RESEARCH ARTICLE

The Digitization of Cultural Heritage through the Integration of the Creative Arts into the GLAMs Sector

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Abstract

This paper discusses on the researchers' exploration in digitizing culture and heritage, as part of a practice-based research. Coming on board the projects with a specialization on creative multimedia, the researcher worked on data capture and processing ranging from audio visual, oral data, animation, graphic design, photography, 3D data and VR360. The data was processed into an Augmented Reality and Virtual Reality container alongside a transmedia, polysensory and immersive exhibition using digital technologies such as projection mapping among others. Through the documentation of the creative process, the researcher shared how the creative arts have a big role in the multidisciplinary areas of digital heritage in galleries, libraries, archives and museums institutions. This role encompasses the preservation part in culture and heritage and also the dissemination of culture heritage data & knowledge for the public consumption.

Keywords: *Augmented Reality, Creative Arts, Digital Heritage, Digitization, GLAMs, Museums, Virtual Reality.*

Introduction

The GLAMs industry, which includes galleries, libraries, archives, and museums, has experienced a significant transition in an era marked by rapid digitalization. GLAMs organizations, which were previously limited to preserving and sharing tangible artifacts, are now leading the way in digitization initiatives. They are utilizing technology to increase the availability of cultural heritage resources. Nevertheless, in the middle of this digital transformation, the importance of creative arts disciplines has frequently been minimized. This study aims to illuminate the crucial significance of creative arts in the GLAMs sector, namely in the realm of cultural heritage digitization.

Creative arts span a wide range of subjects, such as media studies, digital media creation, design, and other related fields. These fields provide distinct viewpoints and approaches that can enhance the digitization processes and improve the representation of cultural material in digital formats. GLAM institutions can leverage the integration of creative arts into digitalization programmes to enhance audience engagement, promote cultural comprehension, and save heritage for future generations.

In this article, we will examine the complex connection between creative arts and the GLAMs sector in the digital era. We will explore how talent in creative arts may drive innovation and transformation inside GLAM institutions by studying digital capture techniques, content development, and audience engagement strategies. The article explored the research compilation of projects that the researchers have produced as a prototype in part of practice-based research. This article demonstrates how the creative arts can be utilized in the GLAMs industry, as the author guides the readers to each project that was developed.

This paper seeks to explore the relationship between creative arts and the digitalization of cultural heritage. Its goal is to encourage discussion, cooperation, and proactive measures to foster a more vibrant and inclusive future for the GLAMs sector.

The swift progress of technology has resulted in the expansion of a digital museum sector that concentrates on enhancing visitor interaction via the utilization of diverse digital technologies such as augmented reality (AR), virtual reality (VR), artificial intelligence (AI), and mobile technologies.

In 'The Effectiveness of Digital Technologies Used for the Visitor's Experience in Digital Museums' (Baharin, 2022) examines the influence of digital technologies on digital museums and the experiences of visitors. This text emphasizes the utilization of cutting-edge technologies such as Augmented Reality and Virtual Reality in museums to amplify the quality of cultural heritage exhibitions. The study highlights the significance of expanding technological advancements in digital museums to preserve cultural heritage and enhance visitor experiences.

Literature Reviews

Sarah Kenderdine also emphasized that visualization plays a vital role in connecting the digital archive and its large-scale data, serving as a bridge within galleries and extending its reach beyond physical locations through networked access.

Nevertheless, there is a significant gap between the capabilities of humans in handling data and those of machines. Facilitating increased public involvement with collections through visualization is not a straightforward remedy, but rather a single advancement in the transformation of storytelling and the unfolding of narratives (Kenderdine, 2021).

She also stated that visualisation experiments have the capacity to generate novel ways of interacting with cultural heritage resources, surpassing conventional approaches of accessing and displaying information.

In a paper published in May 2024, a study was conducted to investigate the impact of virtual reality (VR)-mediated interventions on cultural education. The study examined the effects of a virtual reality (VR) cultural education program on students' academic achievement and studied their attitudes towards this alternative method. The study provides solid evidence in favour of the claim that cultural education programmes based on virtual reality can have a favorable effect on the acquisition of knowledge (Christopoulos et al., 2024).

