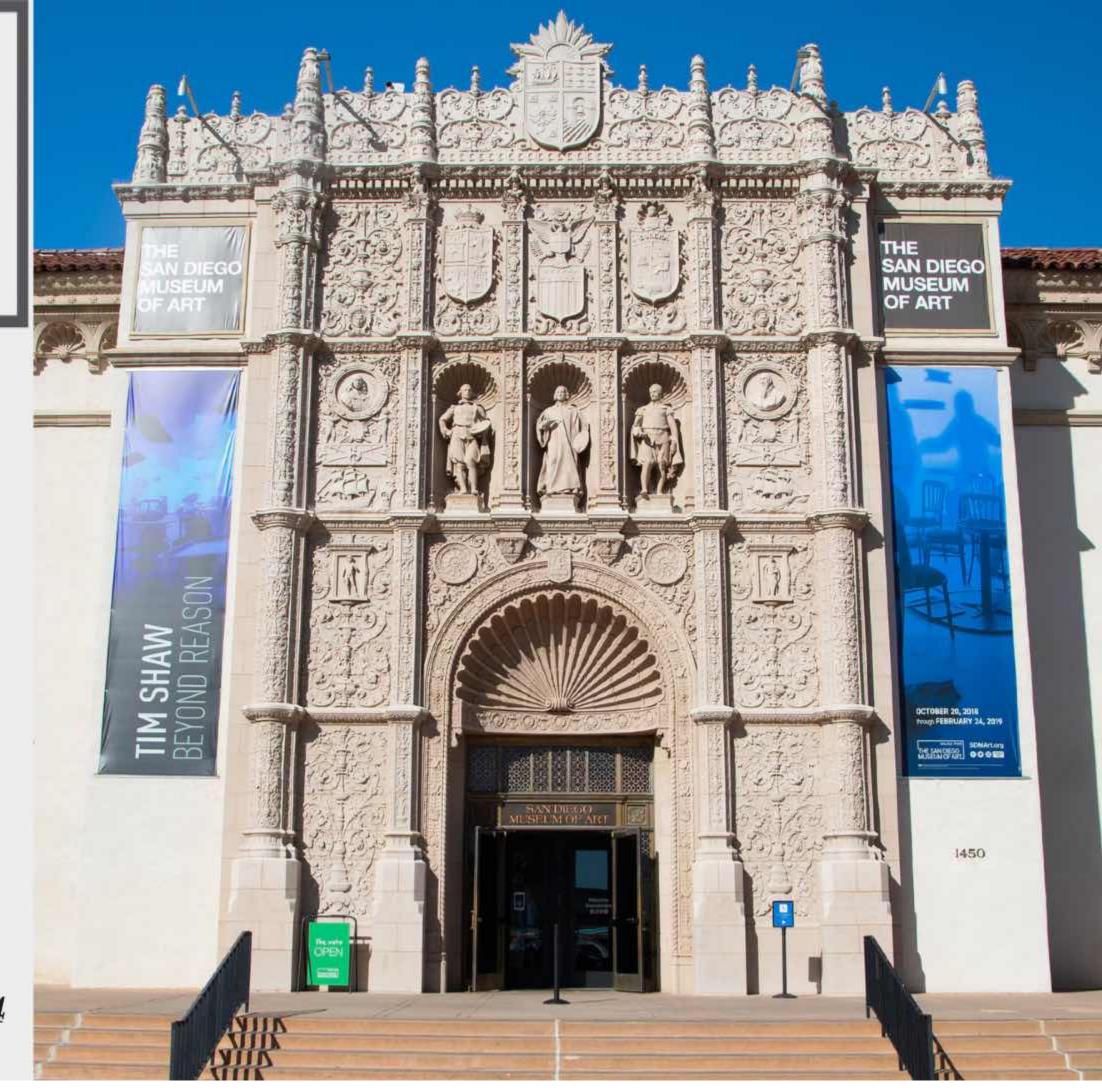# THE SAN DIEGO MUSEUM OF ART

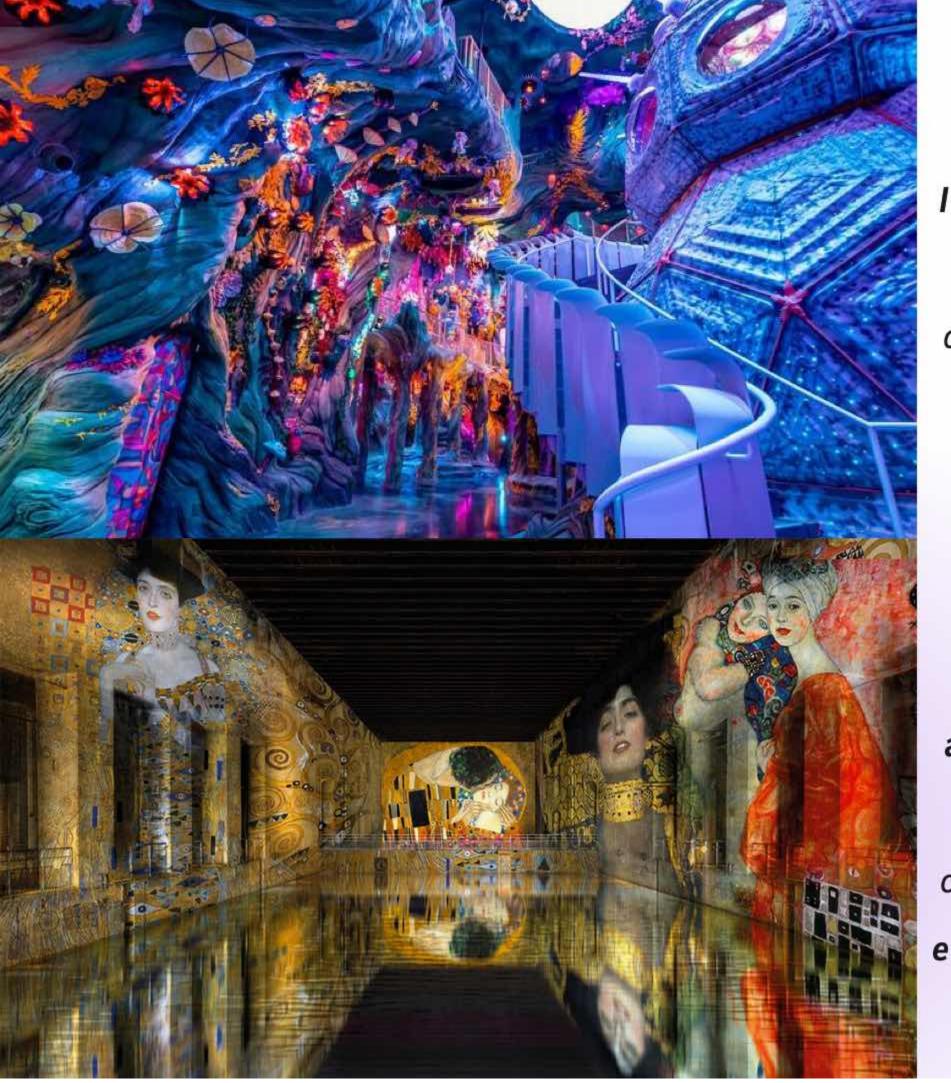# Virtual Reality for Museums

*An Inspiration Report by Kiana Pouya*

*Prepared for Dr. Michael Stephens*

*INFO 287: The Hyperlinked Library - Fall 2024*

# OBJECTIVE

Explore the adoption of **Virtual Reality** (VR) at the **San Diego Museum of Art** (SDMA) to enhance our exhibitions by allowing visitors to experience firsthand recreations of historical sites, immerse themselves in distant cultures, examine intricate artifact details otherwise inaccessible to the public, and even "step into" famous paintings for a transformative connection to art

# Exective Summary

*Integrating VR technology into our programming* will allow the museum to offer visitors groundbreaking opportunities to **experience