. **Explorers are driven by curiosity and a desire to discover new things.** They enter museums without specific goals but are open to learning from whatever captures their attention.

Facilitators, on the other hand, focus on supporting the experiences of others, such as friends or family members. For them, the value of the museum lies in enhancing the visit for those they accompany. **Rechargers seek museums as spaces for personal reflection or spiritual renewal,** viewing the environment as a retreat from their daily lives. **Experience Seekers visit museums with a desire to engage with iconic or significant cultural content,** often driven by the idea of having "been there" rather than deep interest in the content itself. Lastly, **Professionals/ Hobbyists are individuals with a deep connection between their personal or professional interests and the museum's subject matter.** Their visits are purposeful, aimed at gaining knowledge or inspiration related to their field of expertise

The scheme used to create each persona, as detailed in *Figure 48,* is a structured approach that captures the key aspects of each individual's life and how these factors influence their museum experience. The scheme includes categories such as **age, occupation, and health conditions, which provide a foundation for understanding the physical and cognitive needs of each persona.** Additionally, it considers social participation and community involvement, including activities like attending university courses or engaging in neighborhood events, to reflect the persona's level of interaction with others.

The scheme also **examines routine habits, including weekend and weekday activities, shedding light on how often they visit cultural institutions like museums. Transportation preferences and financial resources** are also evaluated, ensuring that each persona's accessibility to museums is grounded in practical realities. The final persona profile integrates these aspects into a cohesive narrative, making it easier to understand how each individual would approach a museum visit, whether they prefer guided tours, interactive activities, or quieter, contemplative experiences



Name

Age

Occupation

Location

Type of profile

Description

Public transport?

☐ Yes
☐ No

Museum membership?

☐ Yes
☐ No

Social participation

☐ Third age University
☐ Community activities

Weekend routine

Week routine

Health condition

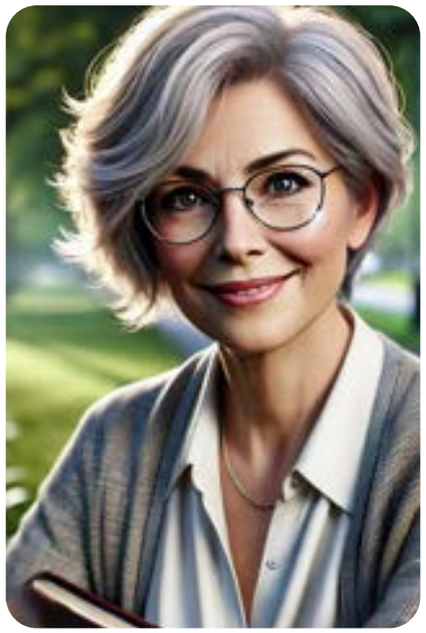
☐ Physical

☐ Cognitive

Money investemnt

Health | Travel | Groceries | Entertainment | Self-care | Bills | Education | Social activities

Fig 48 - Personas scheme. By Author 2024



Giulia Bianchi

Age: 70

Retired school teacher

Turin, Italy

Facilitators

Giulia lives with her husband, Carlo, in a small but cozy apartment near Parco del Valentino. Carlo, also retired, shares her passion for lifelong learning. Their two children have moved to Milan and Rome, but they frequently visit with their three grandchildren, who adore spending weekends with their grandparents.

Public transport?

- [x] Yes
- [ ] No

Museum membership?

- [x] Yes
- [ ] No

Social participation

- [x] Third age University
- [ ] Community activities

Weekend routine

During the week, Giulia spends her mornings in her university courses, then enjoys leisurely afternoons at home reading or walking in the park with Carlo. She also meets with her university friends for a coffee

Week routine

Weekends are dedicated to family, with her grandchildren visiting often. She loves taking them to the park or museums. Occasionally, she and Carlo attend theatre performances.

Health condition

- [x] Physical
- [ ] Cognitive

Giulia experiences mild arthritis, which sometimes makes walking longer distances uncomfortable, but she manages well with regular exercise and treatment.

Money investemnt

Health | Travel | Groceries | Entertainment | Self-care | Bills | Education | Social activities

* The image was created by an Artificial Intelligence (2024)

The first persona, Giulia Bianchi, represents a younger, socially active elder who enjoys spending time with her family and friends. Giulia is a retired schoolteacher living with her husband, Carlo, in Turin. She **frequently engages in community activities and lifelong learning,** attending university courses for the elderly. Giulia experiences mild arthritis, which can **make walking uncomfortable** over long distances, but she stays active through regular exercise. Her involvement with her **family, particularly her grandchildren, and her passion for cultural activities,** such as visiting museums and the theater, positions her as a **Facilitator, a visitor who enjoys sharing museum experiences with others.**

Marco Bibbiani

Age: 76

Carpenter

Turin, Italy

Professionals/Hobbyists

Marco is a widower and lives alone in an apartment in the vibrant San Salvario neighborhood. His daughter lives nearby with her two children, and he visits them frequently. Marco loves being involved in the community and often hosts family lunches on Sundays.

Public transport?

- [x] Yes
- [ ] No

Museum membership?

- [x] Yes
- [ ] No

Social participation

- [ ] Third age University
- [x] Community activities

Weekend routine

His weekdays are busy with activities at the Casa del Quartiere. He does gardening. In the evenings, he often watches documentaries or football matches on TV.

Week routine

On Saturdays, Marco enjoys cooking traditional meals for his family. Sundays are family days, spent with his daughter, son-in-law, and grandchildren, usually at his place or theirs.

Health condition

- [x] Physical
- [ ] Cognitive

Marco has minor hearing loss and uses a hearing aid. Despite this, he is active and energetic, often leading the charge in group activities.

Money investemnt

Health | Travel | Groceries | Entertainment | Self-care | Bills | Education | Social activities

* The image was created by an Artificial Intelligence (2024)

The second persona, Marco Bibbiani, is an active, community-oriented elder. A retired carpenter and widower, Marco is highly **involved in social activities at the Casa del Quartiere** and regularly spends time with his daughter and grandchildren. **Despite suffering from minor hearing loss,** he remains energetic and frequently participates in group activities. His interest in cooking traditional meals for his family and **his active role in the community classify him as a Professional/ Hobbyist,** someone who connects museum experiences to personal or professional interests

Maria Conti

Age: 82

Seamstress

Turin, Italy

Explorers

Maria lives in a small, quiet apartment near the Lingotto area. She has lived alone since her husband passed away several years ago. She has one son who lives in Genoa with his family. Though they visit during holidays, she doesn't see her grandchildren often.

Public transport?

- [x] Yes
- [ ] No

Museum membership?

- [x] Yes
- [ ] No

Social participation

- [ ] Third age University
- [ ] Community activities

Weekend routine

On weekends, Maria usually attends church services and spends time in prayer. She might go out for coffee with a neighbor or family friend but otherwise prefers the comfort of her home.

Week routine

Her weekdays are quiet and predictable. Maria spends her mornings tidying up her home and cooking simple meals. She reads the newspaper, watches television, and occasionally knits. Twice a week, she visits the local market and socialize

Health condition

- [ ] Physical
- [x] Cognitive

Maria has hypertension and struggles with slight memory issues, but nothing too severe. She takes medication to manage her condition and follows a strict diet to maintain her health.

Money investemnt

Health | Travel | Groceries | Entertainment | Self-care | Bills | Education | Social activities

* The image was created by an Artificial Intelligence (2024)

The third persona, Maria Conti, reflects an older, more isolated elder who lives alone. After the death of her husband, Maria spends most of her time in her quiet apartment near the Lingotto area. While she maintains social ties through **occasional coffee outings with neighbors or attending church services,** her daily routine is centered around home life. Maria struggles with **hypertension and slight memory issues,** which sometimes affect her ability to engage fully in complex activities. She is characterized as an **Explorer, a persona driven by curiosity** but more focused on introspective, contemplative experiences

3.5.4
MAPPING THE MUSEUM EXPERIENCE

After identifying and understanding the different types of users who visit museums, the museum experience flow was mapped out to provide a detailed breakdown of each stage of the visitor's journey. This flow visualizes *(Figure 49)* the visitor's path from the **Pre-visit phase, including Research and Planning, Traveling to the Museum, and Arriving at the Museum, to the Visit phase, where they engage with exhibits and interact with collections through various methods.** The map further extends to the **Post-visit phase,** emphasizing the importance of **Reflecting on the Experience** before Exiting the Museum.

Each step in the journey was scrutinized in the context of five key museums in Turin: **Museo Scienze Naturale, Museo Egizio, GAM (Galleria d'Arte Moderna), MAO (Museo d'Arte Orientale), and Museo dell'Automobile.** By closely examining these experiences, the journey map highlights strengths and weaknesses in how well each institution caters to **different visitor personas, focusing on accessibility, engagement, and overall satisfaction for a diverse audience.**

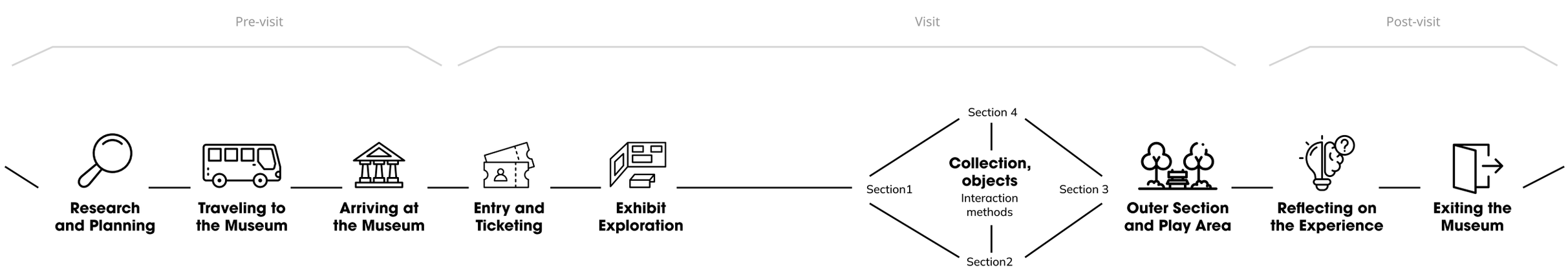


Fig 49 - Museum experience flow. By Author 2024

Museo Scienze Naturale

The Museo di Scienze Naturali, or Museum of Natural Sciences, is a **well-regarded cultural institution in Turin** that offers visitors a **rich journey into the natural world.** This museum **is designed to appeal to all age groups, from children to adults,** providing them with a **detailed look at the diversity of life on Earth,** the history of scientific discovery, and the wonders of the natural environment. The exhibits feature everything from a**nimal bones and preserved specimens to interactive multimedia installations,** aiming to create an educational yet entertaining experience for all visitors.

The journey map for the Museo di Scienze Naturali is structured to **capture the entire experience of a visitor,** from the initial consideration of visiting to sharing reflections after the visit. The map is divided into several key components. **The journey phases include: Pre-Visit, covering the stage where potential visitors think about visiting, organize the trip, and gather information; Visit,** which begins with obtaining details about opening hours, ticket prices, and available special services such as guided tours. **The arrival phase** details how visitors reach the museum, whether by **public transport (metro, taxis, bus, walking) or private means (parking).** The core museum experience encompasses interactions with staff, the use of brochures and mobile guides, visits to exhibits, and exploration of the collection. **The final phase, Leaving the Museum,** describes the exit and transportation back home. **Post-Visit** involves sharing the experience through social media, conversations with family, or reviews.

Touchpoints and key visitor moments include interactions with museum services such as **ticket counters, information desks, brochures, and guided tours.** Key moments involve finding accessibility information, experiencing waiting times, using special tours, and enjoying technological features in the museum.

The map highlights various **visitor categories: Regular Visitors,** who explore independently due to their interest in the natural world; **Special Needs Visitors,** with an emphasis on the availability (or lack) of facilities for additional support; and **Visitors Over 50,** capturing their specific experiences related to physical comfort and engagement. Inclusivity, technology, and emotional flow are central elements of the map. **Inclusivity features such as exhibit height, ease of navigation, and seating are noted.** Technology is represented through **interactive screens, lighting effects and multimedia** that enhance the experience.

Emotional flow captures reactions during different visit phases, pinpointing moments of engagement and frustration. The journey begins in the pre-visit phase, where potential visitors are influenced by word of mouth, family, or friend recommendations. **Re-opening information spread within the community also stimulates interest.** A positive aspect of this phase is that the information regarding the museum's re-opening generated curiosity and enthusiasm.

* All the images were taken by author during the visit to the musuem (2024)

However, **a negative point is that online accessibility information was not sufficiently detailed,** posing challenges for those with special needs. In the arrival phase, visitors benefit from multiple transportation options, including metro, taxis, and buses. **Positive aspects include the variety of transport options allowing flexible access** and the availability of orientation support like brochures and info desks. On the negative side, waiting times for tour guides were noted, which can detract from the initial excitement of visitors eager to start exploring.

The core museum experience features travel through sections that depict different periods and aspects of natural science. Creative use of lighting, such as illuminated animal bones, adds drama to the exhibits. Positive elements include the use of **lighting effects to enhance exhibits and interactive technology like video displays, audio systems, and character simulations that enrich visitor engagement.** The one-floor layout is beneficial for those with mobility issues, and guided tours offer structured exploration. However, negatives include the lack of interactive features designed specifically for visitors with special needs, limiting inclusivity. Exhibit labels positioned at non optimal eye levels, small fonts, and low contrast made reading difficult, particularly for older visitors. The path's limited seating impacted visitors over 50, making it tiring and reducing comfort. Additionally, older visitors were noted not interacting with technological features, suggesting these elements may not have been designed to be accessible or appealing to this group.

Emotional flow highlights positive feelings from creative lighting and engaging exhibits, with guided tours providing valuable insights that helped visitors connect with the subject matter. However, frustrations arose from the difficulty in reading exhibit labels and insufficient seating, causing exhaustion, particularly among older visitors. Limited engagement with technological components by older visitors also indicated that these features might have been intimidating or unengaging.

The post-visit phase focuses on how visitors share their experiences through photos, souvenirs, and social media. Discussions with family and friends emphasized the lasting impression of the visit. **A positive takeaway was that many visitors took photos and collected pamphlets,** indicating continued engagement. However, the lack of features specifically designed to engage older visitors and those with special needs may reduce the likelihood of positive recommendations within these groups.

Overall, the journey map identifies key positive points, such as multi layered experiences, creative lighting, technological enhancements, and a single-floor layout that aids mobility. Guided tours provide deeper insights into exhibits. On the other hand, negatives include the limited features for visitors with special needs, challenging exhibit labels, insufficient resting points for older visitors, and underutilized technology by older demographics, highlighting areas for improvement to make the museum experience more inclusive and engaging for all.

* All the images were taken by author during the visit to the musuem (2024)

Positive Points:

- The museum offers a **multi-layered experience** through different sections that represent various periods in the history of science.
- Creative use of **lighting enhances the visual appeal** of exhibits, contributing to a more immersive experience.
- **Technological features,** such as screens and audio systems, add depth to the visitor experience, especially for younger audiences.
- **The single-floor layout** is beneficial for individuals with mobility issues.
- **Guided tours** allow for a more structured and in-depth exploration of the exhibits.

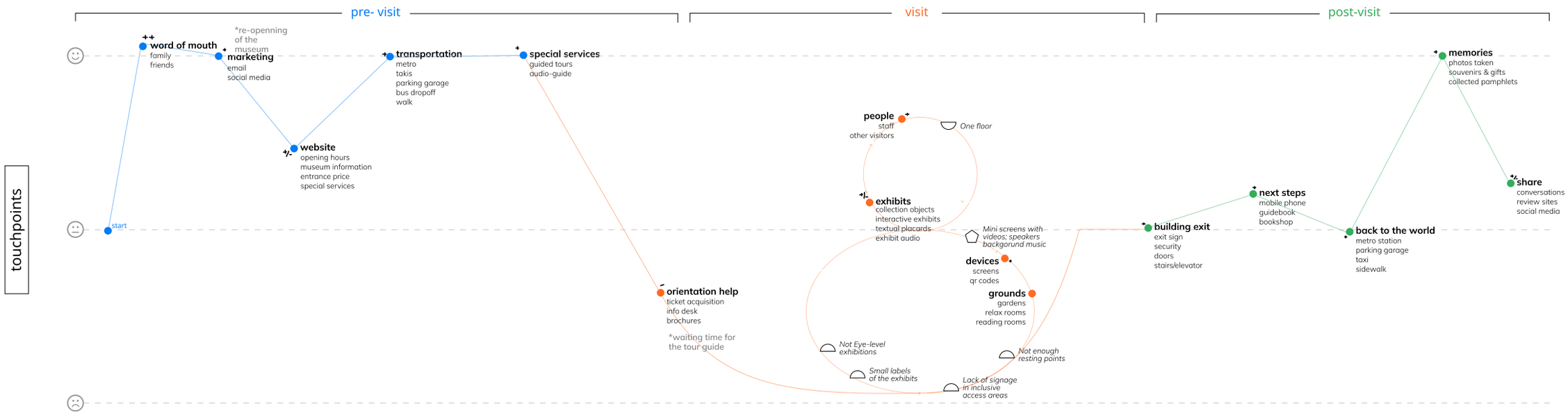
Negative Points:

- The lack of features tailored to visitors with **special needs results in an incomplete experience** for those requiring additional support.
- **Exhibit labels are not at eye level,** and their small size and low contrast make them difficult to read, particularly for older visitors.
- **Insufficient resting points** make the path tiring, especially for visitors over 50, affecting their ability to enjoy the exhibits fully.
- **Technological features** were not utilized by older visitors, suggesting a need for more accessible or appealing options to engage this demographic.

* All the images were taken by author during the visit to the musuem (2024)

journey map | **Museo Scienze Naturale**

pictures linked · technology · inclusion · exclusion · perception



visitor key moments

	consider going	organize the trip	arrive at the museum	experience at the museum	leave the museum	back home
visitor		• Looking for opening hours • Confirm the entrance fees/prices		• Finding different technological interaction in the museum		• Tell friends and famility about it
special needs visitor	• Finding accessibility information online.	• Looking for opening hours • Looking for special tour • Confirm the entrance fees/prices		• Not being able to see every exhibition		
+50 visitor	• Getting to know the re-opening of the museum via word of mouth	• Going with a guided tour • Asking on the front door	• Reduced entrance with the "Abbonamenti musei"	• Getting tired because of the long path • Not being able to read the labels because of misplacement and small dimension		• Tell friends and famility about it

final notes

experience

- The path through the museum was free to follow, with no arrows or signs indicating a specific route.
- However, the experience was guided, allowing for a deeper exploration of each section of the museum.
- Since everything was on a single floor, there was no need for stairs or elevators.
- While the objects were not arranged in chronological order, there was a clear division of areas based on different periods and moments in the history of science

+50

- The path was tiring for visitors over 50 due to its length and the lack of sufficient seating for rest.
- The labels describing the exhibits were not positioned at eye level, and the size of the text along with poor contrast made it difficult to read.
- Despite these challenges, the visitors were very interested in reading and taking pictures of each exhibit.
- However, none of them interacted with the technological components that the museum offered.

inclusivity

- There were no interactive features designed for people with special needs.

technology

- Allong the way, there were different techonological intercation, like screen with videos, screen with interactive characters, which supported the experience by changing the lineal interaction
- The musuem also played with lighting to create other interaction with the bones of the animals

The experience at the Museo di Scienze Naturali is characterized by a free-flowing path, allowing visitors to explore exhibits without the constraints of a specific route. While this flexibility contributes to a relaxed exploration, the guided tours provided an added layer of depth, **enabling visitors to gain a richer understanding of the exhibits.** The entire museum is laid out on a single floor, making it easy to navigate without the need for stairs or elevators, which is a positive aspect for accessibility.

The thematic arrangement of the exhibits, rather than a chronological setup, offers a clear division based on different periods and moments in the history of science. **This arrangement helps visitors understand the scientific concepts** without being overwhelmed by a strict timeline. However, the path proved tiring for many visitors over the age of 50, due to its length and the lack of sufficient seating for rest. **This physical challenge reduced the comfort of older visitors** and limited their ability to fully appreciate the exhibits.

The placement of exhibit labels was another notable issue. **The labels were not positioned at eye level, and the small font size,** coupled with poor contrast, made reading difficult. This was particularly problematic for older visitors, who had to strain to read and often missed key details. Despite these challenges, many visitors were seen taking a keen interest in the exhibits, reading descriptions and taking photos, demonstrating their enthusiasm for the museum's content.

While the museum incorporated various technological interactions, such as video screens and interactive characters, none of the older visitors engaged with these features. The lack of appeal or accessibility of these technological elements for older guests highlights an area where the museum could improve, by making these interactions more inclusive and intuitive. Furthermore, there were no interactive features specifically designed for visitors with special needs, limiting the museum's inclusivity.

On a positive note, **the use of technology, such as screens and lighting effects, contributed significantly to enhancing the overall experience.** The lighting, in particular, was used creatively to highlight animal bones and create a dramatic visual impact, adding an engaging layer to the exhibits. However, **the absence of interactive features tailored to individuals with special needs** remains a gap in the museum's inclusivity efforts.

In summary, the Museo di Scienze Naturali offers an enriching experience through its diverse exhibits and thoughtful use of lighting and technology. However, challenges such as the **lack of sufficient resting points, poorly positioned labels, and limited technological engagement for older visitors** or those with special needs indicate areas for improvement. By addressing these aspects, the museum could create a more inclusive, comfortable, and engaging environment, ensuring that all visitors can fully enjoy and appreciate the wonders of the natural world.

* All the images were taken by author during the visit to the musuem (2024)

Museo Egizio

The Museo Egizio in Turin stands as one of the most prominent museums dedicated to ancient Egyptian culture. **Renowned for its extensive collection of artifacts**, including statues, sarcophagi, papyri, and everyday objects, the museum takes visitors on an immersive journey through the fascinating world of ancient Egypt. **This journey unfolds not just through traditional displays** but through a dynamic interplay of interactive exhibits, multimedia elements, and carefully curated environments designed to guide visitors from one era to another, **creating a sense of traveling through time.**

To understand the full visitor experience at the Museo Egizio, a journey map was developed, encompassing every stage of the visit. This map is more than just a record of the visitor's steps, it provides an emotional and experiential blueprint that reveals how guests interact with the museum from start to finish. **The journey map is segmented into different phases: the pre-visit stage, the visit itself (including arrival and exploration), and the post-visit reflections**. It also highlights key moments of interaction, the emotional flow during the experience, and the impact of inclusivity and technology.

The journey map for the Museo Egizio is structured to **guide readers through the visitor's experience at different stages** of their journey. This includes initial considerations, such as deciding to visit the museum, gathering essential information, and organizing logistics. The journey starts by confirming details like opening hours, entrance fees, and accessing information about special

services. **The visitor's arrival is detailed with transportation options** such as metro, taxis, and walking, and mentions the availability of special services like guided tours, audio guides, and brochures. The core phase involves interactions with staff, using orientation tools such as maps and signs, and engaging with exhibits. Exiting the museum includes security checks and finding transportation. The final phase documents reflections and activities after the visit, such as taking photos, purchasing souvenirs, and sharing experiences with others.

The journey includes elements and touchpoints such as interactions with museum staff, other visitors, and guided groups. Devices like interactive screens, QR codes, and audio guides enhance the visitor experience. Key moments include finding accessibility information, interacting with exhibits, and sharing memories afterward. The map highlights accessibility features, such as **height-adjusted displays and various guided tour options for special needs visitors.** Technology is represented through interactive screens, QR codes for audio guides, and touch-based installations. The emotional journey is portrayed through moments of engagement, boredom, and excitement, showing which aspects resonate most with different age groups.