According to Windhager et al. (2016), digital interfaces are largely designed to improve the conventional experience of interacting with collections in person. However, the experience of exploring cultural collections remotely on screens is still not as good as being physically present in a museum. It is a balancing act between the digital curation and engaging the audience. In order to get the most of visualisation, it is essential to have functional structures that prioritize placing audiences at the core of the digital archive.

Museums around the world are becoming better at communicating with visitors and giving them more agency, according to Haldrup et al. (2021) they discussed

the utilisation of experimental methods in museology and museum practice, with a specific emphasis on involving the audience, encouraging their participation, and fostering co-creation.

The participants also deliberated on the conflict between the conventional function of museums and the imperative to engage fresh audiences in an economy focused on experiential consumption. They discovered that the development of digital data, among other factors, is a crucial aspect to consider in experimental museology. The primary emphasis is on challenging limits, interrogating institutional functions, and embracing critical and communicative stances in order to create transformation within museums (Haldrup et.al. 2021).

The utilizations of emerging technology to document intangible heritage has been demonstrated as the most efficient approach to guarantee its ongoing existence, as demonstrated by the projects outlined in a study article published by the UCL Institute of Archaeology, London (Alivizatou-Barakou, M. et al., 2017).

In 2021, Kenderdine came to the conclusion that computational developments in data science and graphical modelling had been effectively used to material cultural heritage. Examples of this include 3D scanning and exhibitions that employ immersive and interactive technology to bring immutable items to life both online and in museums.

Additionally, she said, computer graphics, temporal and spatial modelling, and virtual reality are all used in computational museology (Kenderdine et.al. 2021).

The constant advance of digitization has caused a dramatic change in the GLAMs industry in the past several years. The need to promote and conserve cultural heritage in an ever more linked world, together with changes in audience expectations and technological advancements, have all contributed to this development.

There has been talk about how museums and other historical organisations may benefit from digitization, datafication, and digitalization in terms of expanding their audiences and enhancing their operations.

Digital data processing and storage, 3D digitization, representation and reproduction of objects, and other similar initiatives have been helping to preserve, disseminate, and valorize cultural and educational resources since at least the turn of the millennium (Blagoderov et al., 2012; Soler et al., 2017).

There has also been a concerted effort and investment of time and energy by cultural heritage organisations to digitise their artefact collections. As a result, internet access to collection catalogues and management systems has been made available, often through institutional websites (Gil-Fuentetaja & Economou, 2019).

Converting tangible cultural assets like artefacts, records, and artworks into digital representations is the backbone of this digital revolution. In an effort to increase accessibility, circumvent physical constraints, and protect cultural artefacts from the effects of time and environmental degradation, GLAM institutions across the globe have embraced this undertaking.

A broad variety of tasks fall under the purview of digitization projects within the GLAMs sector. These tasks include textual document digitalization, image and artwork scanning, artefact 3D modelling, and the construction of digital archives and virtual displays. Technological developments in imaging, digitalization standards, and collaborative platforms for sharing and accessing digital cultural content have all contributed to these initiatives.

On the other hand, GLAM organisations face both possibilities and threats from the digitization of cultural heritage. One positive aspect of digital technologies is

the immense potential they have to broaden participation, level the playing field in terms of access to cultural resources and encourage innovative thinking and research. Conversely, digitalization initiatives necessitate substantial financial outlays, intricate technological processes, and moral concerns, such as copyright, privacy, and data security concerns.

In spite of all these obstacles, GLAM institutions are seeing digitization as a strategic necessity for their continued success in the modern digital world. The role of GLAM institutions as cultural guardians and information brokers in the modern day is being rethought through the digitization of collections and the use of digital technologies to generate interactive and immersive experiences.

The following part will delve into the creative arts' contributions to the digitalization of cultural assets in the GLAMs sector, as well as the opportunities for collaboration and innovation in this dynamic field.

In a 2017 publication, researchers investigated digital methods to conserve and distribute these folklore traditions, such as producing animatics and employing 360-degree storytelling techniques. The narratives of Cik Siti Wan Kembang and the Snake Dragon of Lake Chini are being showcased using prototype animatics and delivery techniques such as projection mapping and large screen TV. The ongoing discussion is around the significance of employing narrators who are fluent in their native language to ensure authenticity, as well as the delicate equilibrium between preserving cultural heritage and making a lasting impression (Santano, 2017).