history, science, art, and culture in previously unimaginable ways through first-person perspectives**. *Virtual reality will allow* curators to **reimagine storytelling**, bring **historical and cultural contexts to life**, and create **immersive, multi-sensory journeys** that will make art more **accessible to diverse audiences**. By **transcending the physical limitations of our traditional galleries**, we can offer **transformative, interactive experiences** and **enrich our users' engagement and education** (Shehade & Stylianou-Lambert, 2020).
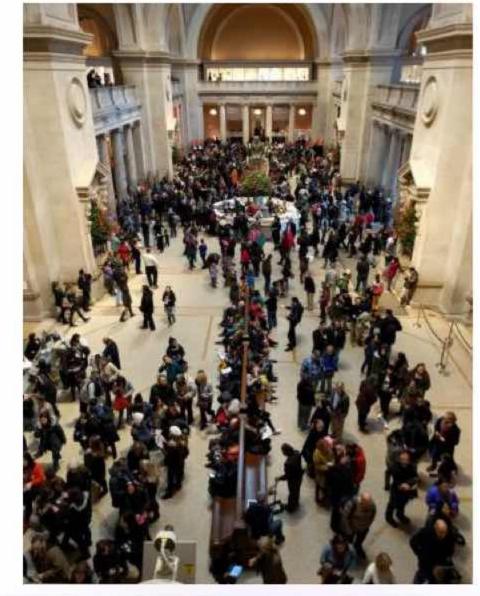
# Introduction



VR has rapidly gained popularity across various industries, including museums. Many leading institutions worldwide are embracing these multi-sensory technologies to elevate their user experiences.