Visitors gather information through word of mouth, online research, or directly from family and friends.

* All the images were taken by author during the visit to the musuem (2024)

They look for accessibility information, entrance fees, and special services like guided tours. **The availability of detailed information online about opening hours** and accessibility makes planning the visit easier, especially for those needing extra accommodations. The museum offers multiple transportation connections, metro, taxi, and walking paths, to make arrival convenient. Special services such as guided tours and audio guides are available, contributing positively to the experience. However, s**ome visitors find it challenging to navigate the museum effectively due to the long paths required to see everything.**

The Museo Egizio experience involves traveling through time, moving from room to room, each representing different eras and showcasing various artifacts, traditions, and lifestyles. The museum has several floors, each with different exhibits, including artifacts, interactive elements, and multimedia components. **Engaging content includes interactive screens** where visitors can write their name in hieroglyphics or interact with touch-sensitive displays, particularly popular with younger visitors. **Free audio guides accessed by scanning QR codes** add an informative layer, with an intuitive app contributing positively. Exhibits are positioned at accessible heights, and options for tours catering to people with special needs are apparent, with elevators facilitating movement between floors. **Clear signage, arrows, and maps throughout the museum** aid navigation and understanding of the time periods.

The audio guide app, though intuitive, includes segments that are quite long, causing some visitors to stop listening before the end. This suggests that shorter, more concise information might improve engagement. The layout, with its long paths, can make the experience physically demanding, particularly for older individuals or those with mobility challenges. **While the interactive elements are advanced, older visitors were less likely to engage** with these technologies compared to younger individuals, indicating a generational gap that may require additional engagement methods.

Visitors generally found the museum well organized, with clear paths and interesting interactive elements. Younger visitors enjoyed the screens and activities that allowed active participation. Visitors over 50 were often observed in designated seating areas, showing interest in reading detailed exhibit descriptions but engaging less with interactive technologies. **Some visitors expressed boredom due to the long paths or lengthy audio segments.** Visitors with special needs were not fully satisfied with accessibility features, such as the limited number of aids (e.g., Braille descriptions) compared to the overall number of exhibits.

Post-visit reflections show that visitors often share their experiences through photos, souvenirs, and discussions with friends and family. These shared memories extend the museum experience beyond the visit itself. **The journey map indicates that visitors took advantage of post-visit touchpoints,** suggesting the museum successfully maintains engagement even after the visit.

* All the images were taken by author during the visit to the musuem (2024)

Positive Points:

- The museum provides an experience that takes visitors on a **journey through time,** offering insights into ancient Egyptian culture through exhibits, interactive screens, and artifacts.
- **Interactive technologies,** such as touch screens and QR code audio guides, add depth to the experience, especially for younger audiences.
- **The exhibits are thoughtfully positioned** at accessible heights, and the museum provides options for special needs visitors, contributing to inclusivity.

Negative Points:

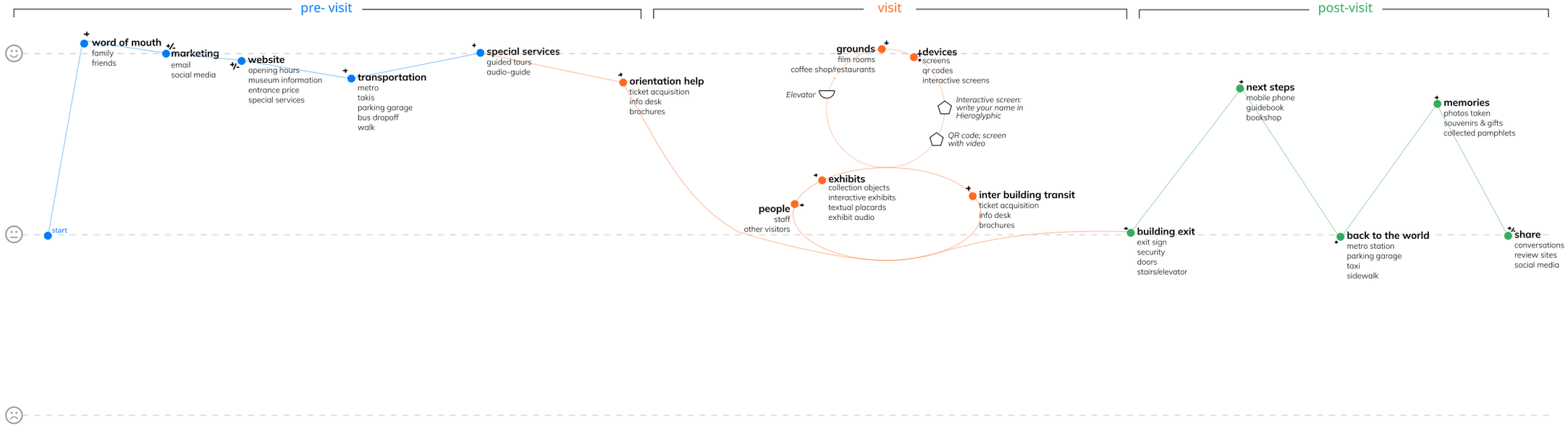
- **The audio guides,** though informative, have overly long segments that can lead to disengagement.
- The long paths between different sections can be **physically exhausting, especially for older visitors** or those with limited mobility.
- While there are various **interactive technologies,** they are primarily used by younger visitors.
- The number of **accessibility resources, such as Braille descriptions, is limited** compared to the vast number of exhibits, indicating a gap in fully inclusive design.

* All the images were taken by author during the visit to the musuem (2024)

journey map | **Museo egizio**

pictures linked · technology · inclusion · exclusion · perception

touchpoints



visitor key moments

	consider going	organize the trip	arrive at the museum	experience at the museum	leave the museum	back home
visitor		• Looking for opening hours • Confirm the entrance fees/prices		• Finding different environments inside the musuem		
special needs visitor	• Finding accessibility information online.	• Looking for opening hours • Looking for special tour • Confirm the entrance fees/prices	• Special transport	• Finding inclusive content • Finding accessible entrances inside the building • Not being able to see every exhibition		
+50 visitor		• Looking for opening hours • Looking for guided tours • Confirm the entrance fees/prices	• Reduced entrance with the "Abbonamenti musei"	• Getting bored/ remaining on each description to read the content • Long path		• Tell friends and famility about it

final notes

experience

- *The experience involved traveling through time, moving from room to room and progressing forward in time. You could see how each society lived, the objects they used, and their traditions.*
- *The audio guide was free and could be accessed by scanning the QR code corresponding to the exhibition sticker number. The app was very intuitive, but the audio segments were too long, leading some people to stop listening before reaching the end. Initially, people were listening to the audio guide in the first room, but as they progressed to more advanced rooms, fewer people continued to listen.*
- *The organization was commendable; there were arrows and signs everywhere to guide visitors, and maps helped orient them to the specific time periods they were exploring.*

+50

- *There wasn't a high prevalence of individuals over 50, but there was still a significant presence of that generation. In the movie room with chairs, they were observed gathered, watching the entertaining and short videos. This generation could also be seen sitting in chairs located throughout the floors. Some appeared very interested in reading more carefully compared to the younger individuals in the museum, who seemed to quickly skim through each object.*

inclusivity

- *As a museum they offer a lot of options and tours for special condition visitors.*
- *Everything is on the correct height for every one to see.*

technology

- *When discussing technology in museums, they are often very advanced. They make use of many interactive technologies to capture people's attention. Mostly, it was noticeable that younger people engaged with it, such as a screen where you could write your name in hieroglyphics, an interactive screen that sensed hand movements, and many touch screens for delving deeper into information.*

The Museo Egizio experience is designed to evoke a sense of traveling through time, moving from room to room and progressing through different eras of Egyptian history. **Each room illustrates how ancient societies lived,** the artifacts they used, and their cultural traditions. This progression provides a rich narrative experience, allowing visitors to understand the continuity and evolution of ancient Egyptian life.

One of the key features of the museum is the **free audio guide,** which visitors can access by scanning QR codes placed throughout the exhibits. While the app is intuitive, the length of the audio segments can be overwhelming, resulting in many visitors stopping before the end. Initially, many guests listened attentively in the early rooms, but fewer continued using the audio guide as they moved further along the exhibits. This suggests that shorter, more focused audio content could enhance sustained engagement.

The organization of the museum is commendable, with arrows and signs effectively guiding visitors and maps that help orient them to specific time periods. These features contribute to a positive navigational experience, allowing visitors to move through the exhibits with ease.

Although the prevalence of visitors over the age of 50 was not particularly high, there was still a noticeable presence of this generation. Many of these older visitors gathered in the movie rooms with seating, where they enjoyed watching short, entertaining videos. T**hroughout the floors, older visitors could also be seen sitting in chairs,** taking their time to read exhibit information more thoroughly compared to younger visitors, who tended to move more quickly through each section. This highlights a difference in how different age groups interact with the content and points to the need for providing more comfortable seating and resting areas for older guests.

Inclusivity is a central part of the Museo Egizio experience. **The museum provides numerous options for visitors with special needs,** including accessible exhibit heights, elevators, and guided tours specifically designed for individuals requiring additional support. However, despite these efforts, there are areas where inclusivity could be improved. For example, while tactile resources such as Braille descriptions are available, they are limited in number, making the experience less fulfilling for visually impaired visitors compared to others.

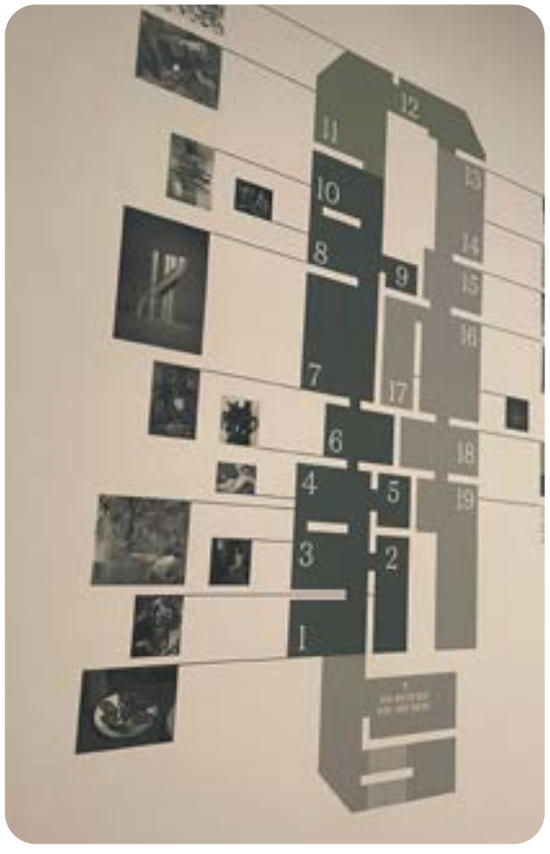
Technology plays an important role in the Museo Egizio, particularly in capturing the attention of younger audiences. Interactive screens, such as those that allow visitors to write their name in hieroglyphics or use hand sensing technology, **provide engaging and educational opportunities.** However, it is evident that older visitors tend to engage less with these technological features, indicating a need for a wider range of engagement methods that can appeal to all generations.

* All the images were taken by author during the visit to the musuem (2024)

GAM (Galleria d'Arte Moderna)

The Galleria d'Arte Moderna (GAM), located in Turin, is a cornerstone of modern and contemporary art in Italy. **The museum hosts an extensive collection that spans different art periods,** including classical, modern, and conceptual pieces. Visitors can explore an array of paintings, sculptures, and multimedia installations, each offering insight into the evolution of artistic expression from the past to the present. GAM is not only a space for art appreciation but also an inclusive environment aimed at catering to a diverse audience, including those with special accessibility needs.

The journey map developed for GAM provides a detailed representation of the visitor experience, from the initial consideration of a visit to post visit reflections. The journey is broken down into distinct phases, each capturing key interactions and emotional responses of visitors as they navigate the museum. The map highlights significant touchpoints such as planning the trip, acquiring tickets, experiencing the exhibits, and leaving the museum, providing a comprehensive view of the complete visitor cycle.



Touchpoints during the visit include points of contact where the visitor interacts with museum services, such as ticket counters, information desks, brochures, and guided tours. Key visitor moments involve activities like finding accessibility information online, confirming entrance fees, and locating inclusive exhibits. The visitor categories noted are regular visitors, who are general museum goers with varying levels of interest, special needs visitors who require

assistance or accommodations, such as visually impaired visitors, and visitors over 50, a significant portion with specific needs like resting areas and a preference for detailed information.

The journey map describes the entire visitor experience, **capturing their emotions, inclusivity efforts, and the use of technology.** Visitors gather information from family, friends, or online resources, focusing on accessibility features, opening hours, entrance fees, and special services like guided tours. **The availability of information on the website, including opening hours and entrance fees,** facilitates planning for all types of visitors, though finding detailed accessibility information can be challenging for those with special needs. The museum can be accessed via various transport modes, metro, taxis, bus drop-offs, and walking paths, with special services like guided tours and audio guides available. While multiple transportation options and orientation help are positives, limited signage for individuals with special needs can hinder accessibility.

The museum comprises different floors, each presenting unique exhibits, from old paintings to contemporary works, sculptures, and conceptual art. Small drawings on ceilings and above stairs enhance the experience between rooms. The variety of exhibits, including both old and contemporary art, sculptures, and conceptual works, contributes to a seamless and immersive

* All the images were taken by author during the visit to the musuem (2024)

experience. Notable inclusivity features **include Braille-printed plastic cards for visually impaired visitors,** inclusive height exhibitions, ramps, and elevator access. **Temporary exhibitions providing maps** help organize and inform visitors of all age groups. Visitors aged 50 and above showed notable engagement by taking notes, reading descriptions, and interacting deeply with exhibits.

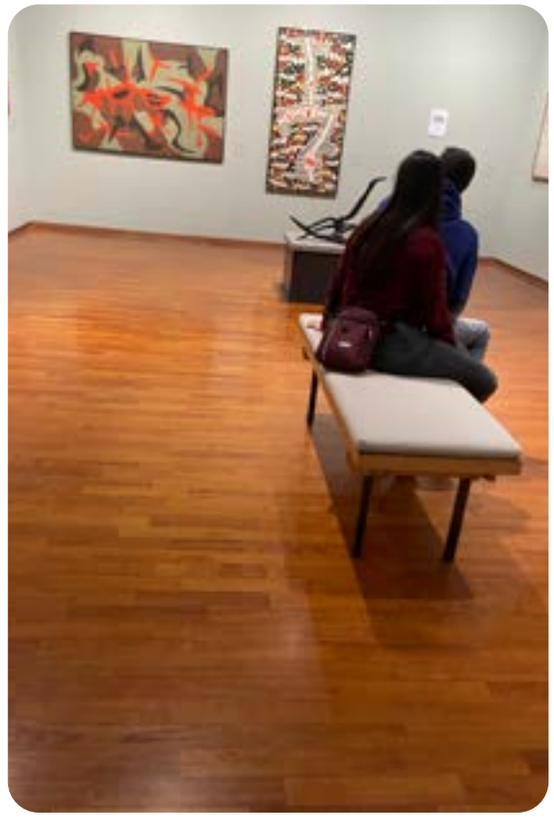
Despite positive aspects, there are areas for improvement. **Limited accessibility resources such as only five Braille plastic cards** for visually impaired visitors reduce their ability to fully enjoy the museum. **The overall low use of technology, with minimal digital tools** like QR codes, speakers, and screens, diminishes interactive and immersive experiences that could benefit all visitors, especially those with special needs. Visitors leave the museum through marked exits, using public transport or walkways to return home. Post-visit activities include taking photos, collecting souvenirs, and sharing experiences via social media or conversations. While the opportunity to **collect pamphlets, take photos, and purchase souvenirs fosters lasting memories,** the lack of digital engagement post-visit means fewer opportunities for continued interaction online.

The emotional journey of visitors to GAM is shaped by their interactions with exhibits, services, and the environment. Many visitors, particularly those over 50, experienced high engagement and curiosity, with varied spaces offering an enriching and dynamic experience. **Temporary exhibitions with detailed maps provided a sense of fulfillment and satisfaction.** However, frustration arose due to limited accessibility resources for visually impaired visitors, with insufficient Braille and audio resources creating a sense of exclusion. Minimal technological use throughout the museum led to missed opportunities for deeper engagement.

* All the images were taken by author during the visit to the musuem (2024)

Positive Points:

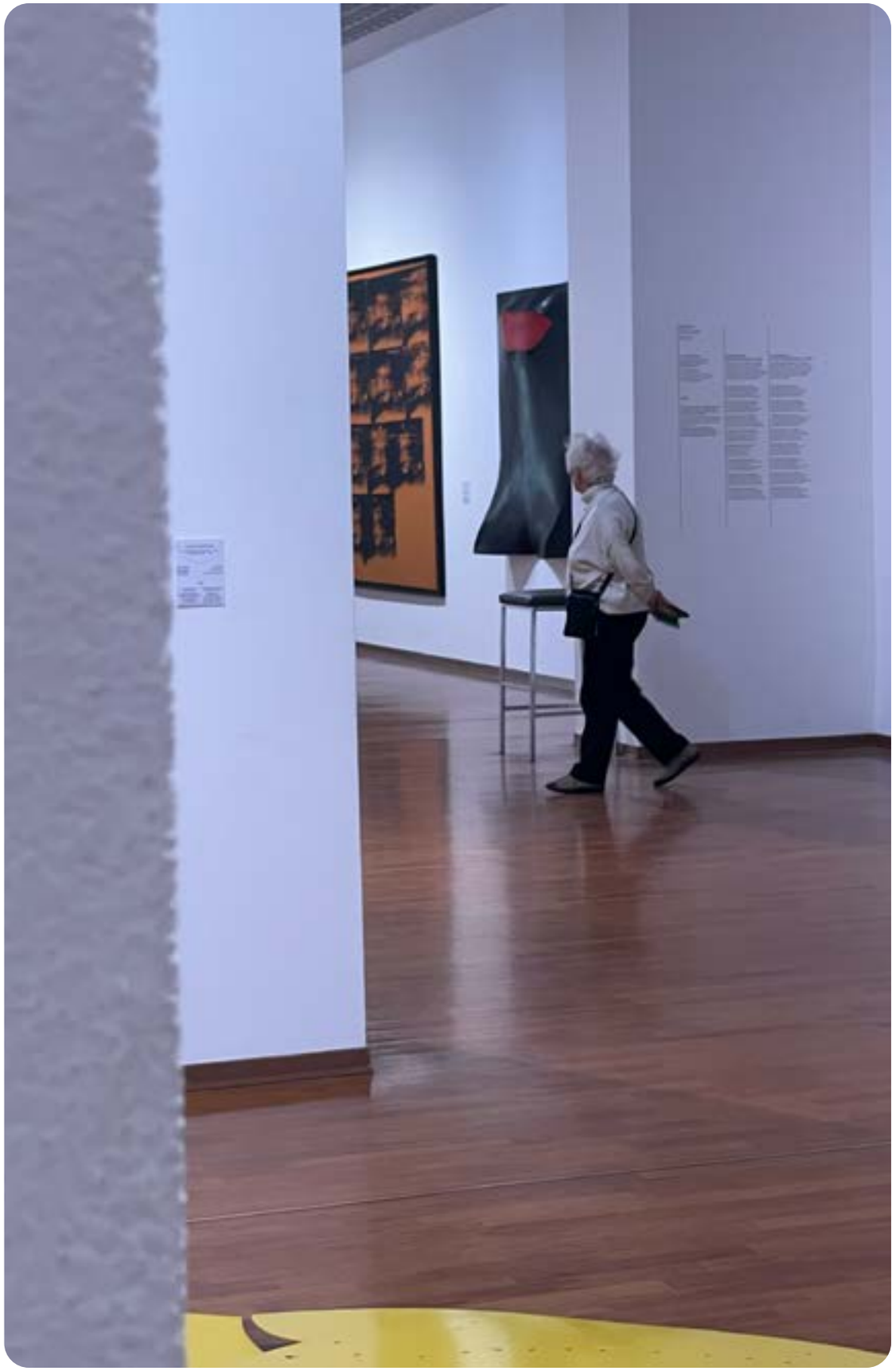
- **Diverse exhibits** spanning different art forms and periods create an engaging experience for visitors of all interests.
- **Inclusivity features** such as ramps, elevators, Braille paintings, and inclusive height exhibitions improve accessibility.
- **Detailed maps for temporary exhibitions** helped orient all visitors, creating a well rounded experience.



Negative Points:

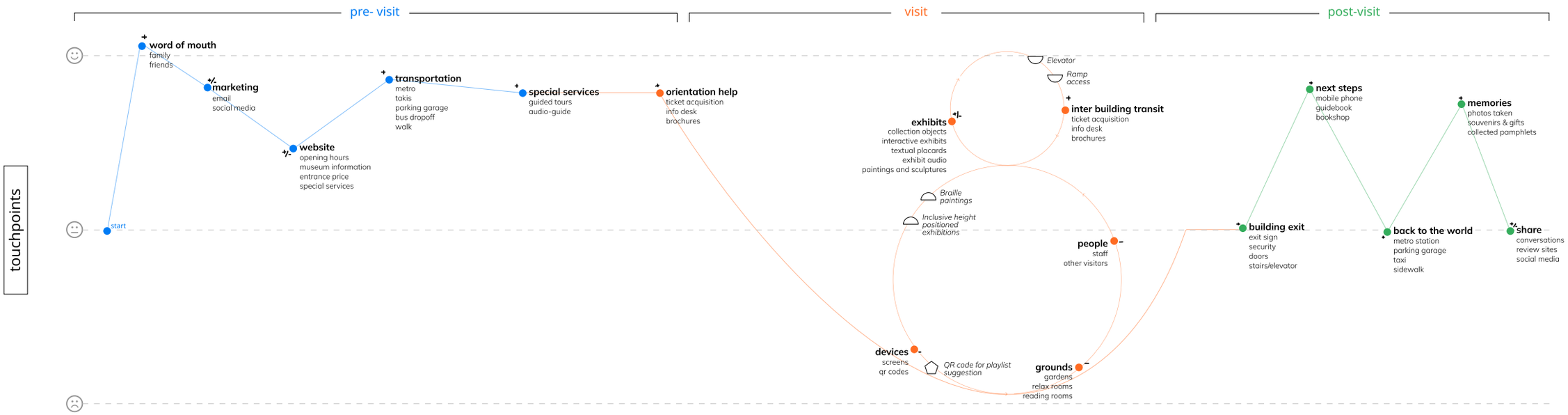
- **Limited accessibility features** for visually impaired visitors, with only five Braille printed plastic cards available.
- **Lack of advanced technology** such as interactive screens or more extensive use of audio visual aids to enhance visitor engagement.
- Some logistical challenges for **special needs visitors** due to inadequate signage and limited guidance.