In their publication titled "A Malaysian cultural heritage digital compendium," Thwaites and his colleagues (Thwaites et al., 2019) examine the concept of research-creation in the context of digital cultural heritage. The main emphasis of their work is to create immersive and significant visitor experiences related to cultural imagination. The content encompasses the notion of the cultural imaginary, the immersive virtual reality encounter known as the Hidden Waterfall City, and the recording of indigenous cultures, along with projects such as the Hainan Boatbuilder and the Tomb of a Sultan virtual reality experience. The significance of safeguarding intangible heritage through the means of storytelling and digital media is underscored.

The museum is a place that collects, exhibits, researches, and classifies material objects representing nature and human cultural heritage and provides a place for visitors to study, research, and be entertained.

The introduction of new digital technologies has caused museums to revise their long-standing approaches to providing services in order to stay up with the industry's fast pace of change (Khan et al., 2020).

Emerging technologies are facilitating a profound transformation in the dissemination of cultural and historical knowledge, while also revolutionizing interpersonal communication.

Results and Discussion

In this section, the paper presents 4 different projects that have been executed by the researchers spanning over 10 years. As part of practice-based research, the creative work was produced and exhibited for the public dissemination. The discussion in this section will present how the creative process is applied in producing the creative work ranging from Augmented Reality, 3D Photogrammetry, 2D illustration, VR360 and spatial audio production, and High-Resolution Digital Imaging.

The creative arts fields are becoming crucial allies for GLAM organisations as they face the challenges of digitising cultural property. Creative arts workers enhance

the digital presentation and interpretation of cultural heritage with their experience in media production, design, storytelling, and audience engagement. They add a fresh perspective and unique ways to digitization processes.

The digitization of cultural heritage data is one domain where the creative arts are vital. Photographers, artists, and historians in the creative industries use a wide range of imaging technology, including high-resolution cameras, 3D scanners, and virtual reality, to record and preserve priceless artworks, artefacts, and historical locations. They take raw data and turn it into aesthetically beautiful representations that capture the beauty and soul of cultural heritage objects through their expertise of visual composition, lighting, and aesthetics.

Figure 1: VR360 Data Capture of Wayang Kulit Kelantan

The creative arts also cover the conceptualization and design of digital experiences in addition to the technical parts of digitization. Professionals in the creative industries use their knowledge of design thinking, UX design, and narrative construction to make digital storytelling platforms, immersive virtual tours, and interactive multimedia installations that anyone can enjoy.

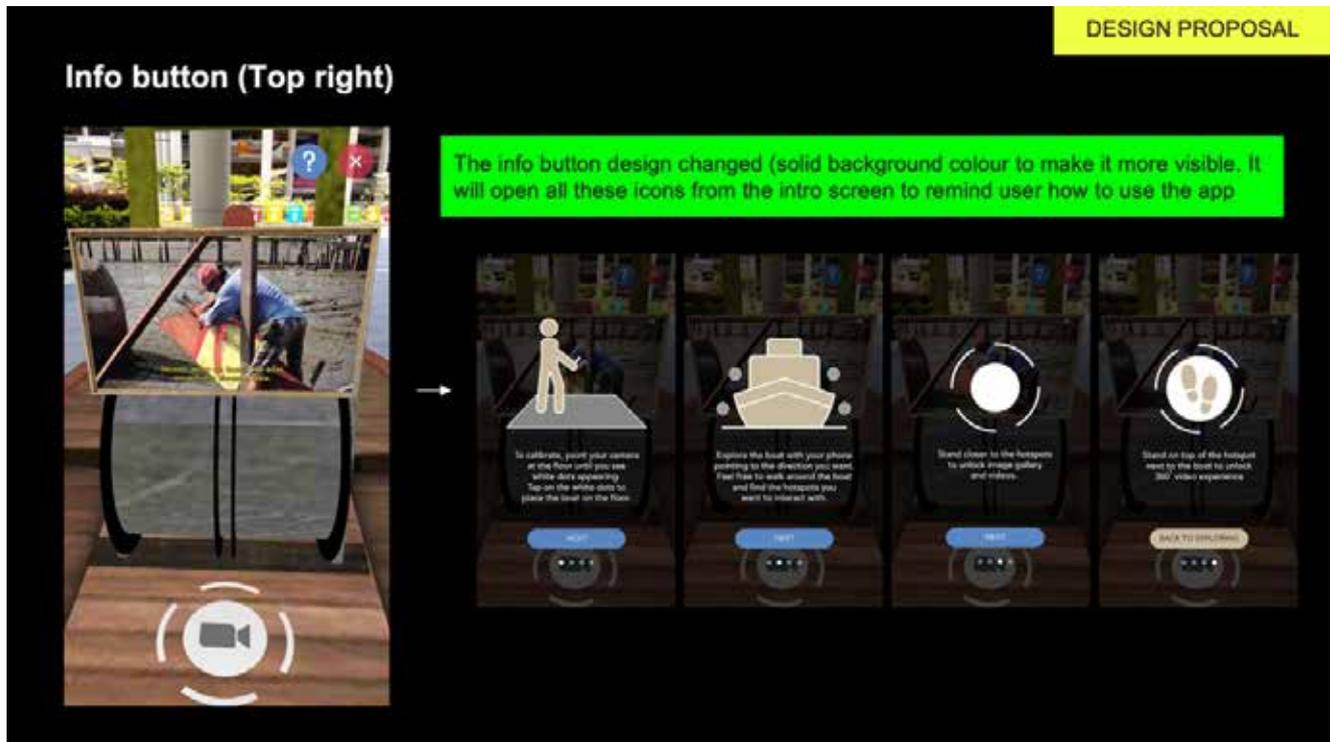Figure 2: UI Design for Pangkor Boatbuilder AR App