As Balboa Park's oldest and largest art museum, SDMA welcomes **nearly half a million visitors each year** with annual increases often leading to overcrowding and obstructed exhibit views (SDMA, n.d.). With patrons further discouraged by arrangements of contextless artifacts, museums risk undermining their purpose when they fail to provide meaningful narratives for their collections. VR addresses these challenges by providing dynamic context through detailed simulations and vivid historical recreations. If an exhibition does not require touch or smell, VR can enhance or even surpass the traditional museum experience (Hon, 2016).

# Background

Unlike augmented reality that blends real-world surroundings by overlaying digital information onto them in real time, *virtual reality* immerses users in a completely artificial environment using computer-generated models and simulations to create visual three-dimensional interactive environments.

To simulate reality, users can immerse themselves into these computer-generated environments through the use of specialized equipment such as VR headsets, goggles, gloves, or even body suits. While most of these interactive devices are tethered to a computer, some can be portable.



Under the typical format, the user will wear a helmet containing a stereoscopic screen to view animated images of the simulated environment. Once there, they will experience telepresence (or the illusion of 'being there') as motion sensors detect their movement in real time and adjust the screen's view accordingly. This allows the user to explore a suite of simulated rooms while experiencing shifting viewpoints that seamlessly correspond to their own head movements and steps. With the use of data gloves featuring force-feedback technology, they can even feel the sensation of touch as they pick up and interact with objects within the virtual world.

The early technical foundations of VR date back to the 1830s, but it wasn't until 1935 that Stanley Weinbaum introduced a concept closely resembling modern VR in his science fiction story *Pygmalion's Spectacles*. In the story, the protagonist uses a pair of goggles that transport him to a fictional world, engaging his senses and incorporating holographic recordings. Many regard this as a precursor to the VR concept because it predicted the sensory immersion and interactive experiences that VR would aim to achieve in the future.



The field took a major step forward in 1987 when Jaron Lanier coined the term "virtual reality." Lanier's groundbreaking engineering efforts and pioneering research not only defined the industry but set the stage for the diverse applications of VR we see today. Initially designed for military training and gaming, VR has since expanded into areas such as healthcare, education, entertainment, and cultural engagement (Lowood, 2024).

# Global Impact

Globally, VR has transformed these industries, including museums. In recent years, many VR exhibits around the world have achieved astounding success, delivering truly awe-inspiring wonders.

# Louvre Museum (Paris)



Museums like the Louvre have embraced the technology to enhance the experience of their most visited masterpiece. With 20,000 daily visitors, the *Mona Lisa* (1503) is obscured behind protective glass, surrounded by a sea of amateur photographers, making the viewing experience less than ideal. To address this, in 2019, the Louvre launched *Mona Lisa: Beyond the Glass*, as part of Leonardo Da Vinci's blockbuster exhibition. The VR exhibit allowed more visitors to explore the iconic Renaissance painting through interactive designs, sounds, and animated images, offering a personal experience with the eminent artwork.

Users could uncover details about the celebrated painting, such as its wood panel texture and how the passage of time has since altered its appearance.

Offered in five languages, the experience was accessible for four months through direct bookings with the Louvre or downloaded via the VR app store Viveport, as well as iOS and Android devices (Richardson, 2024).



Mona Lisa: Beyond the Glass at The Louvre I HTC VIVE ARTS

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# Victoria & Albert Museum (London)

London's acclaimed V&A Museum unveiled the *Curious Alice* VR exhibition in 2021, in partnership with HTC Vive Arts, to celebrate a classic piece of Victorian literature. Alongside traditional gallery displays, visitors dive into a captivating VR simulation, experiencing Alice's whimsically fantastical and mind-bending world through her eyes. In addition to an at-home version found in Viveport, this immersive reimagining of Lewis Carroll's timeless Wonderland even allows visitors outside of the museum walls to tumble down the rabbit hole through interactive storylines and amusing challenges (Richardson, 2024).