* All the images were taken by author during the visit to the musuem (2024)



journey map | **GAM- galleria d'arte moderna**

pictures linked · technology · inclusion · exclusion · perception



visitor key moments

	consider going	organize the trip	arrive at the museum	experience at the museum	leave the museum	back home
visitor		• Looking for opening hours • Confirm the entrance fees/prices		• Finding different environments inside the musuem		
special needs visitor	• Finding accessibility information online.	• Looking for opening hours • Looking for special tour • Confirm the entrance fees/prices	• Special transport	• Finding inclusive content • Finding accessible entrances inside the building • Not being able to see every exhibition		
+50 visitor		• Looking for opening hours • Looking for guided tours • Confirm the entrance fees/prices	• Reduced entrance with the "Abbonamenti musei"	• Getting interested by the different areas offered		• Tell friends and famility about it

final notes

experience

- *The experience consisted of different floors where you could find one room with old paintings, another with contemporary paintings, and another with modern art. It was also possible to find sculptures in the different sections, but most of them were in the paintings at the beginning of the experience. Towards the end, where the contemporary exhibition was situated, it was possible to find more conceptual art exhibitions.*
- *Something worth highlighting is the experience of transitioning between rooms. On the ceiling and above the stairs, there were mini drawings that contributed to a positive experience.*
- *At one point in the experience, there was a temporary exhibition where they provided a map to orientate visitors around the exhibition. It was the only room in the museum where it was possible to see everyone reading everything in order; the youngest and the oldest.*

+50

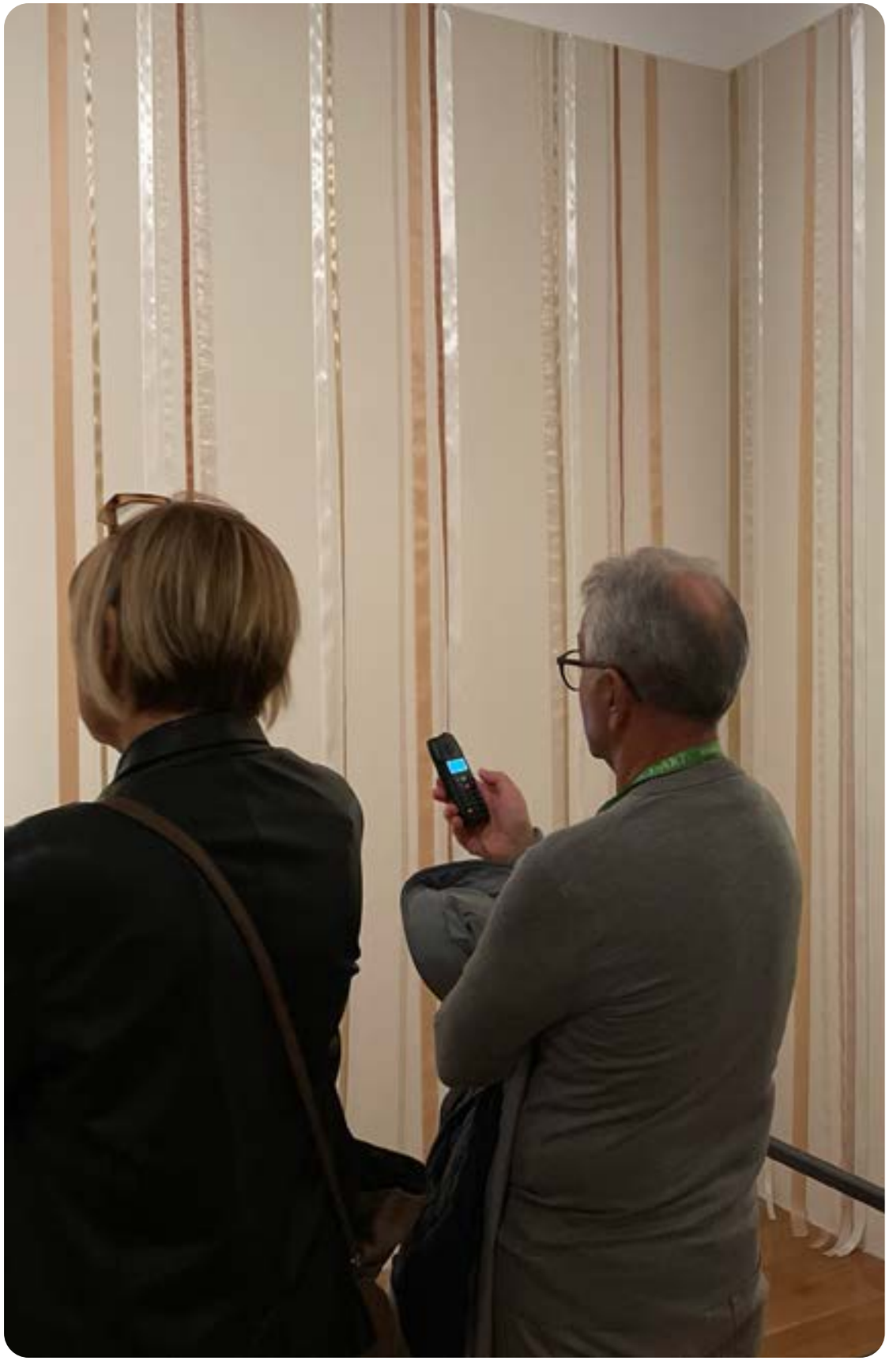
- *The museum was almost full of +50 people.*
- *There were 2 big guided groups of couples of elders and single people that were not guided*
- *They showed a lot sof interest, it was possible to see how they remained reading, taking notes and taking pictures*

inclusivity

- *It was possible to see some of the paintings printed on plastic cards that were dedicated to in visual impaired people with the Braille language were you could find the painting with a description in the painting itself with texture.*
- *Unfortunately, there were just five of these cards and comparing it to the number of painting the experience for a visual impaired person is not fulfil as for a visitor without special conditions.*

technology

- *The overall use of technology is not that high*
- *Lack of variety and advanced technology: qr codes, speaker and screens*



The visitor experience at the GAM museum spans **multiple floors, each offering a different type of art.** One room is dedicated to old paintings, while others showcase contemporary and modern art. Sculptures are distributed across different sections, with most being placed alongside paintings early in the journey, while more conceptual art is featured towards the end. This diversity in exhibit types contributes to anexperience that **allows visitors to appreciate various artistic styles and periods.**

An important highlight of the experience is the transition between rooms. **Mini drawings on the ceiling and above the stairs added an unexpected and enjoyable element,** enriching the overall journey. A temporary exhibition provided visitors with a map to navigate the exhibits, which proved especially effective in engaging visitors of all ages, everyone, from the youngest to the oldest, was seen thoroughly exploring each piece in order.

The museum's audience consisted largely of individuals over the age of 50, with many of them either participating in guided groups or visiting independently. Their engagement level was notable, these visitors were observed reading descriptions, taking notes, and capturing photographs, demonstrating a strong interest in the exhibits. However, **some of the guided groups lacked actual guides,** which may have limited their ability to fully understand and appreciate the content.

Inclusivity at GAM is a mixed experience. On the positive side, the museum offers Braille printed plastic cards for visually impaired visitors, along with ramps and elevators to facilitate movement. However, there were only five Braille cards available, which is insufficient compared to the total number of paintings. This gap leaves visually impaired visitors with an experience that is **less comprehensive than that of other guests,** highlighting a need for more inclusive resources.

The use of technology within the museum is generally low. While there are QR codes for playlist suggestions, as well as screens and speakers, the lack of variety and advanced technology limits the potential for deeper engagement with the exhibits. Enhanced technological features, such as interactive screens or more audio visual aids, could greatly benefit all visitors, especially those with special needs.

In conclusion, the GAM museum offers a **diverse cultural experience through its varied art collections** and thoughtfully designed spaces. The museum is largely successful in catering to older visitors, who make up a significant portion of its audience, and provides some inclusivity features that enhance accessibility. However, there is room for improvement, particularly in expanding the use of **inclusive resources and enhancing technological** engagement. Addressing these issues will help ensure that the museum experience is enriching, inclusive, and enjoyable for all visitors, regardless of their abilities or age group.

* All the images were taken by author during the visit to the musuem (2024)

MAO (Museo d'Arte Orientale)

The Museo d'Arte Orientale (MAO), or Museum of Oriental Art, is one of the most significant cultural institutions in Turin, offering a deep exploration into the rich heritage of Asian art and culture. This museum features an **extensive collection of artifacts and exhibits, representing various facets of the Middle Eastern, South Asian, and East Asian civilizations.** The museum's exhibits are uniquely arranged to guide visitors through a multi-sensory experience that aims to bring the diverse traditions and cultures of Asia to life.

The journey map developed for MAO provides an in-depth view of the visitor experience, documenting each stage from initial planning to the time spent within the museum and the memories that endure afterward. This journey map aims to capture **both the emotional and practical aspects of visiting MAO,** offering a holistic picture of the experiences encountered by individuals of all backgrounds, including those with accessibility needs. By laying out key moments and touchpoints, the journey map highlights areas where the museum succeeds in engaging visitors and those where further improvements could enhance inclusivity and enjoyment.

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encountered by individuals of all backgrounds, including those with accessibility needs. By laying out key moments and touchpoints, the journey map highlights areas where the **museum succeeds in engaging visitors and those where further improvements could enhance inclusivity and enjoyment.**

The journey map for the MAO museum is organized into different stages of a visitor's journey, covering considerations before visiting, such as organizing transportation and gathering museum information. **Visitors plan aspects like gathering opening hours, ticket prices, and transportation options.** Arrival includes descriptions of transportation options like metro, taxis, or walking, and features such as parking garages and drop off points. The experience at the museum encompasses ticket acquisition, interactions with the info desk, use of brochures, visiting exhibits, and moving between buildings. Departure involves leaving the building through exits, stairs, and elevators. The post-visit experience includes memories, souvenirs, photos, and sharing experiences on social media or review sites.

The journey map highlights key elements and touchpoints such as **interactions with staff, guides, and other visitors,** as well as the use of devices like screens, QR codes, and audio guides. Key moments include specific activities such as acquiring tickets, exploring exhibits and searching

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for accessibility information. Services like guided tours, brochures, accessibility information, and audio/video resources are also featured. Emotional states are noted throughout the journey, pointing out areas of satisfaction or frustration, and inclusivity concerns focus on the need for better information and improved accessibility provisions.

Visitors gather information through word of mouth, family, friends, or online resources, focusing on accessibility information and transportation arrangements. While accessibility information and opening hours are mentioned on the website, some visitors express difficulty finding detailed accessibility information for people with special needs. The museum can be accessed via multiple transport modes, metro, taxi, bus, or walking, with designated parking and drop off areas. **Positive points include the availability of different modes of transportation** and guidance services like orientation help, though some barriers remain for visitors with special needs due to insufficient signage indicating inclusive access areas.

The exhibits are diverse, showcasing various aspects of Middle Eastern culture, such as traditions and art. Visitors move from room to room, with each representing a different Middle Eastern country. **Positive elements include inclusivity features like audio/video resources** for visually impaired visitors, eye level exhibitions, and seating areas for rest. **The varied environments, such as relaxation spaces and rooms with different lighting, enhance the experience.** Guidance is provided through arrows on the floor, and staff are available to assist when needed. However, there are limitations, such as **minimal use of advanced technology, few screens, limited audio guides**, and a lack of varied technological tools like QR codes and speakers. Accessibility challenges are noted, with **only one audio or video resource for visually impaired visitors** and insufficient signage for inclusive access areas. Movement flow issues arise as visitors must return to the garden's entrance to access the main exhibition, causing inefficiencies and requiring revisiting previously explored areas.

The post-visit stage includes sharing experiences through conversations, social media, and review sites. **Visitors appreciate opportunities to collect pamphlets and take memorable photos,** though some express dissatisfaction with the lack of engaging content to maintain attention during the visit.

The emotional flow of visitors is influenced by **interactions with exhibits, services, and the environment.** Positive emotions stem from the helpful staff, accessibility features like eye level exhibitions, and varied environments that offer enriching experiences. Visitors enjoy moments of exploring cultural artifacts and interacting with informative displays. However, **frustration occurs due to limited accessibility information,** the need to return to certain points to access the main exhibition, and the lack of technological variety. Older visitors, in particular, **may feel tired or disengaged, often sitting on stairs and chairs without interacting with the exhibits.** Inclusivity is perceived both positively and negatively; while certain features cater to special needs, inconsistencies like **insufficient signage and inclusive access** create an uneven experience.

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Positive Points:

- Availability of detailed **pre-visit information.**
- **Variety in the environments** within the museum, such as relaxation spaces.
- Presence of **helpful staff** and clear guiding arrows for navigation.

Negative Points:

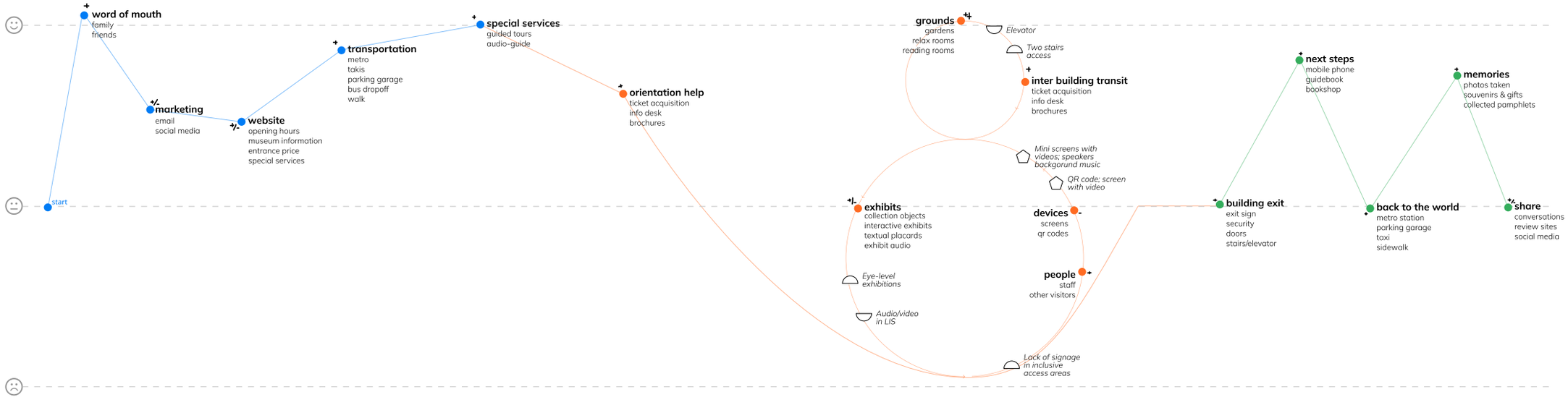
- **Insufficient use of advanced technology** for engagement, such as interactive screens or diverse audio resources.
- **Lack of clear signage** for inclusive access, which creates barriers for those with special needs.
- **The need to backtrack** to access certain exhibits, which detracts from a seamless experience.

* All the images were taken by author during the visit to the musuem (2024)

journey map | **MAO- museo d'arte orientale**

pictures linked · technology · inclusion · exclusion · perception

touchpoints



visitor key moments

	consider going	organize the trip	arrive at the museum	experience at the museum	leave the museum	back home
visitor		• Looking for opening hours • Confirm the entrance fees/prices		• Finding different environments inside the musuem		
special needs visitor	• Finding accessibility information online.	• Looking for opening hours • Looking for special tour • Confirm the entrance fees/prices	• Special transport	• Finding inclusive content • Finding accessible entrances inside the building • Not being able to see every exhibition		
+50 visitor		• Looking for opening hours • Looking for guided tours • Confirm the entrance fees/prices		• Getting bored/ remaining on each description to read the content		• Tell friends and famility about it

final notes

experience

- *Experience based on moving through rooms, each representing a different Middle Eastern country*
- *Exhibition showcases objects, traditions, and photos for a comprehensive understanding of Middle Eastern culture*
- *Environments varied: dark, bright, relaxation spaces, seating areas, spaces for deeper information*
- *Notable feature: When objects were being repaired, visitors found pictures and descriptions in their place*
- *Arrows on the floor guide the path through the exhibition, but staff available for assistance if needed*
- *Main exhibition start point located at main entrance*

+50

- *The presence of people +50 was almost half of the visitors at the moment of the visit*
- *Some of the +50 visitors remained still resting on the stairs and chairs. A small percentage were reading the descriptions one by one*

inclusivity

- *Information crucial for understanding objects; without it, objects lose meaning*
- *Only 1 audio/video resource provided for visually impaired visitors*
- *Necessity to return to garden's entrance to access main exhibition and revisit rooms already traversed*

technology

- *The overall use of technology is not that high*
- *Lack of variety and advanced technology: qr codes, speaker and screens*

The visitor experience at the MAO museum is built around a journey through various rooms, each representing a different Middle Eastern country. **The exhibitions feature objects, traditions, and photographs, providing a comprehensive understanding of Middle Eastern culture.** The environments vary significantly throughout the museum, ranging from dark, atmospheric rooms to bright areas, relaxation spaces, and seating areas that encourage visitors to pause and explore deeper information. A notable feature of the museum is the **inclusion of pictures and descriptions in place of objects that are undergoing repair,** which ensures that visitors are not left without context.

The museum provides guiding arrows on the floor to help navigate through the exhibition, and staff are available for assistance when needed. The **main exhibition begins at the main entrance, making it easy for visitors to start their journey** through the exhibits. However, there are some logistical challenges, such as the need to return to the garden's entrance to access the main exhibition, which can be inconvenient and force visitors to retrace their steps through already visited areas.

The presence of visitors over the age of 50 was almost half of the total visitors at the time of the visit. Many of these older visitors were observed resting on stairs and chairs, while a smaller percentage engaged deeply with the exhibits, reading descriptions one by one. This highlights the need for more comfortable resting areas and engaging content to cater to older visitors who may have different physical and cognitive needs.

Inclusivity remains a crucial aspect of the museum experience. While there are features like eye level exhibitions and accessible resting areas, the overall use of technology to enhance accessibility is limited. **There is only one audio video resource available** for visually impaired visitors, which is insufficient for providing an inclusive experience. Information is critical for understanding the exhibits, and without adequate resources, some visitors may struggle to fully appreciate the artifacts on display.

The use of technology in the museum is generally low, with limited options such as QR codes, speakers, and screens. The lack of variety and advanced technological tools reduces the potential for interactive and engaging experiences, which could otherwise enhance visitors' understanding and enjoyment of the exhibits. Increasing the use of technology, such as interactive screens or more audio-visual aids, could greatly improve the inclusivity and overall visitor experience.

In summary, the MAO museum offers a rich cultural journey through its exhibits, with varied environments and a thoughtful representation of Middle Eastern culture. However, there are clear opportunities for improvement in terms of inclusivity, comfort, and technological engagement. Addressing these issues would help make the museum experience more accessible, engaging, and enjoyable for all visitors, particularly for those over the age of 50 and individuals with special needs.

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Museo dell'Automobile

The Museo Nazionale dell'Automobile (MAUTO) in Turin is a captivating destination for automobile enthusiasts and casual visitors alike. This iconic museum provides **an exploration of the history of the automobile, tracing its evolution from early prototypes to modern innovations.** With an extensive collection of cars, ranging from classic vintage vehicles to cutting-edge concept cars, MAUTO offers an **immersive experience that appeals to diverse audiences,** including families, young adults, and international visitors.

A journey map of the visitor experience at MAUTO was developed to capture the various phases of a visit and offer insights into the different touchpoints and interactions that occur along the way. This journey map emphasizes not only the physical aspects of visiting the museum but also the emotional and sensory elements that shape the experience. **By following visitors through the pre-visit, visit, and post-visit stages,** the map highlights the journey's dynamics and the ways in which technology, inclusivity, and accessibility influence visitor satisfaction.

The journey map for the Museo Nazionale dell'Automobile is organized to reflect the complete visitor experience from the initial consideration of a visit to the reflection afterward. It begins with the pre-visit phase, where visitors decide to visit the museum, plan their trip, and gather essential information. Visitors collect details about opening hours, entrance fees, and accessibility options. Arrival describes how visitors reach the museum

through different transportation options such as metro, taxis, or buses, and covers ticket acquisition and orientation. The core museum visit involves interactions with staff, use of brochures, interaction with exhibits, and navigating between floors. Leaving the museum includes exiting the building and accessing transportation options for returning home. **The post-visit phase involves reflections** and activities like taking photos, purchasing souvenirs, and sharing the experience with others.

Touchpoints include key services that visitors interact with, such as ticket counters, info desks, elevators, and brochures. Key visitor moments encompass activities and challenges like finding accessibility options, accessing guided tours, and interacting with exhibits. The journey map highlights visitor categories, **including young adults and families as the majority of visitors, visitors over 50 with specific needs** related to physical comfort and interaction with exhibits, and special needs visitors, noting inclusive features and accessibility challenges.

The journey map provides a holistic view of the visitor experience at MAUTO, focusing on both positive and negative aspects encountered. Visitors often hear about the museum from friends, family, or online sources and gather details about opening hours, entrance fees, and accessibility options. The availability of accessibility

* All the images were taken by author during the visit to the musuem (2024)

information online makes it easier for visitors with specific needs to plan, but detailed information could be more comprehensive to support diverse needs. **The museum is accessible via few transportation modes,** and visitors can acquire tickets, brochures, or an audio guide upon arrival. Positive aspects include the availability of elevators for accessing all floors, ensuring ease of movement, and clear signage and marked paths that facilitate navigation. However, audio guide segments were noted as being too lengthy, reducing engagement, particularly in later sections of the museum.

The museum experience spans three floors, blending chronological storytelling with sensory experiences that guide visitors through the history of the automobile. Visitors engage with interactive exhibits, 3D models, and multimedia installations. **Positive elements include a variety of experiences, such as physical 3D models of cars that allow visually impaired visitors to interact with the exhibits.** This sensory aspect provides a more inclusive experience. Technological interactions, including QR codes, video screens, background audio, and interactive displays, cater to all ages and enhance the visit. The sensory journey through the museum, marked by strategic lighting, sounds, and interactive exhibits, ensures that the path does not feel overly long. **The presence of elevators, well-marked routes, and seating areas** adds to the comfort and accessibility of the experience.

There are some limitations. **Audio guide segments were informative but too lengthy, leading to decreased usage** as visitors moved further into the museum. The lack of personalization options for visitors with special needs **limited the usefulness of the audio guide** for those who required simplified content. While there were interactive chairs and elements, older visitors often did not engage with these technological features, indicating the need for better tailoring or explanations to appeal to them.

The emotional flow of the visit highlights that **visitors felt entertained and engaged by the diverse experiences.** Technological interactions and a variety of exhibit types maintained interest and made the visit enjoyable despite spanning multiple floors. **Younger visitors and families were particularly engaged** with the interactive elements, while older visitors, though interested in reading placards and examining displays, were less inclined to interact with technology. **Some frustration arose from the audio guide's pacing** not aligning with natural movement through the exhibits, and the absence of specialized content for visitors with special needs impacted inclusivity.

Post-visit reflections **show that visitors shared their experiences on social media,** discussed their visit with friends and family, and kept souvenirs. This indicated that the museum's impact extended beyond the visit itself. Positive aspects include the **availability of unique souvenirs and interactive pamphlets** that encouraged visitors to take memories home. However, the lack of a personalized experience for visitors with specific needs could reduce the overall impression, resulting in less enthusiastic recommendations within these groups.

* All the images were taken by author during the visit to the musuem (2024)

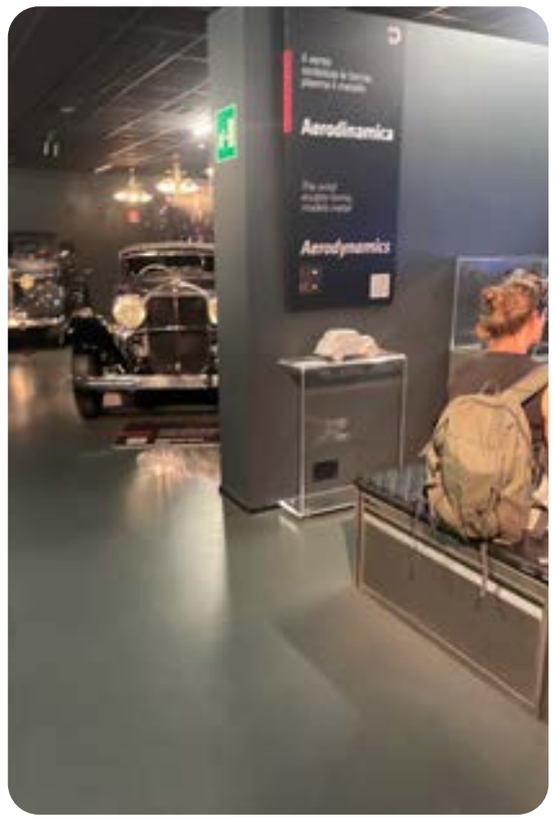
Positive Points:

- The museum offers a diverse and rich experience with its **chronological and sensory storytelling,** which keeps visitors engaged throughout the visit.