Figure 3: UI Design for Pangkor Boatbuilder AR App

In addition, the fields of creative arts provide a multitude of post-production methods that can be used to improve and expand upon digital cultural products. Creative arts practitioners use a wide variety of tools and approaches to improve and augment digital resources, from picture restoration and enhancement to video editing and sound design. This ensures that the materials remain true to life while also adding aesthetic and emotional resonance.

Sculpting and contextualizing data from cultural assets into meaningful tales and experiences for public consumption is another important function that creative arts professionals play, beyond only creating material. They take digital cultural assets and use their skills in storytelling, visual communication, and audience engagement to create interactive and immersive experiences that encourage empathy, curiosity, and cross-cultural understanding.

We will explore how creative arts have played a role in the digitization of cultural heritage at various stages within the GLAMs sector. By looking at innovative projects and collaborations, we can see how the creative arts can be a game-changer when it comes to digital preservation and promotion of heritage.

According to Santano and Mustaffa (2016) in the article "Re-imagining folklore stories in illustrated animatic," the Mah Meri indigenous people of Malaysia include folklore stories into their practice of carving wooden masks, and the Iban tribe's stories are intertwined with the weaving of Pua Kumbu fabrics. The exploration of digital preservation of folklore in Malaysia involved the use of distinct visual styles for each project. The graphics of the Mah Meri exhibit possess an organic and rustic aesthetic, whilst the visuals of the Pua Kumbu exhibit a geometric and clean aesthetic. The design process prioritized incorporating the essence of each ethnic group's culture into the tale. The narratives were derived from dreams, employing distinct methodologies for each project. The exhibition presented the narratives using video format and projection mapping. The animation project had difficulties in incorporating the Mah Meri masks and Iban's Pua Kumbu due to their distinctive visual aesthetics. The initiatives encompassed a fusion of conventional and digital media, with the possibility for groundbreaking advancements.

In their publication titled 'Unmasking the Mah Meri mask', Delas Santano et al. (2021) documented that the Mah Meri tribe in Malaysia engages in the artistic practice of carving wooden masks and statues for the purpose of animistic rituals, which symbolise folklore narratives. The craft is encountering difficulties as a result of a declining number of artisans and diminishing wood resources. Scientists are employing digital technology to convert the carving process into a digital format in order to safeguard the art and generate interactive encounters. The 3D-captured materials, along with other types of audio-visual data, are utilised to provide procedural and instructive augmented reality/virtual reality experiences. In the process of digitising the masks and statues, the authors gathered the folklore narratives associated with each object. The authors employed photogrammetry techniques to digitally capture the process of manufacturing masks and statues.

Unlike a conventional visual narrative that follows a linear timeline and is usually displayed on a television screen, Augmented Reality (AR) versions were created to provide people a distinctive and innovative way of viewing. Both performances were conducted in English, which had limited advantages for the Mah Meri community, considering that most individuals are proficient in Bahasa Malaysia or their indigenous Mah Meri dialect.