V&A Curious Alice: the VR experience | Behind the scenes | V&A
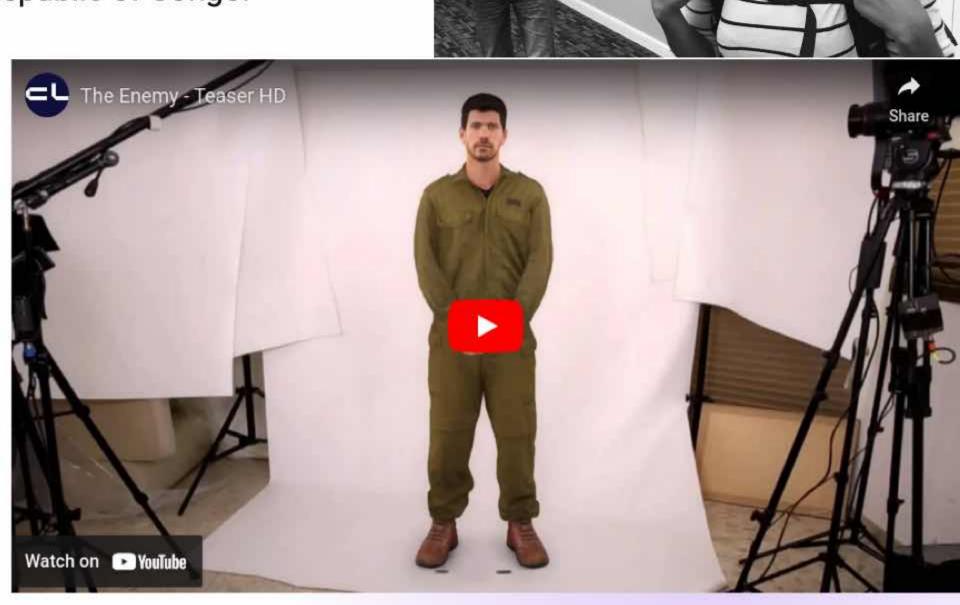
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# MIT Museum (Massachusetts)

One notable example of a meaningful museum interpretation is *The Enemy*, a VR installation that debuted at the MIT Museum in 2017. Created by Belgian-Tunisian war correspondent Karim Ben Khelifa, the installation blended art and journalism to offer a deeper understanding of war than what traditional articles or news reports typically provide. By wearing VR headsets, visitors were immersed in the experiences of combatants from three war zones: Israel and Palestine, the Mara in Salvador, and the Democratic Republic of Congo.



Each participant encountered one of the 'enemies' and was asked the same six questions the combatants had been asked during filming, such as 'What does peace mean to you?' and 'Who is your enemy, and why?' By hearing their powerful testimonies and witnessing their body language, visitors can gain insight into the mindset of individuals shaped by war and violence, offering a firsthand look at the human cost of conflict. *The Enemy* was widely recognized as a compelling and thought-provoking exhibit, using innovative technology to challenge its audience through deep reflection (Carlsson, 2020).



The Enemy - Teaser HD

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# Advantages

Recreates experiences that are impossible in person

Provides virtual tours of historic sites that no longer exist

Serves as an educational powerhouse, offering immersive and realistic experiences bringing history to life

Revolutionizes how narratives are presented, allowing visitors to interact with characters and make choices that shape their journey, creating a personalized and engaging experience

Recreates lost or damaged works of art in a safe, digital format, protecting their cultural heritage while granting the public new access to significant objects. This dual capacity to educate and preserve makes VR an invaluable resource for modern museums.

Enhances accessibility for visitors with disabilities or those unable to travel to the museum, encouraging individuals with mobility issues to enjoy exhibitions from the comfort of their homes (GLUK, n.d.)

# Challenges to Consider

"Building collections and seeking ways to engage the public and promote curiosity challenge us all" (Stephens, 2016)

## Operation/Maintenance Cost

- VR equipment is expensive, and designing/managing the programs can quickly become costly. Depending on a project's scope, costs can escalate with expenses ranging from custom content creation to replacing damaged headsets.

- For example, Nils Pokel from the Auckland War Memorial Museum discussed how an exhibition encountered hardware issues, with around 15 headsets malfunctioning within just a few weeks (Richardson, 2024).

## Potential Technical Issues

- VR systems require substantial investments in both hardware and software, ongoing maintenance and technical support, which is particularly challenging for smaller institutions with limited budgets.

- Setting them up often requires specialized knowledge, which may necessitate hiring or training staff, further increasing expenses. Users may also require guidance and staff support to learn how to use the technology (MuseumNext, 2023).