- A wide range of **interactive technological** elements, such as QR codes, mini-screens, and 3D models, makes the experience engaging for younger audiences and visually impaired visitors.

- **Clear signage, marked routes,** and elevators enhance accessibility and ease of navigation for all visitors.

- **The variety of sensory experiences,** through audio, lighting, and interactive displays, ensures that the museum journey remains dynamic and interesting.



Negative Points:

- **The audio guide, while informative, features lengthy segments** that do not align well with the pacing of most visitors, leading to disengagement.

- There is **no personalization of the audio guide** for visitors with special needs, which limits the inclusivity of the museum experience.

- **Older visitors showed less engagement with the technological components,** indicating a need for improvements in the design or explanation of these features to appeal to this demographic more effectively.

- While the route was clearly marked, the length of the path combined with the limited **personalization of content reduced the overall experience quality** for visitors requiring additional accommodations.

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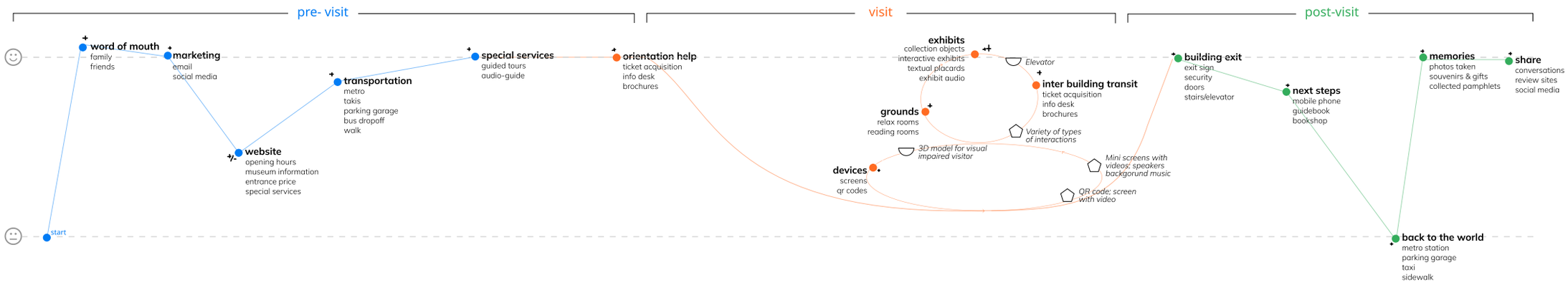
journey map | **MAUTO- Museo Nazionale dell'Automobile**

pictures linked · technology · inclusion · exclusion · perception

touchpoints



visitor key moments

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special needs visitor	• Finding accessibility information online.	• Looking for opening hours • Looking for special tour • Confirm the entrance fees/prices		• Finding inclusive content • Finding accessible entrances inside the building • Not being able to see every exhibition		
+50 visitor	• Finding accessibility information online.		• Reduced entrance with the "Abbonamenti musei"	• Visitors were entertained by the variety of experiences offered. • Elevators were available to access all the floors.		• Tell friends and famility about it

final notes

experience

- *The experience not only followed a chronological order but also created a sensory journey that guided visitors along a path which, despite its length, didn't feel long due to the variety of experiences offered in each area.*
- *The exhibition spanned three floors, and QR codes and an audio guide were available for a self-guided tour.*
- *However, the audio segments were too long compared to the time spent at each exhibit, though still interesting to use.*

+50

- *The number of visitors over 50 was not high, as most were young adults. Along the path, there were many chairs with interactive elements.*
- *The route was always clearly marked with signs and arrows.*
- *Some of the interactive features, though technology-based, were easy to understand and didn't require advanced technological skills.*

inclusivity

- *There were many mini 3D models of the cars, allowing visually impaired visitors to interact with the exhibition and actively participate.*
- *There was no personalization of the audio guide to accommodate special needs.*

technology

- *There were many innovative and fun interactions with technologies adapted for all ages.*
- *The technological interactions were designed to provide a deeper understanding of the information, but they were not mandatory to follow or continue along the path.*

The visitor experience at MAUTO was designed **not only to follow a chronological order of automotive history** but also to create a sensory journey that guided visitors along a path enriched by a variety of interactions. Despite the physical length of the exhibition, the journey did not feel overly long due to the range of experiences offered across three distinct floors. **QR codes and an audio guide allowed for a self-paced exploration,** though the length of the audio segments often exceeded the time visitors spent at each exhibit, limiting engagement for some.

The museum's approach to inclusivity was commendable in several ways. **The route was well-marked with clear signs and arrows,** making navigation straightforward for all visitors. There were also many chairs featuring **interactive elements, and mini 3D models of cars,** which allowed visually impaired visitors to interact more fully with the exhibition. However, the lack of personalization in the audio guide to meet the needs of special needs visitors revealed a gap in fully accessible engagement.

Visitors over the age of 50 were notably less present compared to younger adults. Those who did attend often opted for a more observational role, sitting in provided seating areas and focusing on reading placards or viewing exhibits rather than interacting with the technological features. While the technological components were designed to be easy to understand, **the older demographic did not seem drawn to these types of interactions,** indicating a potential need for more inclusive or user friendly features that specifically cater to their preferences.

The museum's use of technology was a significant aspect of the visitor journey. Many of the interactions, such as video screens, interactive characters, and other multimedia elements, were designed to provide a deeper understanding of the information presented, while still ensuring that engagement with these tools was optional rather than required. **This approach allowed visitors to customize their experience** based on their personal preferences and comfort levels with technology, thereby supporting a more inclusive visitor experience overall.

In conclusion, the journey map of MAUTO demonstrates the museum's strengths in providing a diverse and engaging visitor experience through a combination of chronological storytelling and sensory interactions. **While younger visitors appeared to benefit the most from the interactive technological elements,** older visitors and those with special needs could be better served by enhancements in accessibility and personalization. By addressing these areas for improvement, MAUTO has the potential to further enrich its visitor journey, ensuring that every guest can fully engage with and appreciate the extensive history of automotive innovation on display.

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DATA ANALYSIS

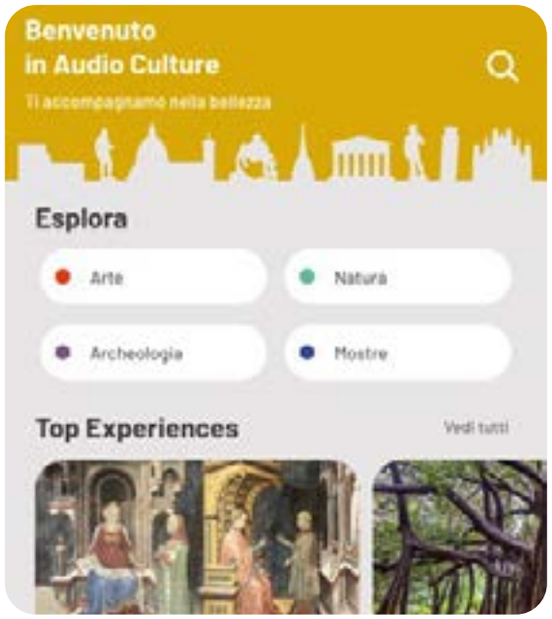
The data analysis examines a range of museum experience apps to assess their approaches to accessibility, customization, and interactivity, particularly for elderly visitors and individuals with impairments. Through a close look at features such as real-time location tracking, adaptive navigation, personalized routes, and multimedia accessibility, the analysis uncovers both strengths and areas for improvement across different platforms. This assessment underscores the potential for technology to make cultural experiences more inclusive experiences for elders, unlocking economic opportunities across multiple sectors.

4.1
TECHNOLOGICAL POV, MUSEUM EXPERIENCE APPS

As cultural institutions embrace technology, museums are increasingly utilizing mobile applications to enhance visitor engagement. These apps offer a variety of features, including **personalized content, interactive maps, and multimedia options**. The apps analyzed, as shown in the provided image, represent different approaches that museums use to improve the visitor experience. Each app has its own strengths and areas for improvement, particularly in terms of accessibility, customization, and interactivity. This analysis evaluates the **design of each app, highlighting successes and areas where enhancements could be made,** with a special focus on inclusivity for senior visitors and those with impairments.

Audio Culture

The "Audio Culture" app provides an immersive ùaudio-guided experience for museum visitors, structuring its content by offering a **specific progression of exhibits.** A notable strength of the app is its **support for various audio formats,** enhancing the visitor's engagement with the exhibits. However, despite its robust auditory content, the app lacks visual support for individuals who are deaf or hard of hearing. **The addition of written explanations alongside the audio** could significantly broaden the app's accessibility. Moreover, the app would benefit from incorporating real-time location tracking to help visitors navigate large museum spaces more efficiently.

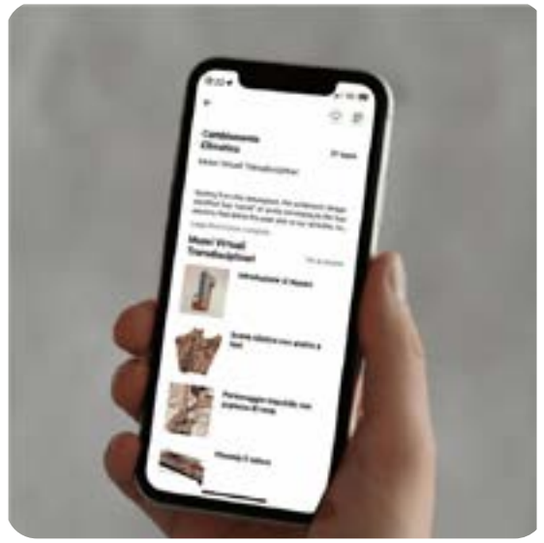


My House of Memories

"My House of Memories" offers a personalized, memory-based approach to museum visits, tailoring content to **visitors' personal histories and preferences.** This app is particularly engaging for older audiences due to its focus on emotional connections with the exhibits. One of its standout features is the option for users to **follow thematic routes through the museum based on their interests.** Another positive feature is the audio feedback that accompanies each action within the app, providing vocal explanations to guide the user through each interaction. However, the app **does not account for users with mobility issues** who may require more frequent **rest breaks or slower pacing.**

I-Muse

"I-Muse" delivers a visually focused experience that allows users to explore museum floors and exhibition rooms in detail. The app includes a favorites section, allowing users to save items of interest. It also offers the option to **add museum memberships,** enabling users to see whether their membership provides reduced or free entry to the museum. Enhancing the app with personalized accessibility options, such as **larger fonts or contrast adjustments for those with visual impairments,** would be a significant improvement. **Additionally, voice-based navigation** could provide an alternative to text-based maps for users who prefer auditory guidance.

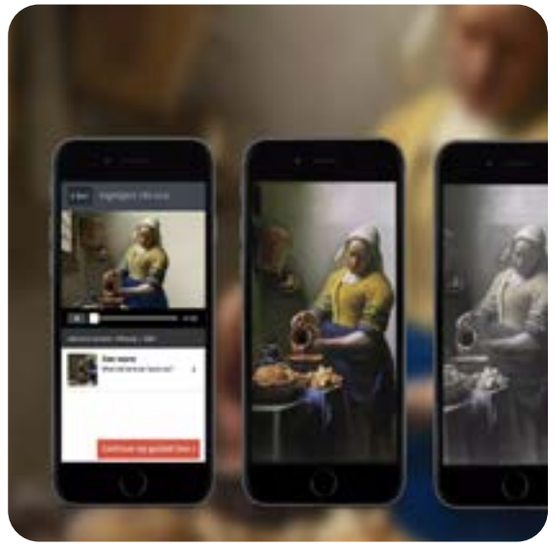


Teppaku Museum App

The Teppaku Museum app is notable for its personalized content, offering both written and audio explanations of the exhibits. It allows users to **explore exhibits categorized by collection,** but like many other museum apps, it **lacks real-time user tracking.** This limitation makes it difficult for users to gauge their exact location within the museum. The app also assumes that all users will follow a predetermined route without considering visitors who may require more time or need periodic breaks. Enhancing inclusivity by adding features for visitors with hearing impairments, such as **multimedia content** in different formats, would significantly improve the user experience.

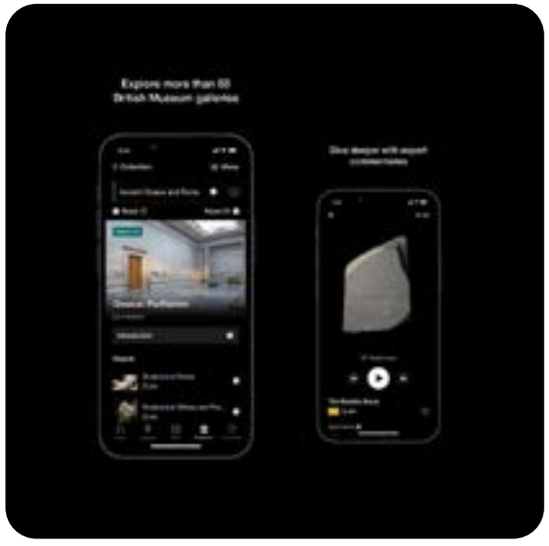
Rijksmuseum App

The Rijksmuseum app excels in providing detailed descriptions of exhibits, supplemented by audio guides and filters that allow users to explore specific exhibit categories. While these features enhance user engagement, t**he app does not offer real-time user tracking,** which would help visitors navigate the museum more efficiently. Furthermore, the app could improve its **accessibility options for senior visitors or those with physical disabilities** by offering routes that avoid stairs or include more frequent rest areas.



The British Museum App

The British Museum app offers a comprehensive digital exploration of the museum's collections, with **detailed descriptions and interactive maps.** One of the app's strengths is its virtual exploration feature, allowing visitors to **plan their visit before arriving at the museum.** However, the app lacks a personalized route feature, which could offer tailored experiences based on a **visitor's interests or time constraints.** The app would also benefit from greater inclusivity features, **such as screen reader compatibility and audio descriptions** for users with visual or hearing impairments.



MRT (Musei Reali Torino) App

The MRT app includes an interactive map that **guides visitors** through multiple museums within the Musei Reali complex. While the app is effective in linking users' memberships to participating museums, **it lacks real-time location tracking,** which would greatly enhance the navigation experience. Additional improvements could include **larger text options** for visually impaired users and audio descriptions for exhibits. **Integrating personalized route suggestions based on user preferences,** such as their walking pace or time constraints, would make the app more user friendly and inclusive.

Connects App

The “Connects” app serves as a unified platform that connects multiple museums, offering users access to a range of content across different institutions. While the app includes interactive features and maps, it could be improved by **offering more personalization based on the visitor’s preferences.** Furthermore, the app lacks support for users with sensory impairments. **Adding functionality for sign language videos or enabling screen readers** would make the app accessible to a broader audience and enhance the overall experience.

Deutsches Museum (Dt. Museum) App

The “Deutsches Museum” app provides a structured, self-guided tour experience, with audio explanations to accompany the exhibits. While the app offers auditory content, it lacks real time location tracking and personalized navigation features, which can be a disadvantage in larger museums. Additionally, while the audio features are inclusive, the app could be **enhanced by offering text to speech features** for those with hearing impairments. Adjusting the narration speed and offering alternative route suggestions based on accessibility needs would further improve the app’s usability for a wider audience.

Features	Audio culture	My house of memores	I-Muse	Teppaku Museum App	British Museum App	Rijksmuseum App	MRT	Connects App	Deutsche Musuem App
Audio guides	✓	✓	✗	✓	✓	✓	✓	✓	✓
Written explanations for audio	✓	✗	✗	✓	✓	✗	✓	✗	✗
Real time location tracking	✗	✗	✗	✗	✗	✗	✗	✗	✗
Personlized routes	✓	✗	✓	✗	✗	✗	✗	✗	✗
Favorites section	✗	✓	✓	✓	✓	✓	✓	✓	✓
Adaptable navigation time	✗	✗	✗	✗	✗	✗	✗	✗	✗
Accessibility features (visual)	✗	✓	✓	✗	✗	✗	✓	✗	✗
Accessibility features (hearing)	✗	✗	✗	✗	✗	✗	✗	✗	✗
Voice command interaction	✗	✗	✗	✗	✗	✗	✗	✗	✗
Screen reader compatibility	✗	✓	✗	✗	✗	✗	✓	✗	✗
Physical accessibility options	✗	✗	✗	✗	✗	✗	✓	✗	✗
Interactive map	✗	✗	✗	✗	✗	✗	✗	✓	✗
Customizable text sizes	✗	✗	✗	✗	✗	✓	✓	✗	✗
Virtual exploration/ planning	✓	✓	✓	✗	✓	✗	✓	✗	✗

Fig 50 - Musuem apps features comparison matrix. By Author 2024

4.2
ECONOMIC POV

In recent years, a demographic shift has highlighted **the growing importance of the silver economy,** an economic model focused on the needs and contributions of older adults. Italy, like much of Europe, faces an increasingly aging population. According to recent studies, **citizens over the age of 65 are projected to make up over 23% of the Italian population by 2030** (Rome Business School, 2023). This demographic change is influencing sectors as diverse as healthcare, housing, and culture, making it imperative for institutions to adapt and innovate to meet the evolving needs of this segment.

In 1998, B. Joseph Pine II and James H. Gilmore introduced the concept of the **"experience economy," which they described as a shift from providing products or services to creating memorable experiences** (Pine & Gilmore, 1998). They argued that businesses must now orchestrate environments that engage customers on a deeper level, turning each interaction into an experience that remains with them long after it ends.

This notion, initially relevant to sectors like retail and hospitality, is increasingly applicable to cultural institutions. Museums, which once simply housed collections, now find themselves in direct competition with experiential brands, prompting a re-evaluation of how they engage and serve their visitors, especially older adults who value accessibility, inclusivity, and tailored experiences.

Silver Economy: Opportunity for Innovation

Italy's silver economy represents a significant and growing segment of its national economy, with an annual impact of **€43.4 billion and a projected contribution to the GDP of up to 30%** (Rome Business School, 2023). Older adults in Italy contribute substantially to economic activity through their spending on healthcare, housing, transportation, and cultural activities. **This group is increasingly seeking experiences that support their health and autonomy.** However, despite their economic influence, their specific needs are often overlooked in traditional business models.

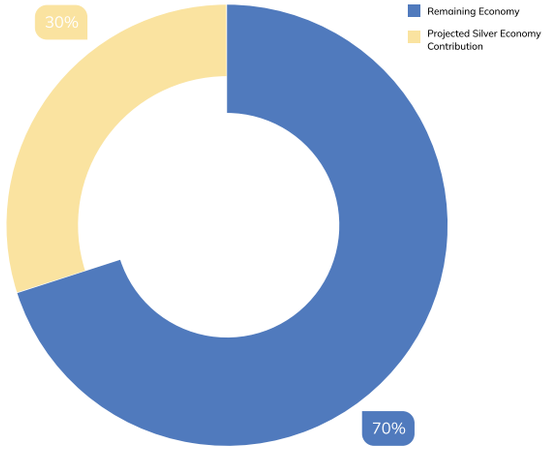


Fig 51 - Impact and projected contribution for 2030 of the Silver Economy in Italian's economy. (Rome Business School, 2023)

Investing in innovative solutions designed to support older adults within cultural spaces, such as museums, presents an opportunity **to enhance both visitor satisfaction and economic performance.** By adapting exhibits, spaces, and services to be more accessible and enjoyable for older adults, museums can increase attendance, foster loyalty, and contribute to a more inclusive society. This investment aligns with the principles of the silver economy, which **emphasizes economic growth through inclusivity and tailored services for older adults.**

The concept of the experience economy, as articulated by Pine and Gilmore (1998), **holds that consumers now prioritize memorable experiences over basic transactions.** For museums, this means that simply presenting information is no longer sufficient. Instead, they must craft immersive, engaging, and accessible experiences that resonate on a personal level. In the context of the silver economy, this involves designing museum experiences that are **responsive to the physical, cognitive, and sensory needs of older adults.**

Pine and Gilmore illustrated how even everyday services, like buying a cup of coffee, have been transformed into experiences that engage consumers on multiple sensory levels, from personalized interactions to carefully curated atmospheres. Museums must adapt similarly, recognizing that visitors, **including older adults, expect more than passive observation.** They desire experiences that feel tailored and meaningful experiences that can be facilitated through innovation in accessibility features, such as interactive exhibits, audio guides, and real time navigation aids.

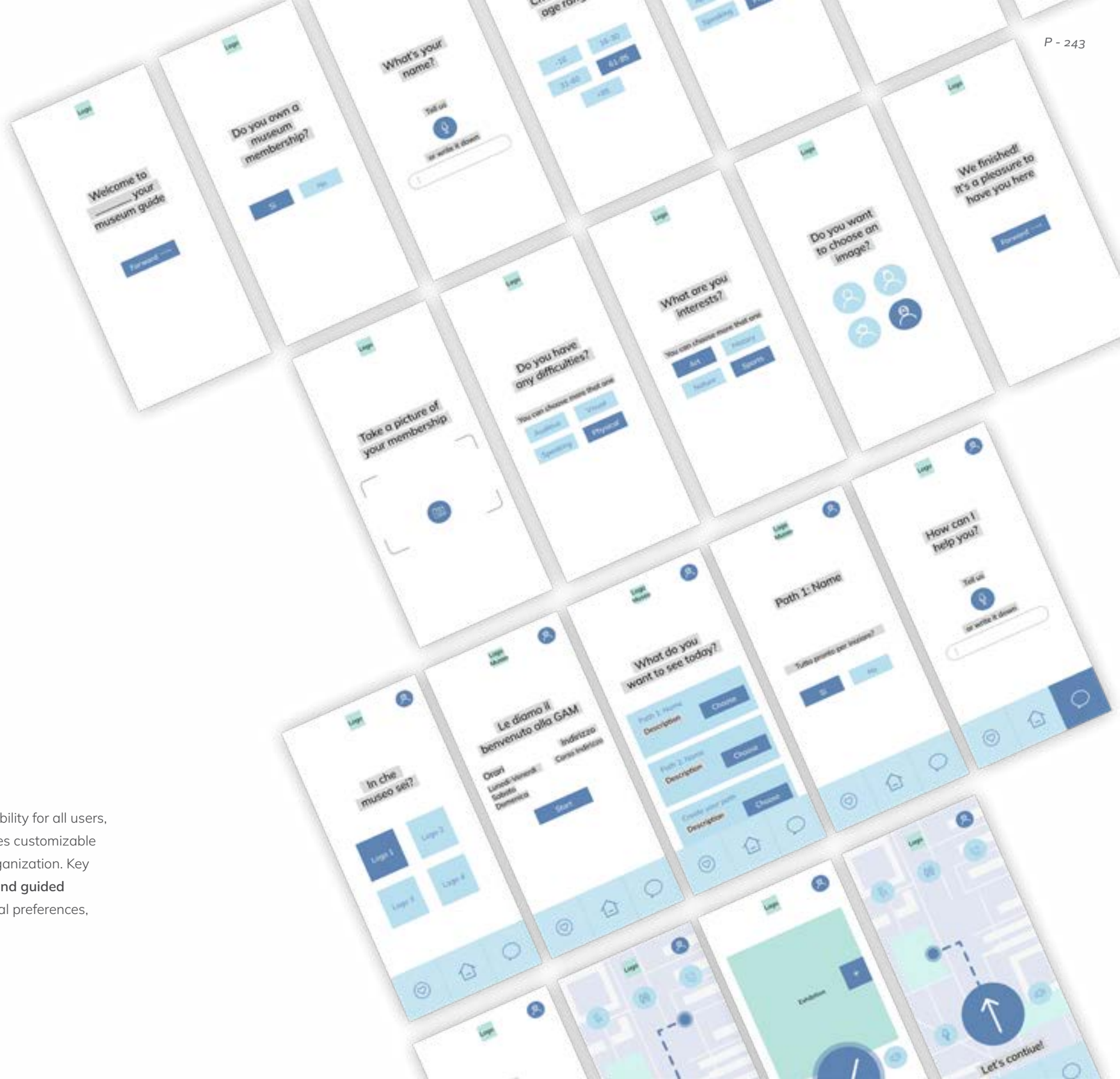
Stella

LA TUA GUIDA NEI MUSEI

5

STELLA, AN INCLUSIVE MUSEUM GUIDE FOR ELDERS

Stella is an innovative museum guide application designed to cater to all visitors but focuses specifically on enhancing the museum experience for elders. With the guiding principles of universal design and an understanding of emotional connections in museum experiences, **Stella integrates practical, user-friendly, and empathetic functionalities** to address physical and cognitive needs. This chapter will explore how Stella's development reflects these principles, its core functionalities and its alignment with emotional design levels.