Since 2014, the principal investigator, leveraging his professional acumen as an audiovisual producer, has been working in partnership with members of the Mah Meri community to conserve and propagate their traditional narratives and cultural heritage to a broader demographic.

The fieldwork resulted in the collection of diverse data, encompassing audio, audiovisual records, and three-dimensional measurements. The Mah Meri sculptures were scanned to accurately replicate the objects in a three-dimensional manner. We initiated the process by conducting observations, followed by documenting the carvers' activities at every phase of creating the masks and statues (Santano and Thwaites, 2022).

In the field of global heritage asset management (GLAMs), practitioners in the creative industries are crucial to the digitization and administration of cultural heritage data. They use state-of-the-art imaging technology to take high-quality pictures of historical locations, artworks, and artefacts by drawing on their knowledge of photography, videography, and 3D scanning. Virtual collections, online exhibitions, and interactive experiences that go beyond time and location are built on top of these digital assets.

Photographers working in the field of creative arts use cutting-edge technology and methods to record priceless artworks and cultural relics in all their intricate detail. They capture the colour, texture, and fine details of an object with clarity and precision in a variety of photographic techniques, from macro to panoramic. Their mastery of lighting, composition, and framing allows them to capture cultural legacy in digital form, resulting in stunningly stunning photos. In digitizing textile, the researcher has implemented Pixel Shift Multi Shooting to capture high fidelity of the artifacts. Combined with the latest Sony Alpha camera, the data generated was at 19,000 pixels by 12,000 pixels with a dpi of 350.

Figure 4: High Resolution Textile Digitization with Pixel Shift Multi Shooting.

Figure 5: High Resolution Textile Digitization with Pixel Shift Multi Shooting.

Figure 6: Audiovisual Data Capture of Interviews, B-Rolls for Multiple Different Purposes.

Figure 7: Spatial Audio Capture for VR360.

To a similar extent, practitioners in the field of three-dimensional modelling and scanning use state-of-the-art technology like photogrammetry and laser scanning to produce accurate replicas of historical objects and buildings. They capture data from various angles and surfaces, then use that information to build digital models that are an exact duplicate of the actual features of artefacts from cultural heritage. This way, people may explore and engage with these artefacts in virtual reality. involved procedure involving photogrammetry and laser scanning.

Figure 8: Mah Meri Mask 3D Capture with Photogrammetry.

Figure 9: Photogrammetry Test in Studio.

In addition, practitioners in the field of creative arts also have a role in the administration and preservation of digital cultural assets, making sure they are accessible and usable for the long run. They build strong systems for arranging, archiving, and retrieving digital cultural resources by utilizing metadata standards, cataloguing protocols, and digital preservation best practices; these systems protect the data from loss, unauthorized access, obsolescence, and technical difficulties. From the 12 years the researcher has worked in this field, encountering incorrect and inefficient handling of digital files are not a rarity but a frequent occasion.

The creative arts community is essential to the success of the GLAMs sector's culture heritage digitization initiatives because its members bring a unique blend of technical knowledge and artistic vision to the table. They enable GLAM organizations to protect, promote, and share cultural material with audiences worldwide through their knowledge of digital capture techniques and data management processes. This fosters a greater awareness and understanding of our shared human history and heritage.

In the post-production phase, which follows the digitization of cultural heritage data, creative arts practitioners play a crucial role in improving and enhancing digital materials to generate captivating and immersive experiences for viewers. They take raw data and turn it into compelling stories, visualisations, and interactive experiences that digitise cultural heritage by utilising their knowledge of multimedia production, graphic design, and interactive media.

Practitioners in the field of image post-production use a wide variety of tools and techniques to improve and polish digital images of artworks and photographs. its expertise in colour correction, image stitching, and restoration allows them to bring damaged or fading photographs back to life, guaranteeing its authenticity and faithfulness for decades to come. In addition, they add artistic value and emotional resonance to digital photos through compositing and creative alteration, turning them into captivating visual stories that move and inspire viewers.

Like in filmmaking, creatives in the field of video post-production use their expertise in editing, motion graphics, and sound design to create cinematic works that take audiences on a journey through time and space. The artists use visual storytelling techniques to create multimedia installations, virtual tours, or narratives in the style of documentaries to make people feel and learn a different aspect of the cultural heritage and in turn appreciate cultural heritage in all its manifestations.