## Distraction from Core Content

- VR could potentially distract visitors from the actual artifacts and exhibits. If the technology becomes the focal point, it may overshadow the educational and cultural value of the museum's collections. Poorly executed VR experiences may feel superficial, offering little meaningful insight into the exhibits they are meant to support. Hence, critics argue that VR should complement, not replace, traditional exhibits, enhancing storytelling without becoming a mere novelty (MuseumNext, 2023).

# Usability and Accessibility Concerns

- *Hygiene*: Shared headsets can accumulate skin oils, hair, and grease, creating potential health risks. To address this, museums must employ staff or volunteers to clean devices between uses and provide disposable hygiene masks.

- *Simulation Sickness:* Some users may experience nausea, dizziness, or headaches, especially during their first VR encounter, due to the disconnect between physical movements and the virtual environment. Discomforts such as eyestrain, disorientation, vertigo, and even vomiting, can deter some visitors, especially older adults or those with particular disabilities (Richardson, 2024).

- Replicating the social and interactive aspects of a museum visit is challenging in a virtual setting. While museums promote shared experiences and conversations, VR can create isolated realities, limiting opportunities for social engagement and collaborative learning.

- The limited high-end equipment can also restrict the number of users engaging at once, creating *bottlenecks* and *reducing accessibility*.

- Designing an intuitive VR experience is complex. If the technology is hard to navigate or the interface is unclear, it can frustrate visitors. To ensure their VR setups are easy to use, museums must invest in **user testing** and **design iterations** to ensure the experience is smooth and accessible (MuseumNext, 2023).

# Virtual Reality Users

## Current Users

VR technology is particularly appealing to children and young adults, who are often more drawn to interactive experiences, making it an effective tool for museums aiming to attract younger demographics.

## What the Research says

In fact, Allen et al. (2000) discovered that younger audiences and tech-savvy individuals adapt more easily to the virtual environment, reporting less confusion over displayed images, graphics speed, and sound quality than older subjects.



## Future Users

Nevertheless, with proper guidance, visitors across all demographics can enjoy and benefit from the technology. The use of VR can also attract virtual tourists and online learners, expanding the museum's reach beyond its physical location.

# Implementing Virtual Reality @ SDMA

## Strategic Planning

To **avoid technolust** and successfully adopt new technology, it must **align** *with the institution's mission rather than dominate it*. Limited budgets must be used strategically, with careful planning that includes an <u>environmental scan of current trends</u>, <u>a comprehensive roadmap for training</u>, <u>phased rollouts</u>, <u>stakeholder buy-in</u>, and <u>ongoing evaluation</u> (Stephens, 2012).
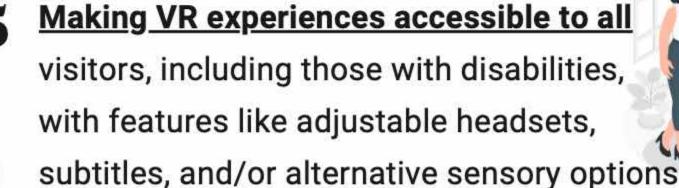
## Exploring the Research

SDMA can draw inspiration from studies like Lee et al. (2020), illustrating how immersive VR experiences can improve the overall museum experience. In fact, they discovered that visitors were more interested in entertaining and visually stunning VR experiences than in escapism, and slightly more in learning or educational experiences than visually aesthetic ones.

# *Steps for Implementation*

**1** **Partnering with VR developers** to create high-quality experiences, including virtual reconstructions of historical settings, behind-the-scenes access to artwork restoration processes, or interactive storytellings centered on key exhibits

**2** **Launching small-scale pilot programs** to gauge visitor responses, identify potential technical or logistical challenges, and refine the VR experience before a full-scale rollout

**3** **Complementing traditional exhibits** using VR to improve physical exhibits, such as reconstructed ancient ruins, or a 360° view of fragile, inaccessible artifacts

**4** **Investing in staff training** and technical support to ensure they can assist visitors, troubleshoot common issues, and effectively maintain the equipment to minimize downtime and enhance the visitor experience

**5** **Making VR experiences accessible to all** visitors, including those with disabilities, with features like adjustable headsets, subtitles, and/or alternative sensory options

**6** **Promoting** SDMA's innovative use of VR through targeted marketing campaigns and community outreach

(Vanek, 2023)

# Conclusion

*Virtual reality is an exceptional educational tool for simplifying complex topics and making learning both enjoyable and memorable through immersive and engaging simulations. With this technology, SDMA can attract more visitors and enhance our educational offerings to deliver greater transformative experiences that will deepen patrons' connection to art and culture. By incorporating VR into our exhibitions, we can revolutionize how audiences interact with our collections, positioning our museum as a pioneer in both innovation and visitor engagement.*

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Thank You