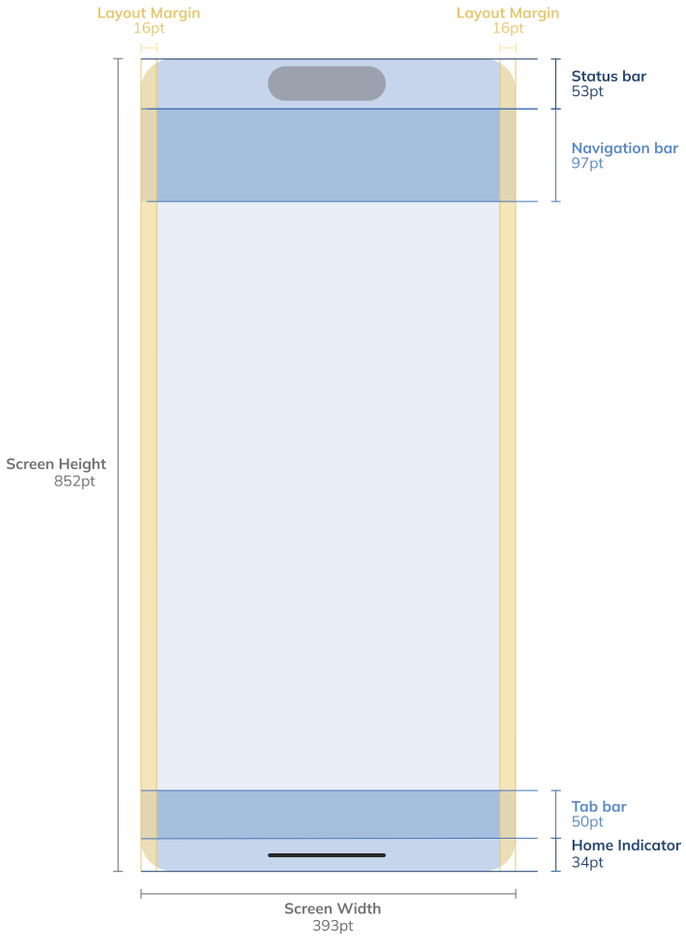


UX ATRIBUTES

Stella is designed to prioritize inclusivity, ensuring accessibility for all users, particularly older adults. Its user-centered approach includes customizable text sizes, clear navigation paths, and thoughtful layout organization. Key features such as **volume adjustments, interest selection, and guided navigation** offer a seamless experience tailored to individual preferences, enhancing usability.

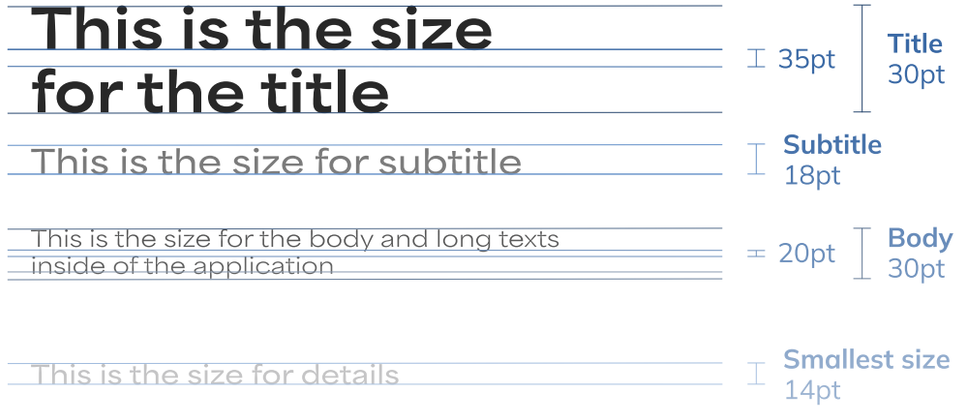
Grid Layout and Spacing

The grid layout was designed **by analyzing frequent user touchpoints on the screen,** ensuring that interactive elements are placed in optimal positions. Adequate spacing between components guarantees proper alignment and reduces accidental touches (W3C, 2023; Apple Inc., 2023).



Typography

Large, sans-serif fonts (18 pt or 14 pt bold) improve readability. Users can adjust text size to suit their needs, ensuring the app remains accessible for various levels of visual acuity (Nielsen Norman Group, 2023; Google, 2023).



Coherence

Consistent button placement and clear labels help seniors navigate easily. Predictable layouts and minimal animations reduce cognitive load, allowing users to focus on their tasks (Government Digital Service, 2023).

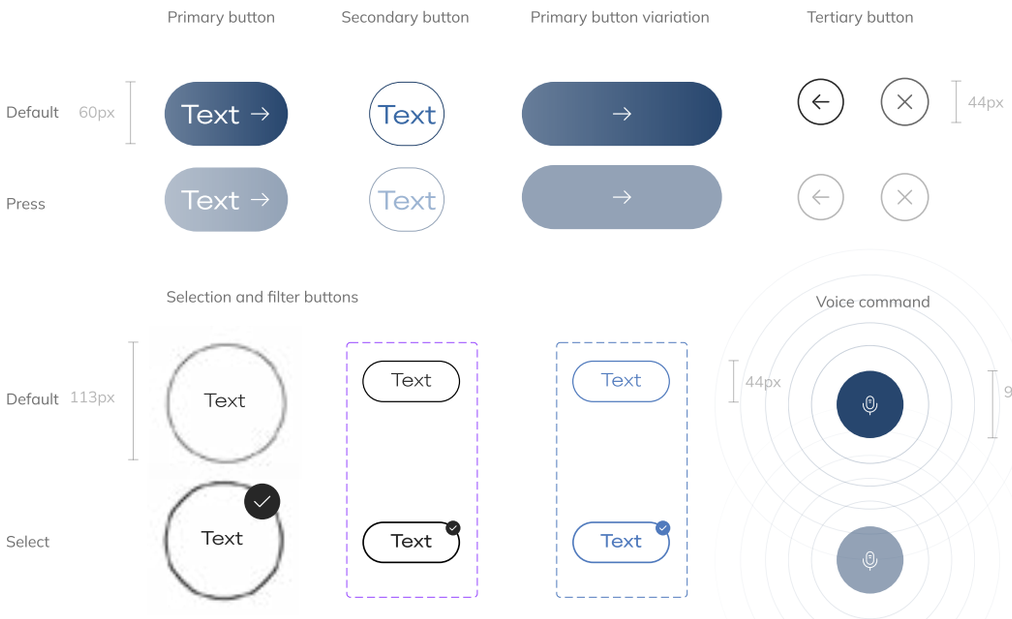
Accesibility

Maps include text based directions, descriptive headings, and title attributes. High contrast designs support color deficient vision, while tactile or verbal alternatives (Google Maps, 2023).

UI COMPONENTS

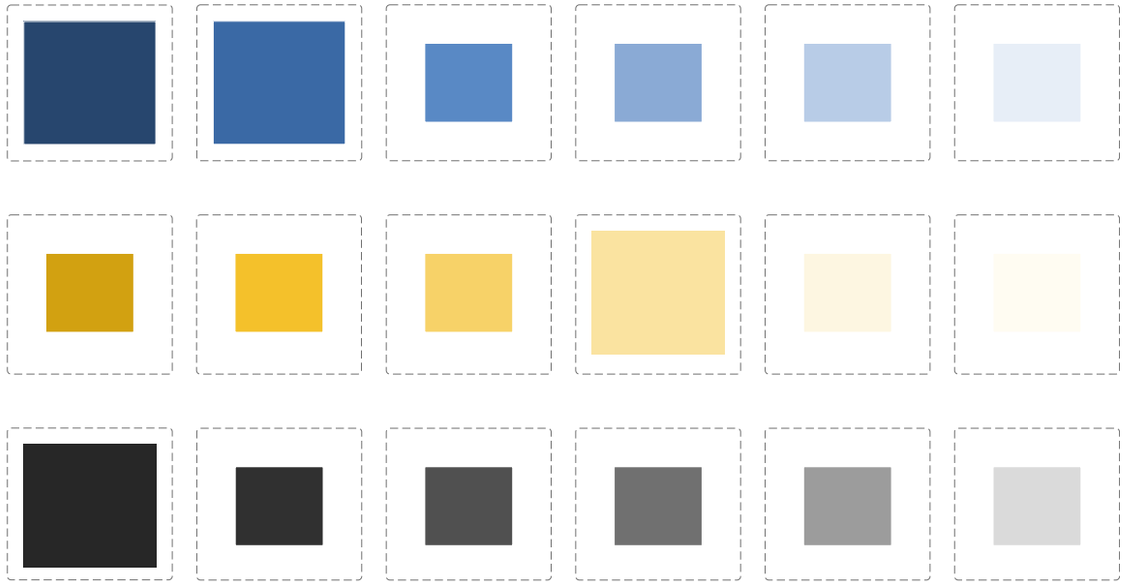
Buttons and Cta

Interactive components like buttons are centrally placed, with a minimum size of **44x44 pixels to accommodate motor impairments** and ensure usability (W3C, 2023; Apple Inc., 2023).



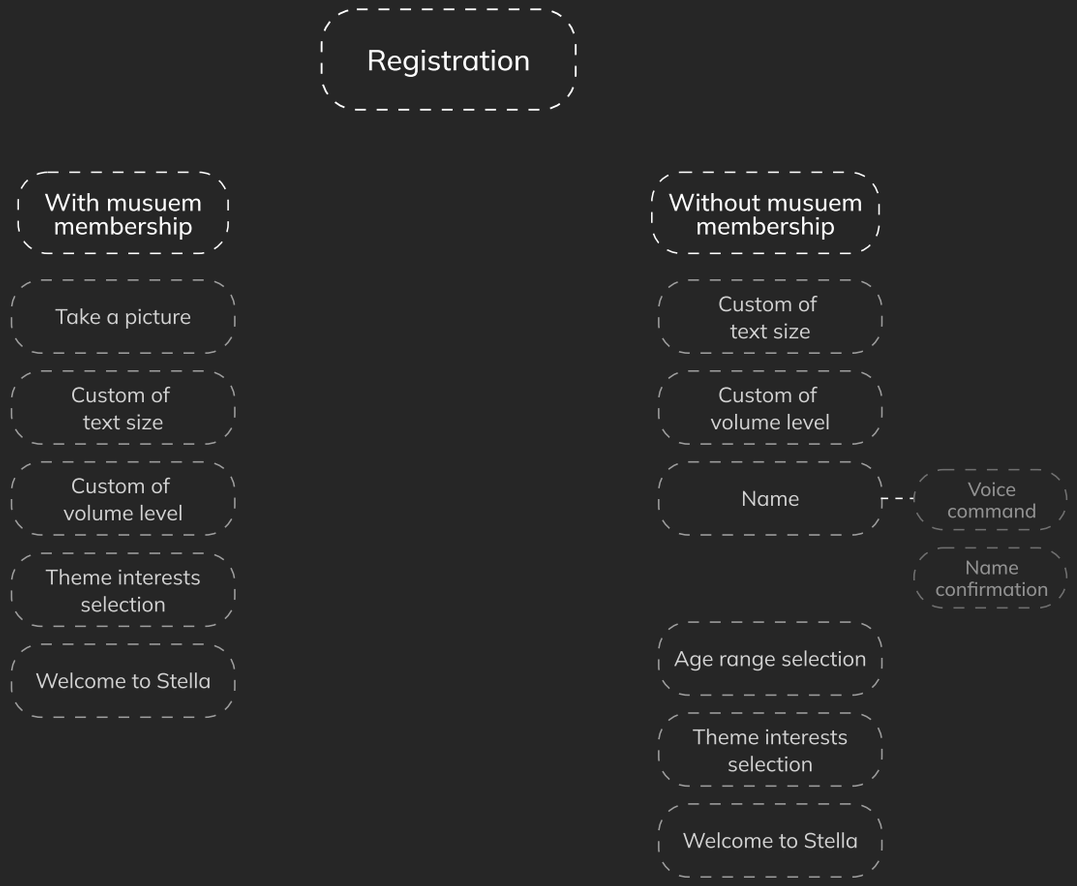
Contrast and Visibility

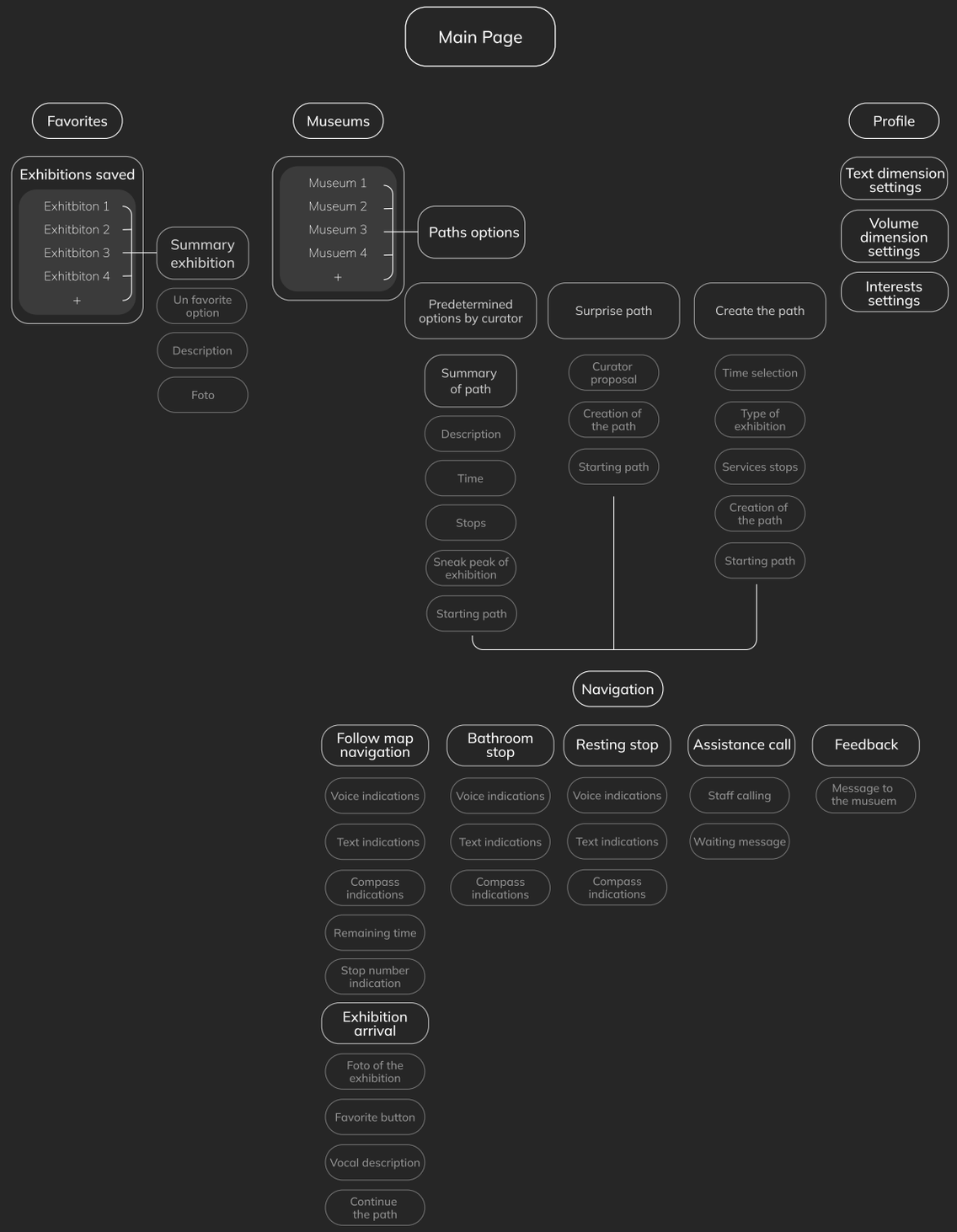
High-contrast colors and adaptive color modes improve visibility, especially in low light. The app adheres to WCAG 2.1 guidelines with **contrast ratios of 4.5:1 for text and 3:1 for large text,** reducing strain for visually impaired users (W3C, 2023).

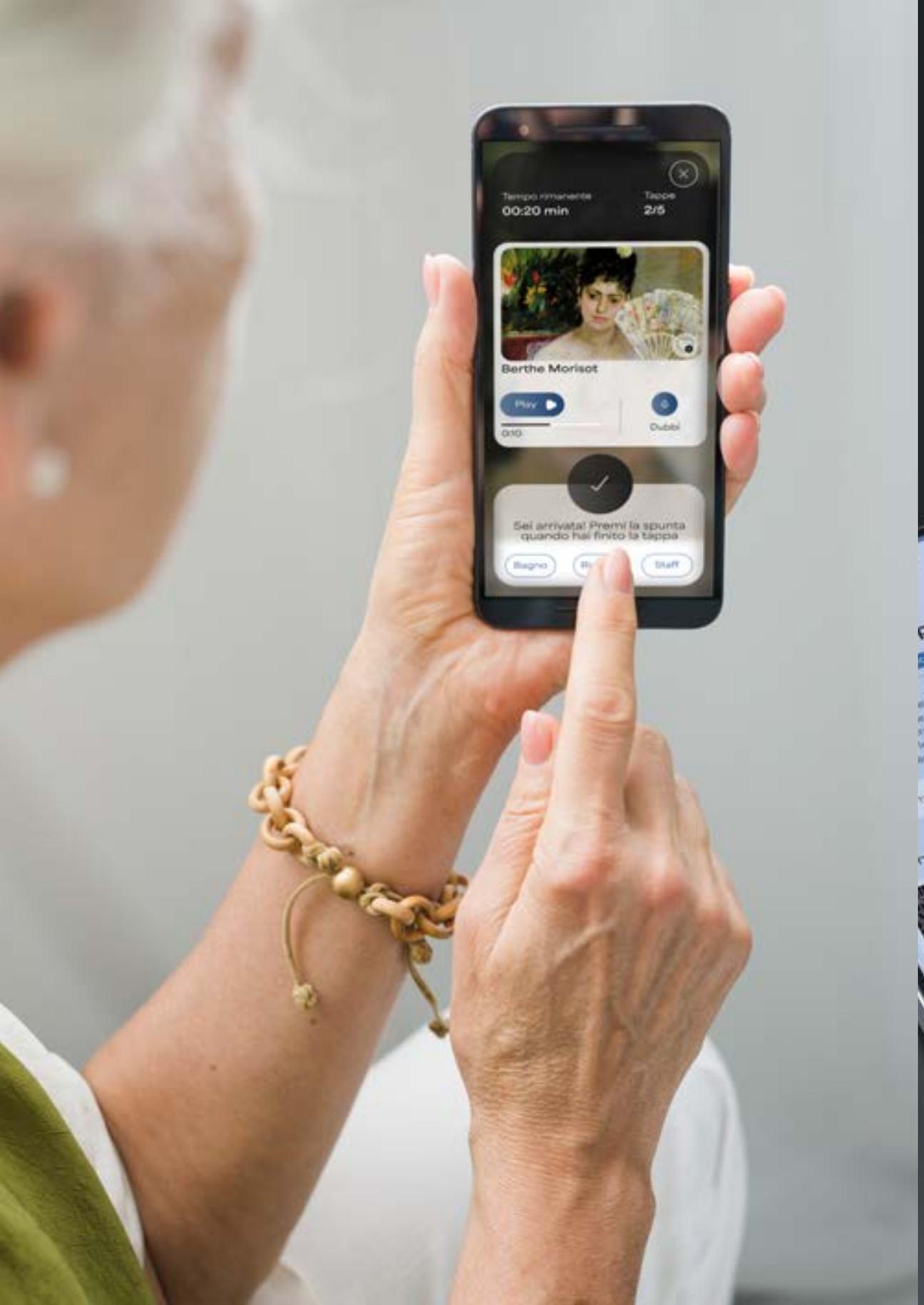


Site map

The site map presents the layout, starting with registration and leading to personalized navigation options.