The creative arts have the potential to enhance audience engagement and connection with cultural heritage by allowing them to interact with digital cultural assets in new and meaningful ways through the incorporation of interactive features like touchscreens, augmented reality, and virtual reality.

Creative arts practitioners bring digital cultural assets to life through multimedia storytelling and interactive media, making them more accessible and engaging for different audiences. Their artistic vision and technical skill allow them to connect the past with the present, preserve traditions while embracing new ideas, and bring cultural heritage to life in ways that pique interest, encourage creativity, and strengthen bonds of community.

In the Mah Meri oral folklores, an illustration was developed to better tell the stories of for public consumption, which was then animated as animatics.

Figure 10: Benchmark Line Art in Mah Meri Project.

Figure 11: Panels to be animated in Adobe After Effects.

Figure 12: Video Compilation of the Mah Meri Stories.

The Mah Meri masks were then post-processed using a combination of Agisoft, Autodesk Recap and Blender.

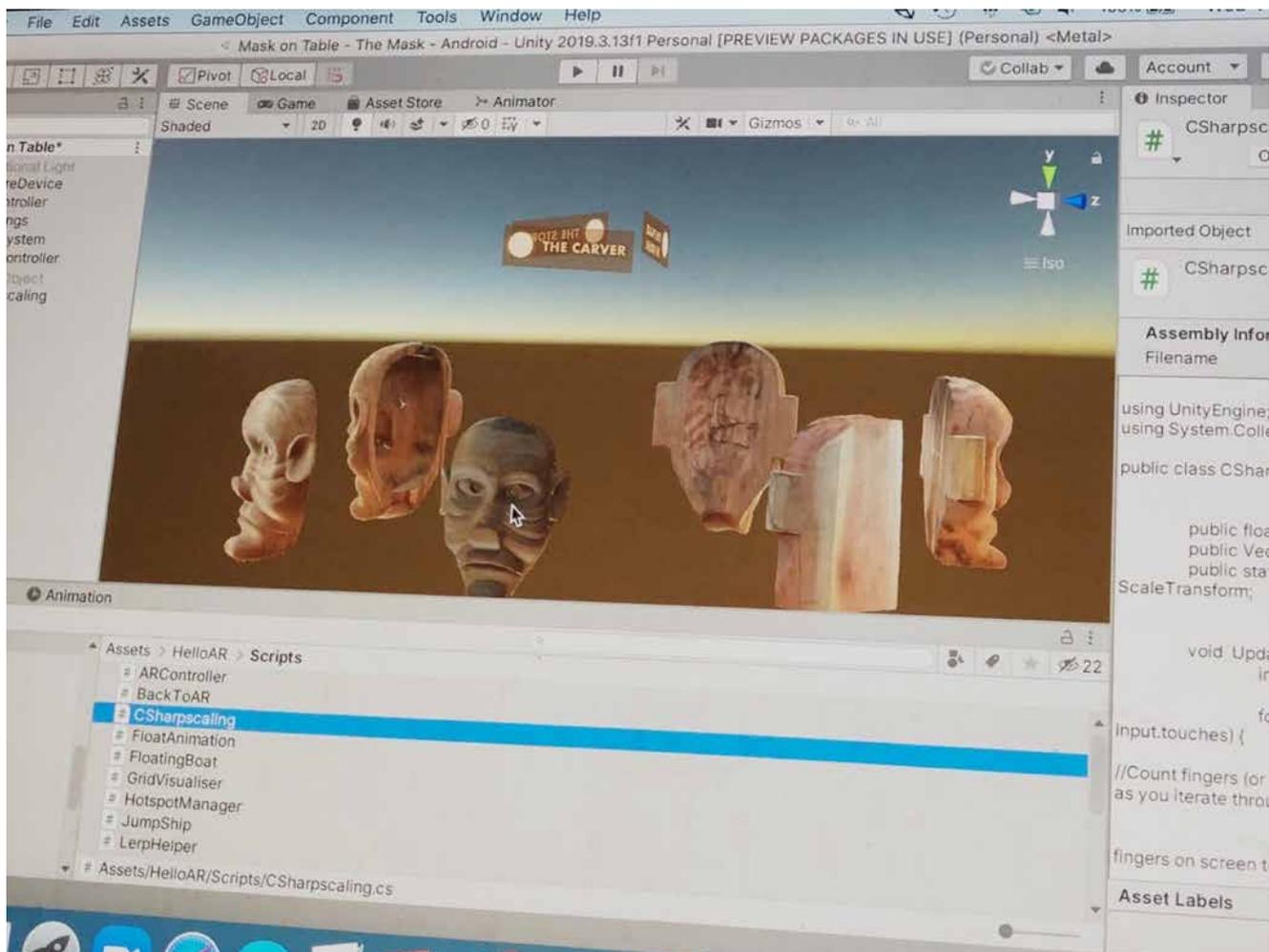Figure 13: 3D Mask Post Processing from Photogrammetry into Object Ready for AR And VR.