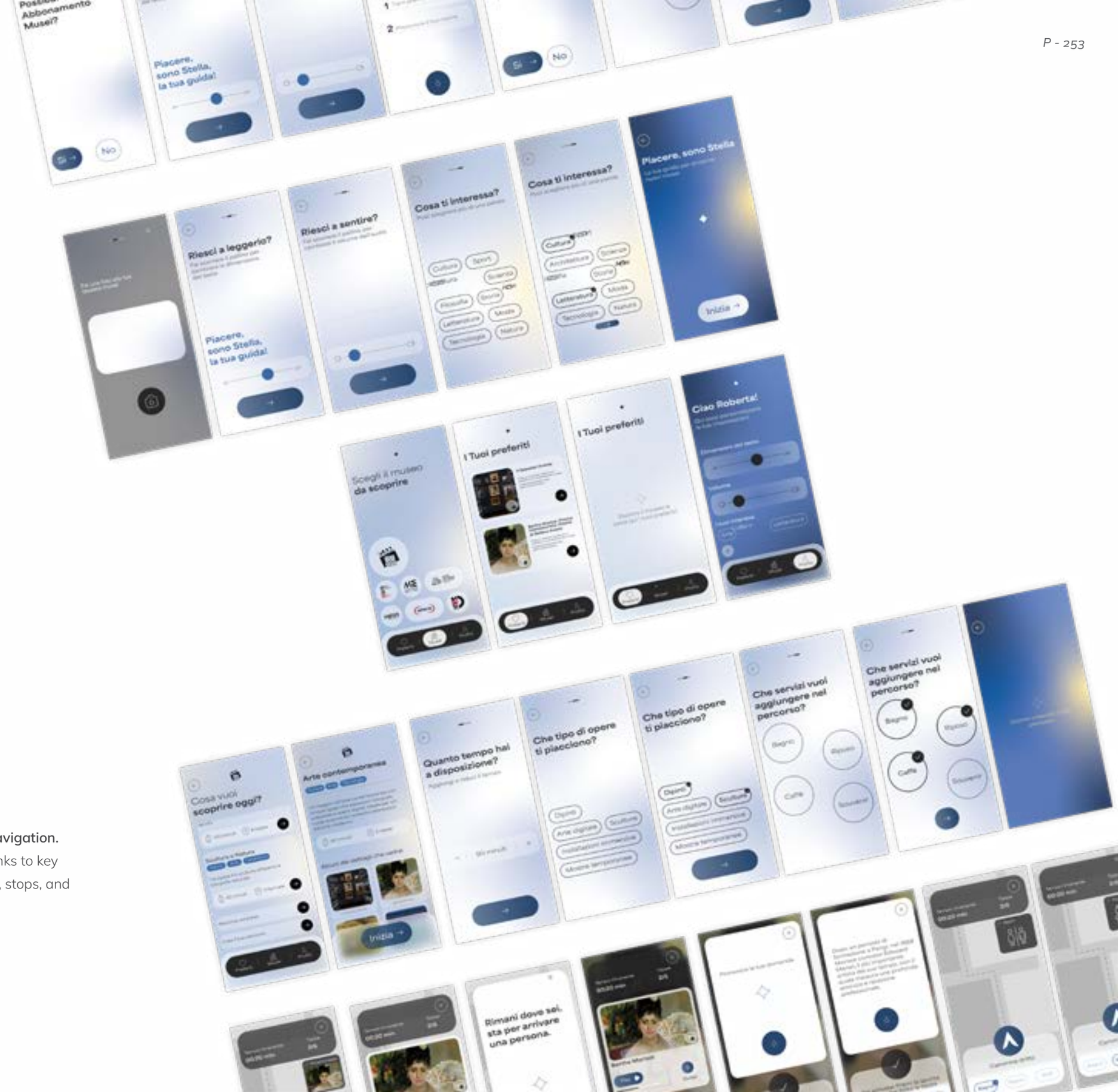



Tempo rimanente
00:20 min
Tappe
2/5
Berthe Morisot
Play
0:10
Dubbi
Sei arrivata! Premi la spunta quando hai finito la tappa
Bagno
Staff


Tempo rimanente
00:20 min
Tappe
2/5
Berthe Morisot
Play
Dubbi
Sei arrivata! Premi la spunta quando hai finito la tappa
Bagno
Riposo
Cammina dritto
Staff
5 tappe
Inizia

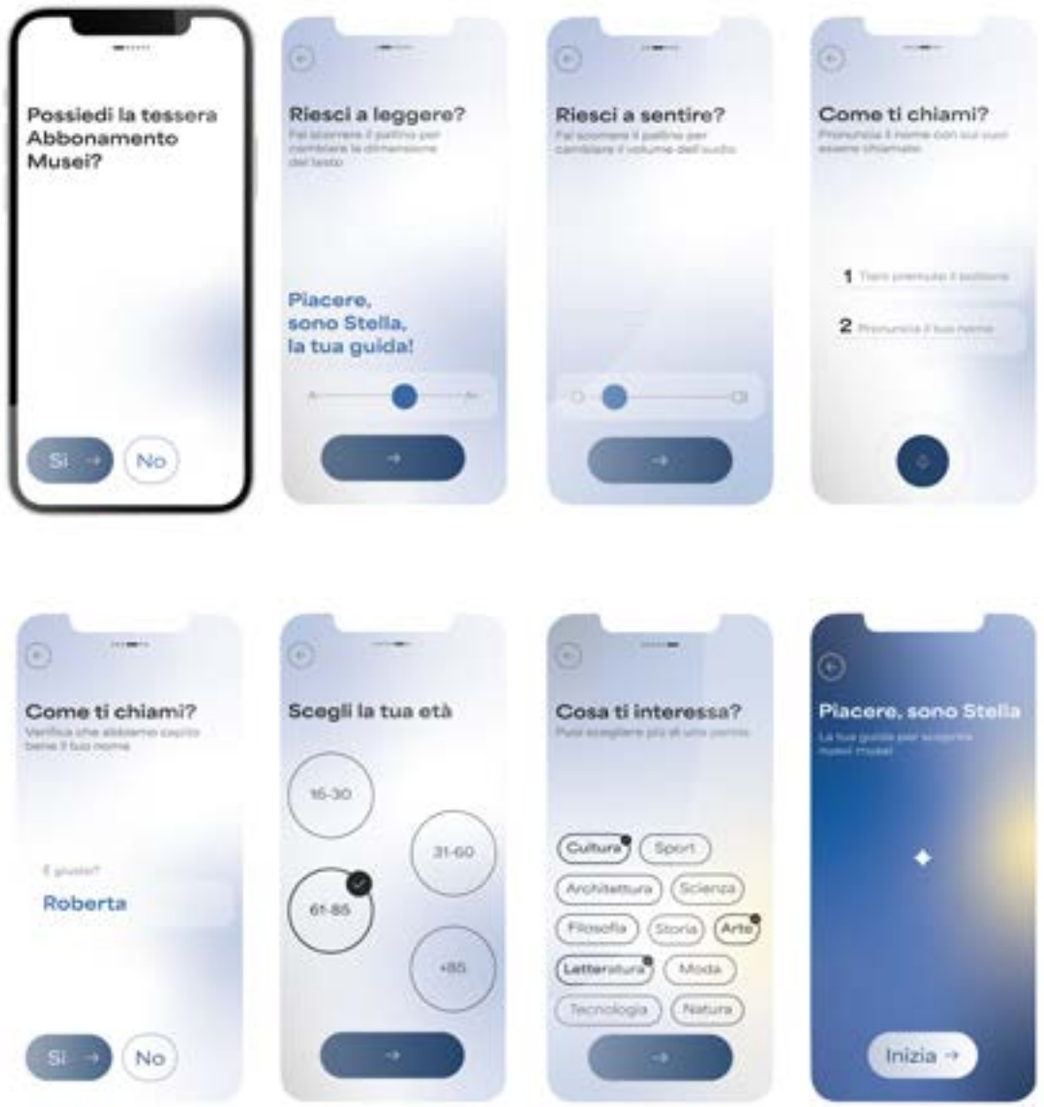
INTERFACE FLOW

The app's interface flow **connects registration, home, and navigation.** Registration customizes user preferences, the home screen links to key features, and navigation offers real time guidance with maps, stops, and assistance



Registration

Users can adjust text size, audio preferences, and select areas of interest, ensuring a personalized experience.



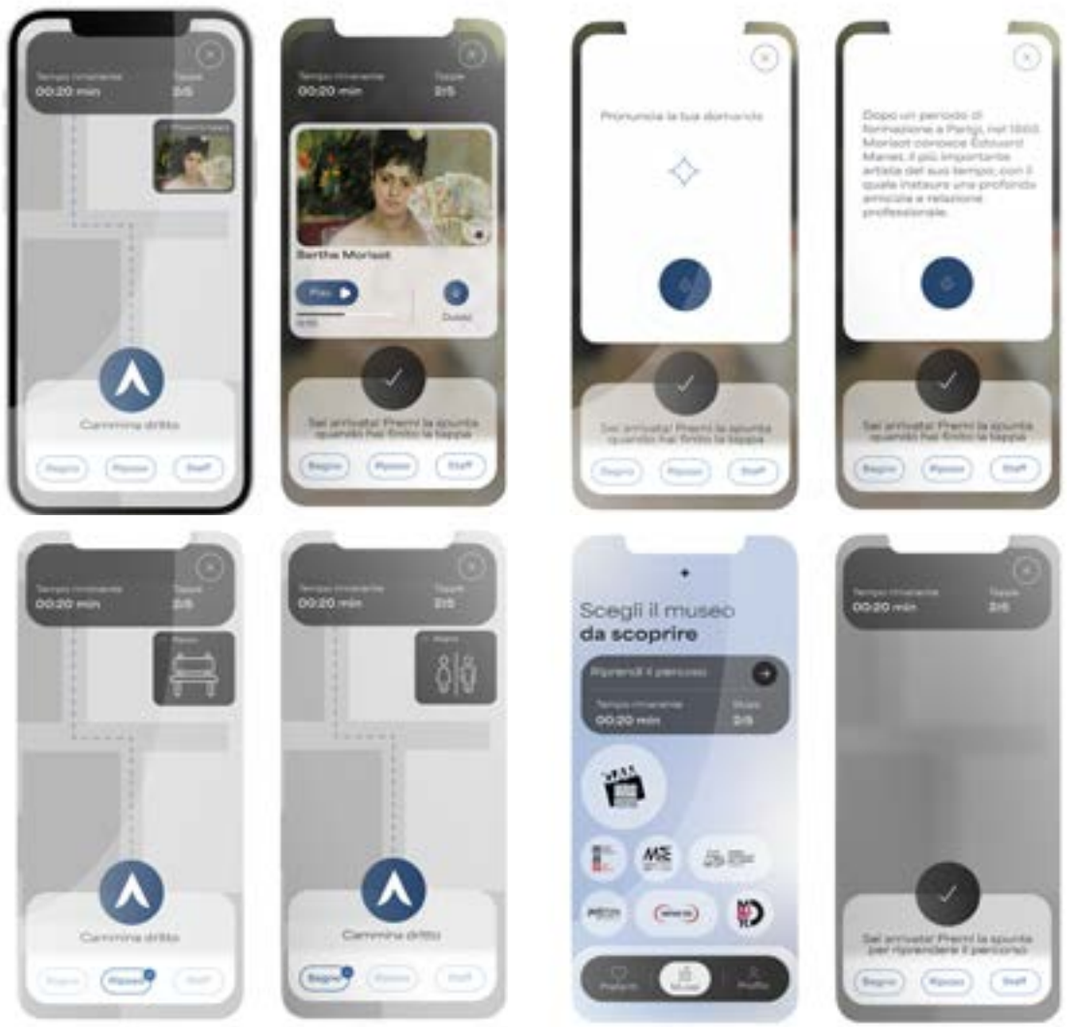
Home

These pages showcase the **personalized home experience of the app,** allowing users to select museums, explore saved favorites, and customize settings such as text size and interests.

Through an intuitive interface, **users can plan their visit by choosing themes, time availability, and additional services** like resting points or cafés, ensuring a tailored and seamless journey through the museum.

Navigation

These pages illustrate the **navigation experience, guiding users through their museum visit** with step by step directions, interactive maps, and accessible prompts.



Features include **resting point suggestions, detailed artwork descriptions, and assistance options,** ensuring an engaging and tailored journey. Additionally, a feedback interaction was added at the end of the path, in order to give the space for visitors to leave a message to the musuem in case they want to.


Scegli la tua età
16-30
31-60
61-85
+85


Cosa ti interessa?
Puoi scegliere più di una parola
Cultura
Sport
Scienza
Architettura
Storia
Moda
Natura
Filosofia
Letteratura
Tecnologia

5.1 *From Concept to Reality*

FACTIBILITY AND VIABILITY

5.1.2
EMOTIONAL EXPERIENCE

The development of Stella was deeply influenced by the **concept of universal design,** which is defined as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Mace, Ron, 1988-National Institute on Disability and Rehabilitation Research). Stella adheres to the seven principles of universal design:

1. Equitable Use

Stella's interface is designed to be accessible and beneficial for users of all ages and abilities, **ensuring that elders can navigate it with ease.**

2. Flexibility in Use

The app allows for different methods of interaction, accommodating users who **prefer touch, voice commands, or simplified visual cues.**

3. Simple and Intuitive Use

Stella prioritizes clear and straightforward navigation, **minimizing cognitive load, making it intuitive** even for those unfamiliar with digital tools.

4. Perceptible Information

Stella's design incorporates **clear visual contrast, large fonts, and audio guides** to ensure information is perceivable by users with varying visual and auditory abilities.

5. Tolerance of Error

The app includes features such as **"undo" "go back" functions and confirmation prompts** to reduce the impact of accidental inputs.

6. Low Physical Effort

Navigating the app requires **minimal gestures and taps,** reducing physical strain and allowing prolonged use without discomfort.

7. Size and Space for Approach and Use

The app's layout is adaptable, allowing for personalized text sizing and spacing, ensuring comfortable use on both tablets and smartphones.

According to Walhimer (2021), "a successful museum visit involves the establishment of an **emotional connection that leads to a sense of belonging and a feeling of security"** (p. 49). Stella was developed with this principle at its core, aiming to create an emotionally engaging experience for older users. The design incorporates three levels of emotional connection as discussed by Walhimer, **visceral, behavioral, and reflective design** (pp. 49-50).

Visceral Design

Visceral design pertains to initial impressions and appearance, focusing on the intuitive and immediate response of users. Stella's interface features **high contrast colors, large icons, and familiar symbols to evoke trust.** This level of design was tested by observing elders' reactions upon their first interaction.

Behavioral Design

Behavioral design emphasizes product performance and use, centering on how users interact with and experience the app. Stella incorporates:

- **Clear Navigation:** The app's simple menus and step by step guides lead users through various features, from locating exhibitions and rest areas to personalized routes.
- **Adaptive Assistance:** Stella leverages artificial intelligence to tailor the experience based on the user's needs
- **Inclusive Accessibility:** Stella's features can be customized to the user's cognitive and physical requirements.

Behavioral Design

Reflective design concerns the deeper emotional relationship users develop with a product over time. Walhimer (2021) notes that **"self-identity as it relates to the product** is an important component of reflective design" (p. 50). Stella's features foster this long-term connection by:

- **Personalized Journeys:** Users can save their favorite exhibitions and create a personalized experience that evokes memories.
- **Assisted Pathways:** Stella allows users to choose routes based on their interests and needs, including 'Assisted Pathways,' enhancing their sense of control and autonomy.
- **Symbol recognition:** Stella uses symbols and mechanisms that mirror familiar real-life features, such as a guiding compass, a newspaper style article list.

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* The development of Stella was informed by the research and experiences gathered during the user-centric design process. Collaborations with seniors aged 65 to 85 from the University of the Third Age in Turin, Cultura dietro L'Angolo and Essere Anziani from Casa nel Parco (Casa del Quartiere di Mirafiori) provided valuable feedback and insights.

5.1.3
TECNOLOGICAL IMPLEMENTATIONS

Stella integrates **Bluetooth Low Energy (BLE) beacons** to track location and smartphone sensors to predict movement speed and route completion time. These technologies ensure that elders can confidently move through museum spaces, **knowing that they are guided by accurate, real time navigation.** The app is accessible via a QR code, simplifying the process of access and engagement.

BLE Beacons

BLE beacons emit signals **detectable by smartphones, allowing real time location tracking** based on signal strength (Nextome, n.d.). This enables precise indoor positioning, **filling the gap where GPS falls short**.

Beacons should be placed every **5-10 meters for high accuracy (1-2 meters) and 10-15 meters for moderate accuracy (3-5 meters).** This ensures overlapping coverage and consistent signal detection.

BLE beacons were selected for their proven effectiveness in indoor environments where GPS is unreliable. **The technology enables real time wayfinding, guiding users to exhibits and services by triangulating their position using multiple beacons.** Similar successful implementations, like those by Nextome, highlight BLE beacons' reliability in museums and public spaces (Nextome, n.d.).

App Information

QR codes

QR codes are 2D barcodes that, when scanned by a smartphone camera, redirect users to specific URLs or content (Smith, 2022). **Chosen for their simplicity** and widespread recognition, **QR codes provide an easy and cost effective way for older users to access digital content.** They can be placed strategically throughout the museum to facilitate access to detailed information and multimedia.

NFC Tags

NFC tags are passive chips that communicate with smartphones when in close proximity, triggering specific actions such as **opening a webpage or providing exhibit details** (NFC Forum, 2023). **NFC tags are intuitive and require minimal user effort,** making them ideal for older visitors. The contactless nature of NFC technology offers a seamless interaction, enhancing user engagement.

Phone Core Sensors

Magnetometer (Compass)

The magnetometer measures the Earth's magnetic field **to determine the device's orientation relative to the north.** This ensures users can maintain accurate navigation and direction. The magnetometer **provides continuous orientation feedback,** crucial for guiding users within the museum and enhancing their wayfinding experience (TechSource, 2023).

Gyroscope

The gyroscope measures the phone's angular velocity across the X, Y, and Z axes, **tracking how fast and in which direction the device is rotating** (Brown, 2021). The gyroscope's sensitivity to rotation complements the magnetometer by capturing the phone's movements in real time, ensuring smoother and responsive navigation.

Accelerometer

The accelerometer detects linear acceleration along the X, Y, and Z axes and measures the **phone's movement in a straight line.** It also helps determine orientation relative to gravity (Johns, 2022). The accelerometer plays a key role in understanding the phone's position (e.g., whether tilted or flat). Its integration with the gyroscope and magnetometer through sensor fusion ensures precise, real time orientation.

Sensor Fusion

Sensor fusion algorithms (calibrated by Kalman filter) integrate data from the magnetometer, gyroscope, and accelerometer to produce accurate readings. This corrects the limitations of each sensor, addressing gyroscopic drift and enhancing magnetometer reliability. **The gyroscope may track rotation, but its drift is corrected using the magnetometer's stable directional data, while the accelerometer confirms tilt and movement** (TechSource, 2023).

Function map

This document outlines the **various features and components** included in the “Stella” system, such as **real time notifications, proactive alerts, velocity detection and advanced accessibility options** like tactile and audio information. It also illustrates how **AI-driven personalized routes and thematic selections** are integrated to cater to user preferences and needs *(Figure 52).*

Leyend

Main functions

Sub/functions

Technology

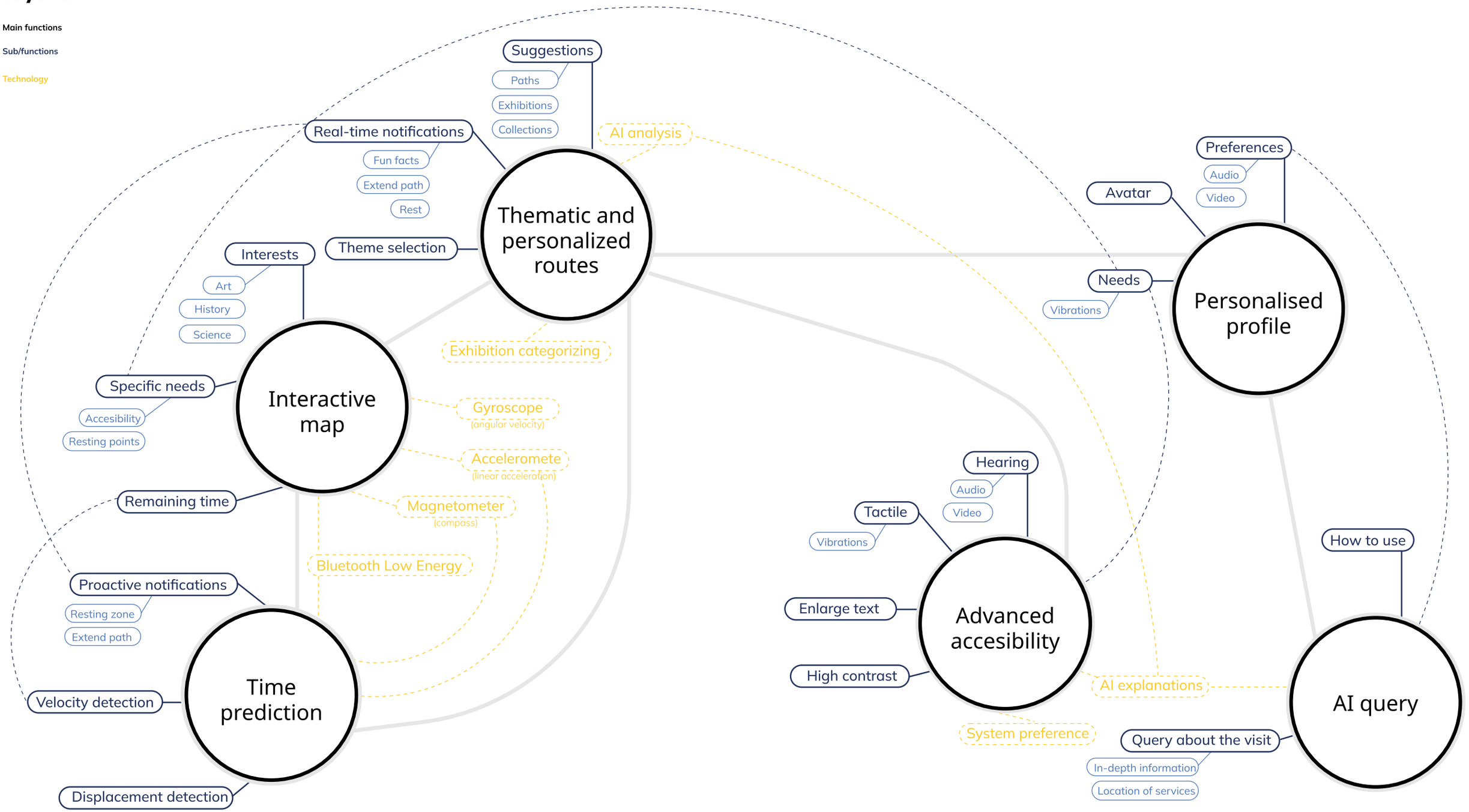


Fig 52 - Function Map of the app. By Author 2024.

Map artifact and technology

This document maps the **artifact interactions within the system,** highlighting the **technological flow and relationships between components.** It shows how **the trio of sensors** (magnetometer, gyroscope, accelerometer) integrates with **BLE beacons to provide accurate positioning.** Additionally, it details how **NFC tags and QR codes contribute to user interaction** by enabling localized access to content, while **AI assistance supports personalization** through voice recognition and tailored notifications *(Figure 53).*

Leyend

Artefacts

Technology

Fig 53 - Map of artifact and technology of the app.
By Author 2024.

VALIDATION AND TESTING

5.2.1
A/B TESTING WITH CULTURA DIETRO L'ANGOLO GROUP IN TURIN

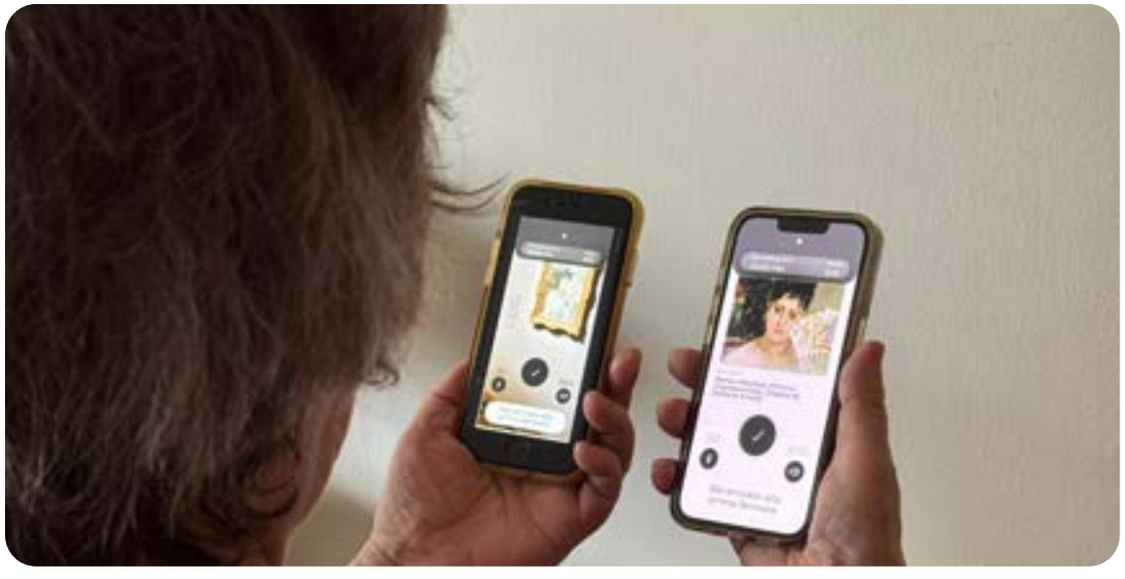
To ensure that Stella was optimized for ease of use among elder museum visitors, an **A/B testing process was conducted with over 65 elders.** This testing aimed to evaluate different screen designs and interface options within the app, **measuring which configurations were more intuitive and user friendly for elder participants.** This chapter outlines the methodology, results, and key findings from the A/B testing.

0. Metodology

The A/B testing **involved participants aged 65 and older from Cultura Dietro l'Angolo,** a community known for its engagement in cultural activities and museum visits. The testing was structured in the f ollowing phases:

1. Participant Selection

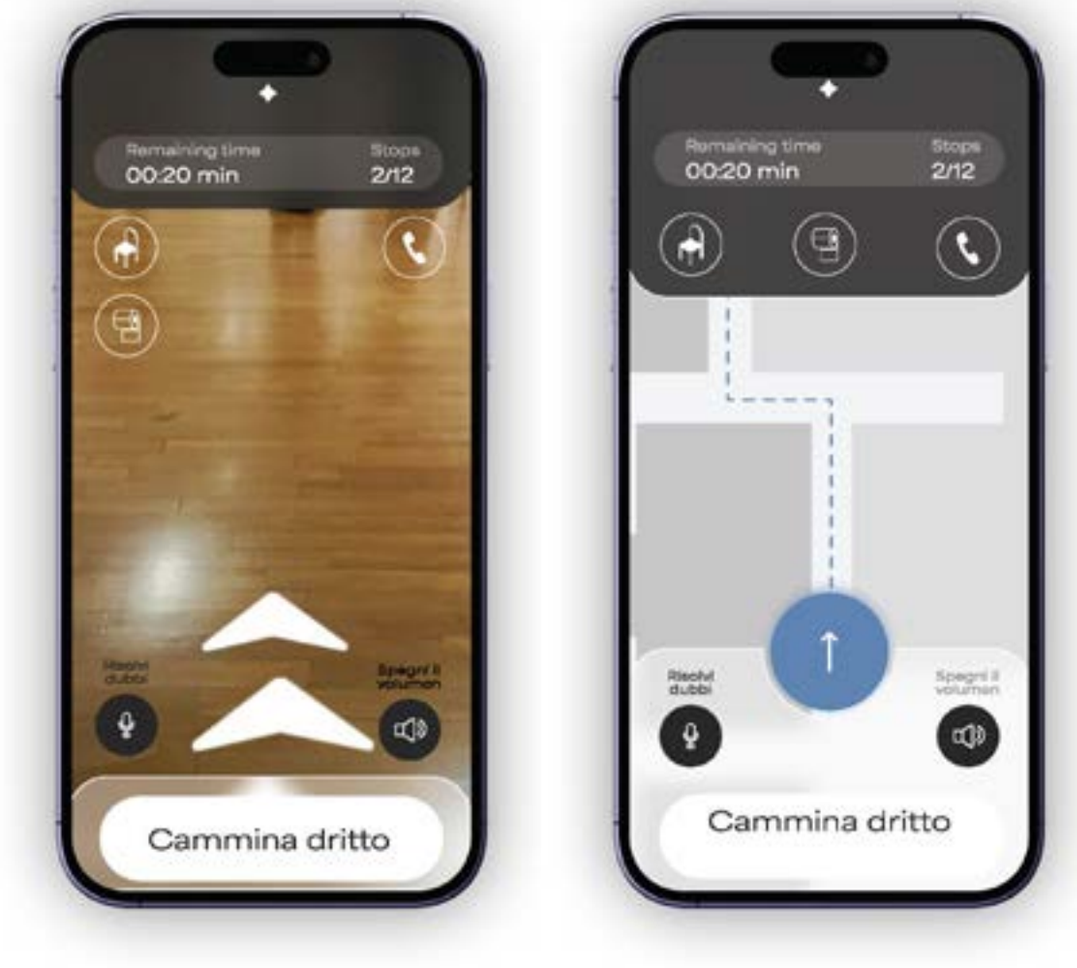
A diverse group of **5 elders, varying in technological proficiency, were selected to participate.** This ensured a representative sample that included both tech-savvy users and those with minimal digital experience.



2. Screen Prototypes

Two versions of three screens within the Stella app were designed for comparison:

Navigation



Version A: Features a navigation system simulating an augmented reality (AR) view of the museum, allowing the user to see the path in real time.

Version B: Includes a 2D map of the architectural layout of the GAM museum, displaying a compass to indicate the direction the user needs to follow.

Home

Version A: Includes rounded square buttons that list all available museums in the app, displaying only the name of each museum.

Version B: Features circular buttons with each museum's logo, with the button for the museum nearest to the phone's position appearing larger.

Overall gerarchy and dimensions:

Version A: Smaller text size

Version B: Larger text size

3. Evaluation Process

5 Participants were given time to **interact with both versions** and were observed for signs of hesitation, confusion, or seamless interaction. Additionally, **they were encouraged to vocalize their thoughts while using the screens,** providing immediate feedback on their preferences and any difficulties.

4. Data Collection

Observational data were collected by **recording task completion times, error rates, and areas where participants required assistance.** Feedback was also collected through post testing questionnaires, where participants rated their experience on a scale from 1 to 5, with 1 being very difficult to use and 5 being very intuitive.

Navigation

- **Version A** resulted confusing for them because they thought it was an interface for taking pictures and not navigations
- Participants made fewer errors when using Version B, **with an error rate of 8% versus 15% for Version A.**
- They expressed verbally that with Version A they were scared of bumping into people and walls, because it forced them to continuously see the phone. Meanwhile, with the **Version B, they felt found familiarity with the compass elements**

Home

- They appreciated the Version B, that indicated the musuem where they were so they **didn't have to look for the museum in each button as proposed Version A**

Overall gerarchy and dimensions

- Participants overwhelmingly preferred screens with larger icons and less text, citing ease of recognition and reduced cognitive load. **"The larger buttons and simpler text made it easier** to find what I needed without feeling overwhelmed," reflecting a common sentiment among the group.
- Many participants **found the additional visual elements in Version B distracting,** preferring the cleaner design of Version A.

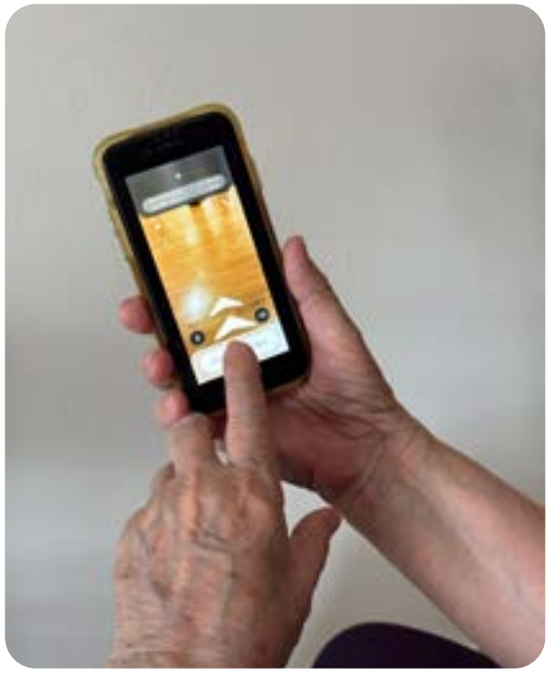
Key Insights

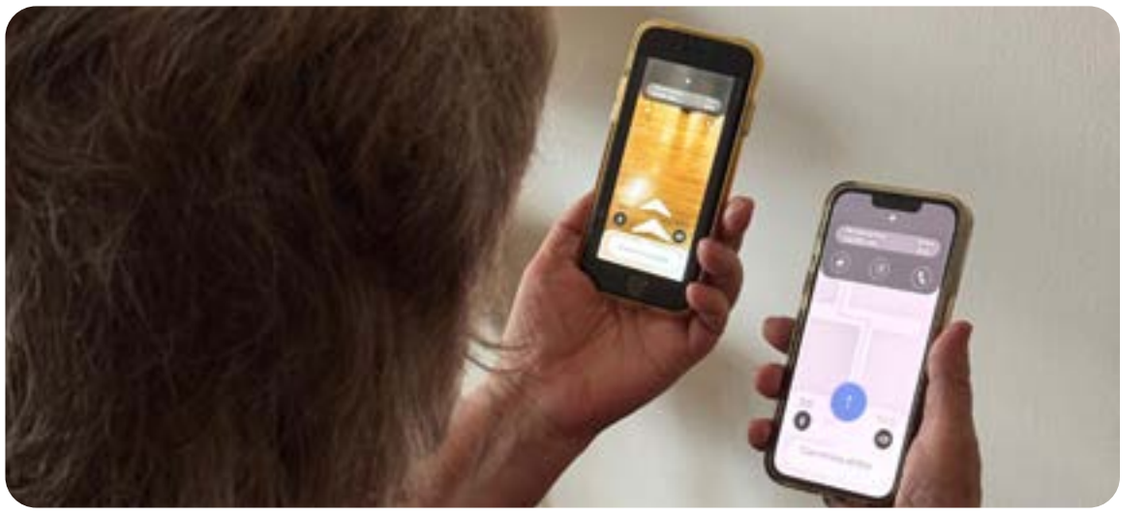
The A/B testing demonstrated that for elder users, **simplicity in design** greatly enhances usability. The following insights were drawn from the testing:

Emphasis on Clarity: Interfaces should avoid unnecessary complexity and prioritize clear, large, and recognizable icons.

Reduced Cognitive Load: Limiting the amount of on-screen information at one time helps users focus and navigate more confidently.

Recognition elements: Providing recognisable features for icons and display adjustments is essential for creating a comfortable user experience.





5.2.2
ACCESIBILITY TESTING

To assess the app's accessibility, questions aligned with **best practices were used to guide evaluations.** These questions helped identify how users interact with the app and if the design supports various needs (Reich et al., 2010; Diamond, Horn, & Uttal, 2016).

Reach	
Are users physically able to reach the interactive elements?	✓
Can they wheel under or orient themselves to use the interface?	✓
Are touchscreen areas accessible, including the topmost touch zones? (Reich et al., 2010).	✓
Navigation	
Is it easy for participants to orient themselves & navigate the digital interface?	✓
Can they find and interact with different activities seamlessly?	✓
Use	
Are all parts of the interactive within physical reach and easy to manipulate?	✓
Information	
Is the information easy for participants to comprehend?	✓
Comfort	
Do participants find the activity comfortable and visually appealing?	✓
Independence	
Can participants use the app independently, choosing their preferred features?	✓

Ensuring the app met the physical interaction needs of users was crucial, particularly for older participants and those with motor challenges (Jones, n.d.). **The evaluation focused on dexterity, assessing if the buttons required fine motor control,** determining whether buttons were close enough to press without difficulty but not so close as to trigger incorrect actions. Pacing, allowing users to process information at their own speed, with the option to skip forward or return to previous sections.

Language and Tactile Features

To support users who may not be able to read the text, the app was designed to include clear icons and visual cues, ensuring effective navigation (Jones, n.d.). **Tactile accessibility was also a focus**; the app was tested to verify that essential features could still be used even if the visual interface was not visible. The app's mapping features addressed common accessibility challenges (W3C, 2023).

Text-Based Directions: The app provided text-based directions alongside visual maps, ensuring that users could navigate with or without visual references.

Alt Attributes: Descriptive alt tags were included for static map images, and embedded maps featured title attributes for screen reader accessibility.

Color and Contrast: Maps used contrasting colors that met accessibility standards, ensuring usability for users with color-deficient vision.

3D/Tactile Maps: A tactile version of the map was considered for users with visual impairments, promoting greater inclusivity.

Visual and Auditory Accessibility

The visual clarity of the app was assessed by checking the readability of its interface from a distance and ensuring sufficient contrast between text and background. The color contrast was tested using **Adobe Accessible Colors** to ensure compliance with recommended contrast ratios (W3C, 2023).

Additionally, auditory feedback was incorporated into the app to aid users with visual impairments, pairing sound effects with visual feedback. **All video content was captioned** to enhance accessibility for hearing-impaired visitors.

5.2.3
VISIT GAM

The GAM (Galleria d'Arte Moderna) visit was conducted in collaboration with the cultural group Dietro l'Angolo from the Biblioteca Civica. The purpose of this visit was to **validate the app's functionality, assess its usability and gather feedback** to improve the system's design and features for elderly museum visitors.

During the visit, the app was presented to the group and its **core functionalities were explained.** Participants were guided through the museum while using the app to **navigate exhibitions, locate important facilities** and access additional information. Feedback was collected in real time to capture their impressions of the app's usability and relevance to their needs.

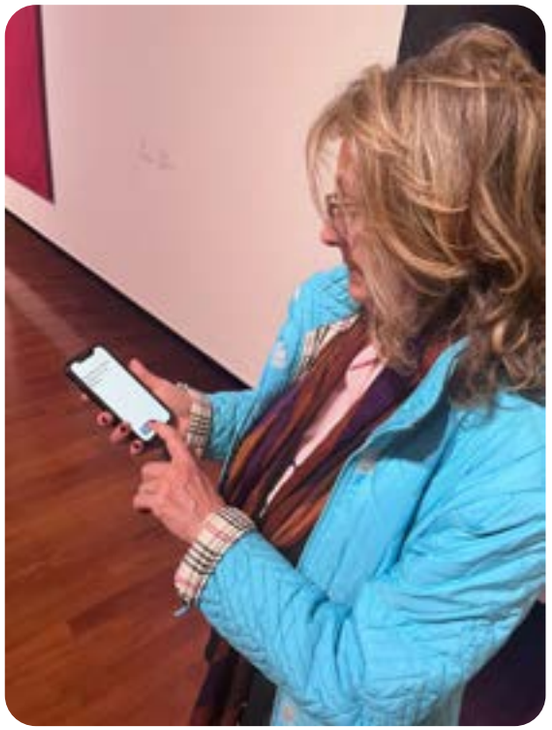
Feedback

Text Accessibility

The dimensions of the text displayed on the app were considered appropriate. Participants appreciated that the **text was easily readable without straining their eyesight,** which is a common concern for older users.

Navigation Features

The navigation system, which adapts to the user's position within the museum, was praised for its practicality. Participants found it **effortless to understand and follow the directions.**



Auditory Descriptions

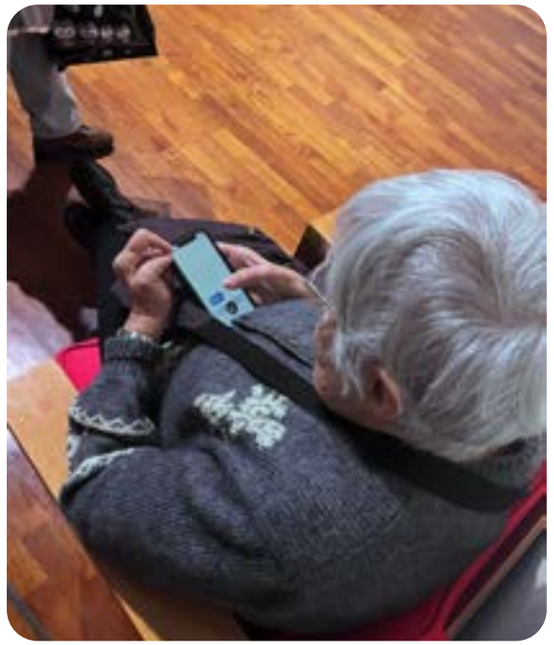
The feature allowing users to **listen to brief descriptions of the artworks was highly valued.** Participants mentioned that the concise nature of the audio explanations was convenient, and they appreciated the option to access more detailed information through the chat function. This flexibility allowed them to engage with the **content according to their personal interests** without feeling constrained by lengthy explanations, as often occurs with traditional museum guides.

Relevance

Participants highlighted the importance of this type of solution for addressing common challenges faced by elderly museum visitors. Specific concerns they raised included:

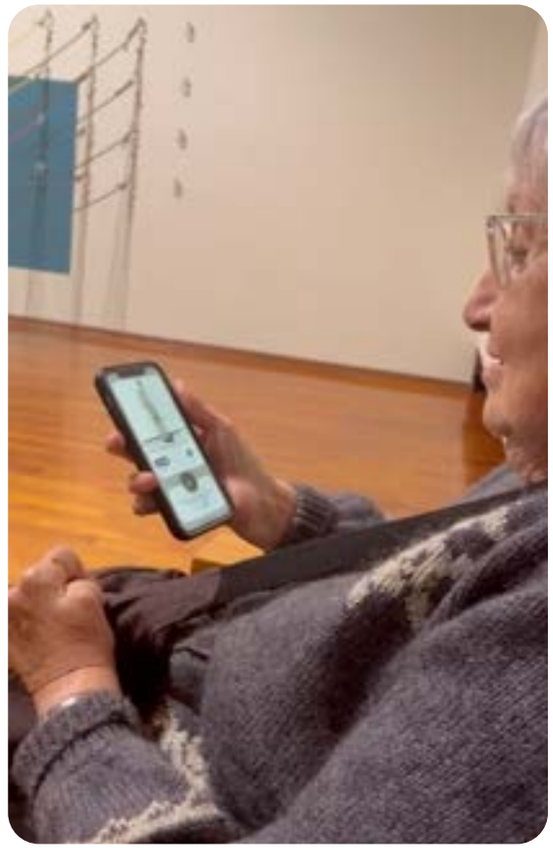
- **The lack of sufficient seating throughout the museum,** which made it difficult for them to rest during their visit.

- **The difficulty in locating facilities such as bathrooms and elevators,** which are often far apart or poorly indicated.



Feedback Integration

Participants expressed a strong interest in having a space within the app to **provide feedback to the museum after their visit.** Many participants mentioned that they would like to request more seating throughout the museum, as well as improvements to the accessibility of certain areas, such as bathrooms and elevators.



5.2.4
TECHNOLOGY VALIDATION

A feasibility test was conducted to evaluate the technical capabilities of **Bluetooth Low Energy (BLE)** beacons for indoor localization in museum environments. The main objective was to **determine whether the proposed system could accurately estimate distances and positions** using **Received Signal Strength Indicator (RSSI) data.**

The experiment used four **Minew E5 BLE beacons,** known for their compact size of 50 mm x 20 mm and stable signal transmission of 120 m ("Minew," n.d.). These beacons were installed in a **16 m² room in a square configuration at a height of 2 meters,** ensuring equal spacing between them. *Figure 54* illustrates the placement of the beacons.

Calibration of the beacons was performed using the proprietary "BeaconSETPlus" application, which allowed adjustments to transmission parameters and measurement of RSSI values at specific distances. The system employed the following distance calculation model:

$$d_i = d_0 \cdot 10^{\frac{P_0 - RSSI_i}{10n}}$$

d_i = *Estimated distance from the beacon*

d_0 = *Reference distance (of 1 meter)*

P_0 = *Signal strength at the reference distance*

$RSSI_i$ = *Signal strength received from beacon i*

n = *Environmental attenuation factor (from 2 to 4)*

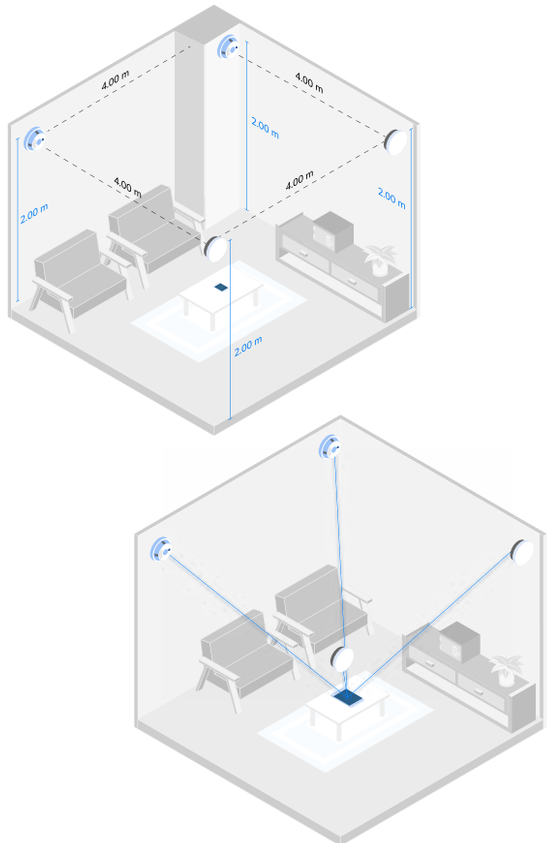


Fig 54 - Beacons positioning and triangulation for testing in a room of 16m². By Author, 2024.

Experimental Procedure

1. Beacon Calibration:

Each beacon was calibrated using the "BeaconSETPlus" app to measure RSSI at predefined distances. This calibration established a reference signal strength P_0, **ensuring uniformity and consistency among the beacons.**

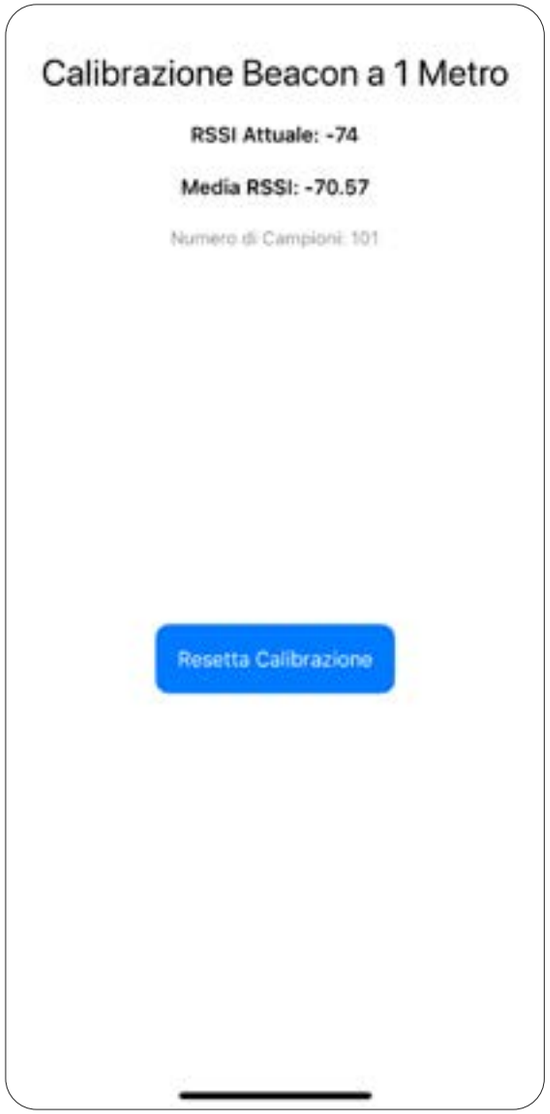


Fig 55 - Swift coded app in Xcode to calibrate each beacon to 1 meter distance. By Author, 2024.

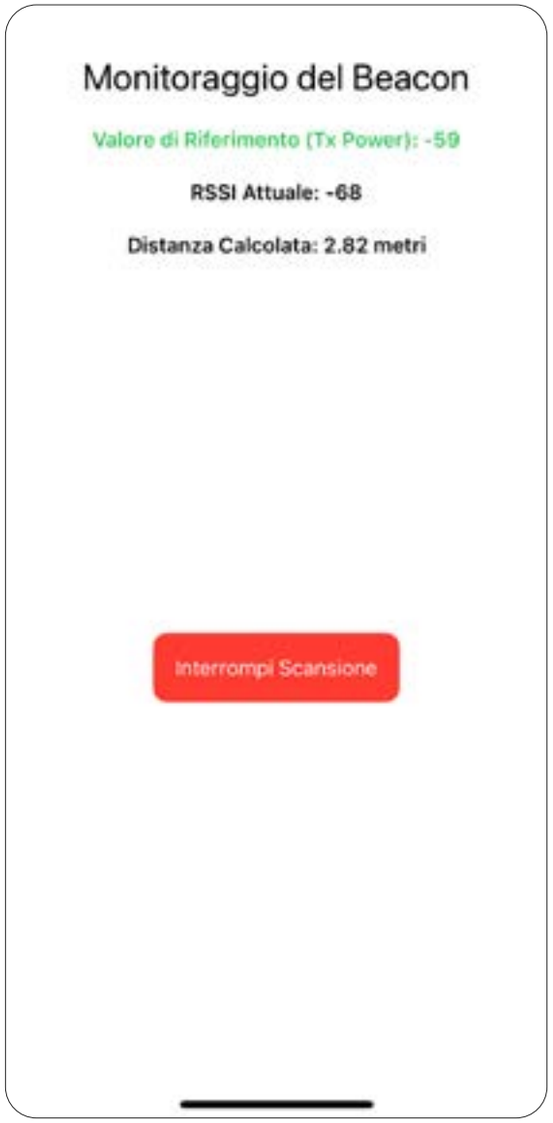


Fig 56 - Coded app with the 4 beacons identification and positioning · By Author, 2024.

2. Error Minimization:

Following calibration, the system calculated the **error committed by each beacon when estimating distances.** This step involved comparing the calculated distances to the actual distances, generating an error value for each beacon. A numerical method was then employed to **minimize the combined error from all four beacons.** The process involved summing the individual errors and determining the location of the smartphone by identifying the point with the smallest cumulative error. This methodology replaced **standard triangulation and allowed for the integration of multiple beacons,** enhancing localization accuracy and enabling further exploration of the optimal number of beacons required in a room.

3. Signal Measurement:

The smartphone, equipped with BLE capabilities, was positioned at various points within the room *(Figure 54)*. The RSSI values from the four beacons were recorded and distances were computed using the propagation model.

4. Position Estimation:

The estimated distances were used to **calculate the smartphone's position based on the error minimization approach.** The final position was determined by **minimizing the total error across all four beacons.**

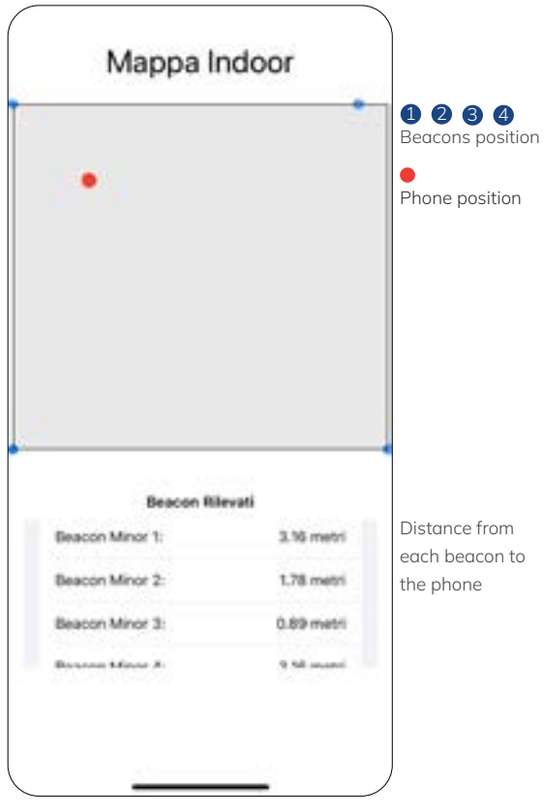


Fig 57 - Coded app with the 4 beacons identification and positioning · By Author, 2024.

5. Filters:

To ensure data reliability, three filters were applied to the results:

Outlier Elimination: Distance measurements that exceeded the room's diagonal (approximately 5.65 meters for a 16 m² room) **were discarded as physically implausible.**

Negative Value Rejection: Negative distances, which are not physically meaningful, were removed from the data set.

Kalman Filter: A Kalman filter was implemented **to stabilize measurements and reduce noise.** This algorithm predicts the system's state, the smartphone's position, and corrects it based on observed data. By continuously refining the predictions, the **Kalman filter effectively discarded results that deviated significantly from the initial estimated position,** ensuring smoother and more reliable measurements (Brown & Hwang, 2012).

Results and Analysis

The system achieved an average distance estimation error of 2.8 meters. The results confirmed that **incorporating four beacons provided more data points for position estimation.** Compared to a three beacon system, the additional beacon introduced redundancy, which in theory allows for a higher degree of precision. This advantage stems from the availability of multiple signal points, enabling the **system to better mitigate errors** introduced by environmental noise and signal attenuation.

As shown in *Figure 58,* trilateration with three beacons relies on the intersection of three signal ranges to determine a location. Adding a fourth

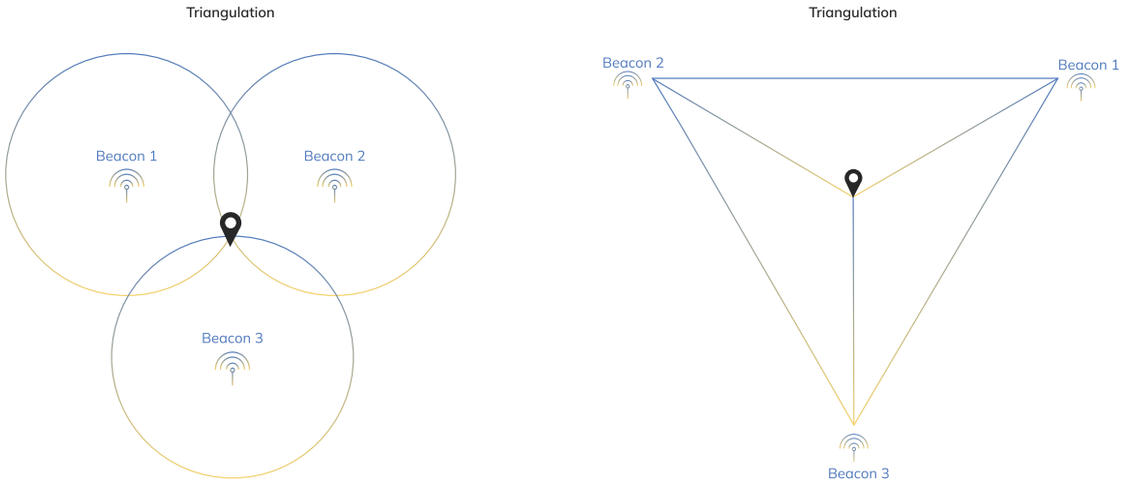


Fig 58 - Trilateration (RSSI based) versus Triangulation (direction based) position estimation (Van De Laar & Klabunde, 2024).

beacon introduces an additional layer of verification, creating more intersections and reducing the potential for error. Although a three beacon configuration can work effectively, particularly in larger spaces, the **inclusion of a fourth beacon provides more robust and reliable signal triangulation for accurate position determination.**

These findings suggest that in environments such as museum rooms, where dimensions typically range between 50 and 100 m² (Museums Association, 2023), a four beacon system would perform better by offering greater data density and error correction capacity. Moreover, **larger spaces improve signal dispersion,** reducing the impact of overlapping signals and environmental noise.

The feasibility test validated the BLE beacon based localization system's potential for implementation in museums. By utilizing four beacons, the system achieves a higher volume of data, enabling more robust error correction and improving overall positioning accuracy. While the experiment highlighted some limitations due to the small size of the test room, the findings suggest that **larger spaces typical of museum environments** would provide a more suitable context for this technology. The spacious rooms of museums allow for better signal dispersion, reducing the effects of overlapping signals and environmental noise.

Furthermore, the unobtrusive nature of BLE beacons makes them an **ideal solution for indoor localization in museums.** Beacons can be discreetly installed on ceilings or other less visible areas, such as behind exhibition panels or within structural fixtures. For example, in spaces like the GAM Museum, beacons could be placed on the **ceiling without interfering with the aesthetics** of the exhibitions or the architectural integrity of the space (see image for a proposed placement). This ensures that the implementation of the system aligns with the museum's visual and cultural standards while enhancing the visitor experience.

The BLE beacon based system provides significant **benefits for accessibility**, particularly for elderly visitors or those with mobility challenges. By offering accurate, personalized **wayfinding solutions, the system enables users to navigate exhibitions** with ease, locating key features such as resting areas, restrooms, or specific displays. The modular design of the system also allows for scalability, meaning that museums of varying sizes and layouts can adapt the technology to their needs. The BLE beacon based localization system is both a **practical and scalable solution for improving accessible** navigation in museums. Its implementation would not only enhance the visitor experience but also maintain the integrity of the museum's design supporting inclusive and innovative initiatives in cultural spaces.

CONCLUSION

This thesis concludes by emphasizing the **vital role museums play as cultural and educational institutions,** urging them to embrace inclusivity and innovation to remain relevant in a **rapidly evolving world.**

A key critique of current museum practices is their **frequent failure to address the needs of all demographics,** particularly the elderly and individuals with mobility or sensory challenges. An essential step in this transformation is **bridging the gap between elder communities and museum experiences.** Museums must recognize that their mission is not solely about preserving artifacts but also about **fostering meaningful engagement with their audience.** Educators, in collaboration with curators, should **adopt visitor centered approaches that focus on the needs**, interests and contexts of diverse populations. This shift would ensure that exhibitions are not only informative but also interactive and relevant, creating a **deeper connection between visitors and the content.**

Furthermore, as the world becomes increasingly technologically advanced, **museums must evolve** to incorporate innovations such as Artificial Intelligence (AI), Bluetooth Low Energy (BLE) beacons, and indoor wayfinding systems. These tools not only provide a personalized experience for visitors but also serve an educational purpose by demonstrating the **positive and constructive applications of emerging technologies.** By embracing technology, museums can also **teach visitors** about the beneficial uses of these innovations, ensuring that they play an **active role in educating the silver generation.**

By addressing structural and systemic barriers, merging curatorial and educational roles and integrating new technologies, **museums can transform into truly inclusive spaces.** Such efforts will not only empower all visitors but will also contribute to the well being and creative potential of the silver generation, **fostering active and reducing the playfinding superficial behaviours** that detract from the musuem's objetive of educating.

As museums stand at the intersection of cultural preservation and technological advancement, one final question emerges: **Can these institutions fully embrace their evolving role and become the inclusive, adaptive spaces that society demands?**

INTERVIEWS

7.1
SMARTPHONE E COMPUTER TEACHER FOR SENIOR, PAOLO PELLERI

Hai notato se gli anziani si avvicinano alla tecnologia degli smartphone o incontrano particolari difficoltà?

Paolo Pelleri: Sì, assolutamente. In Italia il problema è che gran parte della popolazione è anziana, ma nessuno ha pensato di portare queste persone nel mondo della tecnologia. C'è un divario enorme. Alcuni non sanno nemmeno mandare un SMS, e non si è mai pensato a insegnare loro come usare la tecnologia touch. I telefoni e i computer sono andati avanti, ma milioni di persone anziane sono state lasciate indietro.

Hai notato differenze tra le regioni?

Paolo Pelleri: No, sinceramente ho visto sempre la stessa media. Non c'è una fascia di anziani che è molto capace, tranne pochi casi. Ma mediamente, il livello di conoscenza tecnologica è molto basso. Come organizzi i tuoi corsi di tecnologia per anziani?

Paolo Pelleri: Faccio 12 corsi a settimana con gruppi di massimo 10 persone, perché preferisco seguire ciascuno da vicino. Il mio approccio è basato sulla comunicazione: uso un linguaggio semplice e molti esempi della loro epoca per far capire i concetti. Con gli anziani, la comunicazione deve essere adattata, e il tono e la semplicità sono fondamentali.

Quali aspetti della tecnologia trovano più difficili?

Paolo Pelleri: Gli argomenti più difficili per loro sono il Wi-Fi, il Bluetooth, creare un messaggio, e la posta elettronica. Google Maps piace, il QR code è abbastanza facile da usare, ma hanno difficoltà a comprendere il concetto di "link". Loro funzionano meglio con processi immediati e semplici, senza troppi passaggi.

Qual è la tua opinione sull'intelligenza artificiale nei musei?

Paolo Pelleri: Vedo male l'introduzione dell'intelligenza artificiale per gli anziani. Già ora molti hanno paura della tecnologia e non la capiscono. Presentare un'app o un prodotto tecnologico deve essere fatto in modo che non incuta timore. Se sentono che l'uso è complicato, semplicemente si allontanano.

Come possono i musei aiutare gli anziani a comprendere la tecnologia?

Paolo Pelleri: Il museo potrebbe essere uno strumento educativo, ma deve usare un approccio comunicativo semplice. Gli anziani temono la tecnologia, quindi è importante che la spiegazione sia chiara e che i passaggi siano guidati, sia teoricamente che praticamente. Le esperienze museali devono tener conto delle difficoltà di apprendimento e di memoria degli anziani.

Quali sono le sfide maggiori che hai incontrato nel lavorare con gli anziani?

Paolo Pelleri: La sfida maggiore è la memoria. Dopo una certa età, molte persone perdono la capacità di ricordare, quindi quando insegno loro qualcosa, dopo una settimana ricordano solo il 5-10% di ciò che hanno imparato. Molti ripetono i corsi per questa ragione. Anche la concentrazione è un problema: dopo circa un'ora smettono di seguire.

In Italia si parla poco di anziani e disabili, nonostante rappresentino una parte importante della popolazione. Come vedi questa situazione e il futuro della silver economy?

Paolo Pelleri: È una grande contraddizione. Nonostante la maggior parte della popolazione in Italia sia anziana, sembra che non interessi a nessuno. Eppure, l'economia si muove sempre più in questa direzione. Tra vent'anni, quando la silver economy sarà ancora più forte, sarà tutto mobilizzato grazie agli anziani. Guardando a paesi come il Giappone, che ha una percentuale altissima di anziani e ha già introdotto tecnologie avanzate come i robot, vediamo che esiste una struttura che supporta gli anziani con corsi e tecnologie. In Italia, invece, ci sono ancora barriere, anche per i disabili. Alcuni musei offrono l'ingresso gratuito, ma non ci sono vere iniziative per incentivare la visita di queste categorie, e alla fine il sistema attuale non aiuta davvero a coinvolgerli o a farli sentire parte della società.

Come si possono incentivare gli anziani a partecipare?

Paolo Pelleri: L'ambiente deve essere piacevole e il prodotto semplice. Deve essere chiaro fin da subito che ne trarranno un beneficio e che sarà un'esperienza positiva. L'inclusione digitale è la chiave, ma bisogna presentare tutto con un linguaggio accessibile e costruire fiducia, perché altrimenti si scoraggiano.

Secondo te, la tecnologia museale potrebbe essere utile per gli anziani?

Paolo Pelleri: Potrebbe, ma il problema è che la maggior parte delle tecnologie avanzate nei musei sono per un pubblico giovane. L'app deve essere progettata per il pubblico senior. I contenuti devono essere semplici e adattati alla loro capacità di memoria. La guida deve essere semplice. I passaggi successivi dopo aver scaricato l'app devono essere spiegati in modo che non lascino spazio a dubbi. La dimensione dei testi e delle immagini deve essere adeguata.

7.2
MUSEUM EXHIBITION DESIGNER, JULIA ZAMBRZYCKI

Can you tell me a little bit about yourself and your role within the experience creation of a museum? Do you work at a museum?

Julia Zambrzycki: "I'm a designer specializing in museum visitor experiences. My work focuses on bridging the gap between the content museums aim to deliver and the experience of visitors. I collaborate with museums to design experiences that resonate with diverse audiences and ensure that everyone can connect with the material."

How does the experience get created? What steps do you follow to understand the museum dynamic? What's the process behind it?

Julia Zambrzycki: "When the museum project is built, the experience process is based on the content. There's no evaluation behind the interaction. Museums often start with their collections, and the visitor experience revolves around how to present that content. I believe there's a gap here, where more emphasis should be placed on evaluating how people interact with the museum space and materials."

Museums often face challenges in creating personalized experiences for visitors. How do you see this evolving, and what are some of the limitations?

Julia Zambrzycki: "Museums are on a dilemma; for a brand, it's easier to personalize an experience (target audience), while museums have more content to transmit to mostly all people. Because that's their purpose, to educate everybody. Museums struggle with personalizing experiences because their aim is to be inclusive to everyone, which complicates creating experiences tailored to specific visitor needs."

You mentioned technology earlier. How is it being integrated into museums today?

Julia Zambrzycki: "Some technologies are already in use in other scopes, but in museums it's slowly stepping in. There's potential here, but it hasn't been fully realized yet."

Based on your experience, what improvements could be made in how museums design visitor experiences?

Julia Zambrzycki: "There should be more time and budget spent on user research at the beginning and afterwards. If museums dedicated more resources to understanding how visitors interact with exhibits, they could create more engaging and meaningful experiences."

What role do you think research and user feedback play in creating effective museum experiences?

Julia Zambrzycki: "Research and user feedback are crucial, but unfortunately, they are often overlooked. As I mentioned, when the museum project is built, the experience process is based on the content, and there's no evaluation behind the interaction. This means museums often don't get real-time insights into how visitors are engaging. I believe continuous feedback loops and post-visit evaluations could really improve the overall experience."

You mentioned that museums have a purpose to educate everybody. How can museums strike a balance between educating a broad audience and creating personalized experiences?

Julia Zambrzycki: "That's the dilemma, museums are designed to transmit content to mostly all people. But to personalize experiences, museums need to segment audiences or create flexible experiences that can adapt to different visitor profiles. This could involve the use of interactive technologies, allowing visitors to customize their journeys through the museum according to their interests or needs."

Can you elaborate on some of the tools or methods you use to assess visitor engagement during a project?

Julia Zambrzycki: "In the projects I've worked on, we've used methods like visitor journey mapping and interactive prototypes to test engagement. Surveys and observation studies can help us understand how visitors move through the space and what catches their attention. But again, this kind of evaluation isn't as common as it should be."

Finally, what advice would you give to museums looking to start incorporating more technology into their visitor experiences?

Julia Zambrzycki: "My advice would be to start small but think big. Test technologies with pilot projects and gather user feedback. Don't just throw in tech for the sake of it, make sure it enhances the experience in meaningful ways. And most importantly, remember that the goal is to make the museum more accessible, engaging, and inclusive for everyone, not just a select few."

7.3
SYLVAIN DENONCIN, CEO OF OKEENEA CREATOR OF THE APP EVELITY, UNIVERSAL ACCESSIBILITY EXPERT AND ENTREPRENEUR

Can you elaborate on how your app considers the cognitive needs of people with intellectual disabilities (e.g., limited working memory, difficulty understanding complex instructions)?

Sylvain Denoncin: Evelity is built around the principles of universal design, which means that we consider a wide range of needs from the start. For users with intellectual disabilities, we've focused on simplifying interactions by making instructions clear, concise, and easy to follow. Our navigation system provides step-by-step guidance that is intuitive and avoids overloading the user with complex information. We don't ask users to identify their disability, as we believe that the environment, not the individual, is what creates barriers. By studying the way people move in different environments, we aim to create a more inclusive experience for all.

Does the app offer features like simplified language, text to speech, or visual cues to make navigation easier?

Sylvain Denoncin: Yes, Evelity provides a range of features designed to cater to diverse cognitive needs. We use simplified language in our instructions, making the app accessible to users who may have difficulty with complex language. Additionally, there's a text-to-speech feature for those who prefer audio guidance. Visual cues are another key element; they help users process information quickly and confidently, whether it's a map or a directional prompt. These features ensure that users, regardless of their cognitive abilities, can navigate with ease.

How have you tested the app with users who have intellectual disabilities? What were the key findings?

Sylvain Denoncin: We work closely with doctors and specialized labs to study how different users, including those with intellectual disabilities, interact with the app. Through real-world testing in environments like metro stations, we've learned that simplifying the interface and providing clear, context-based instructions dramatically improves the user experience. One of the most valuable insights was that users often prefer content to be presented before navigation details, especially in complex settings like museums. This led us to invert the user interface so that users can access essential information first, followed by directions.

Does the app integrate with accessibility features within museums (e.g., accessible routes, braille signage)?

Sylvain Denoncin: Evelity is designed to integrate seamlessly with the physical accessibility features that museums already have in place, such as accessible routes or braille signage. The app complements these features by providing detailed navigation that takes into account the user's specific needs, whether it's finding the nearest accessible entrance or navigating around physical barriers. Our goal is to make the entire museum experience more fluid and intuitive for users with physical disabilities. We view accessibility as a matter of environment, not the individual's limitations. They're not disabled, it's the environment that makes them disabled, so by integrating Evelity with accessible routes and other features, we aim to level the playing field for everyone.

Can users customize the app settings to accommodate specific physical limitations (e.g., motor impairments)?

Sylvain Denoncin: Absolutely. Evelity allows users to customize settings to better suit their individual needs. For instance, users with motor impairments can adjust the interface to minimize the number of interactions required to navigate the app. Whether it's choosing larger buttons or simplifying the input process, these customizable features make Evelity adaptable to the physical capabilities of each user.

Can the app be customized to different museum layouts and exhibits?

Sylvain Denoncin: Yes, one of Evelity's strengths is its adaptability. The app can be tailored to the specific layout of any museum, ensuring that users can navigate different exhibits and spaces seamlessly. It offers flexibility, whether it's guiding users through a permanent exhibit or adapting to temporary exhibitions with new routes and information. By customizing the environment, we ensure that Evelity provides the most relevant guidance for each location.

Does the app provide information specific to the needs of people with intellectual disabilities in museum settings (e.g., simplified descriptions of exhibits, sensory maps)?

Sylvain Denoncin: In museum settings, Evelity can provide simplified descriptions of exhibits, making the content more accessible to users with intellectual disabilities. Sensory maps are another feature we're developing, which will help users better understand and anticipate the sensory experience in different parts of the museum. This includes everything from sound levels to lighting conditions, enabling users to make informed decisions about their visit. While we haven't had any collaborations with museums yet, Evelity has the potential to work seamlessly in such environments, and we're eager to explore these possibilities in the future. They're not disabled, it's the environment that makes them disabled, and

our goal is to adapt that environment to be as inclusive as possible.

Are there plans to collaborate more closely with museums to integrate your app directly into their existing infrastructure and exhibits?

Sylvain Denoncin: We're very interested in deepening our collaboration with museums. Our goal is to integrate Evelity into the existing infrastructure to create a more cohesive and inclusive experience for all visitors. This means working closely with museum teams to ensure that both the layout and the content of the exhibits are as accessible as possible. We've already started partnerships in some locations, and we plan to expand this to more institutions in the future, ensuring that museums are truly inclusive spaces.

8.1

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APPENDIX

Appendix A

Database museums

This appendix provides a comprehensive database of museums, featuring detailed information such as descriptions, locations, website links, contact details, and accessibility features. It includes data on free and reduced entrance options for various groups.

Appendix B

Museum Mapping

This appendix categorizes museums by themes and types, such as art, history, science, and technology. It includes a visual representations to map out the distribution of museums in Turin and Piedmont.

Appendix C

Questionnaire

This appendix contains a visitor experience questionnaire aimed at understanding preferences and behaviors.

Appendix D

Timeline Museum History

This appendix offers a chronological overview of significant events in museum history, from the earliest known museums to contemporary developments.