Figure 14: 3D Object Used in Unity for AR Development.

Santano & Thwaites (2018) examined the use of Augmented Reality (AR) in transmedia storytelling, focusing on its design and implementation. The authors employed Augmented Reality (AR) technology to develop narrative-driven encounters in two separate research endeavours. One of these initiatives was around the preservation of indigenous boat construction techniques on Pangkor Island. The augmented reality (AR) content comprised of films, photos, interviews, 360 footage, and 3D models. The AR applications were developed using Unity and

Vuforia software. The AR experiences were showcased in a book-like manner, incorporating interactive aspects. The authors emphasise the significance of gathering intangible heritage data to develop impactful augmented reality (AR) experiences. The article also addressed the difficulties associated with file size and feasibility in distributing augmented reality (AR) material to end consumers.

VR360 data were captured and post-processed with Insta360 Pro stitching software and edited in Adobe Premiere Pro. The finished VR360 were rendered as a VR360 video for Oculus Quest 2, HTC VIVE and Samsung Odyssey devices.

Within the GLAMs industry, creative arts practitioners are crucial in preparing digitised cultural assets for public consumption by shaping and contextualising data from cultural heritage into relevant tales and experiences. Using their knowledge of narrative, visual communication, and audience engagement, they create accessible and immersive experiences out of digital materials, appealing to a wide range of people and encouraging a greater respect for cultural history.

Some experts have contended that archivists should perceive culture as a valuable asset that can be replicated and reinterpreted on numerous occasions, rather than just digitising artefacts in a fixed state, as has been the prevailing practice in recent times (Hou et al., 2022).

Carefully selecting and placing digital cultural artefacts into the larger historical context is an essential part of data sculpting. Creative professionals reflect the richness and complexity of the human experience through the rich and multidimensional tales they weave together using various voices, sources of information, and viewpoints. Careful curation and presentation allow them to draw attention to relationships, ideas, and insights that go beyond specific artefacts, encouraging viewers to rethink and reinterpret cultural history.

In addition, artists and other creatives use their knowledge of audience engagement and participatory design to make accessible and engaging experiences for all people, piquing their curiosity and inspiring them to get involved. Inspiring a sense of pride and unity in multicultural communities, they do this through digital platforms, educational programmes, and interactive displays that encourage audience participation in the interpretation and sharing of cultural heritage.

COPE (Create Once Publish Everywhere) is a very common methodology that is being used everywhere by content creators, which is very evident on social media (digital space) and in the physical space.

Artists and performers in the creative industries bring history and culture to life for people all over the globe through compelling narratives and interactive performances. Their creative methods and willingness to work together guarantee that digital cultural assets are not only saved but also used and enjoyed by people of all ages.

In a 2013 and 2014 exhibition at an Art Gallery, the researcher exhibited his creative work that encompasses data capture and post processing (Santano & Mustaffa, 2016).

The exhibition was well received by the visitors of the Art Gallery.

Figure 15: Video Recording of 2013 Exhibition.

Figure 16: Video Recording of 2016 Pangkor Boatbuilder Exhibition.

In 2019, a research-creation project was undertaken to reinterpret the intangible heritage of folklore stories in Malaysia. This project built upon previous research that had documented five folklore stories from the Malay culture, the Iban of Sarawak, and the Mah Meri indigenous culture. Subsequently, all of this data is carefully organised and presented in a visual format, which may then be shared with the general audience.

To distribute the folklore stories, the researcher created animatics based on the gathered stories. The illustrations are presented in both digital and analogue formats, in accordance with the artist's artistic direction. The graphic panels were subsequently animated using digital techniques. Narrators were employed to recount the story, while sound effects were incorporated to improve the storytelling experience.

In the previous exhibition, the researcher presented the stories in a multi-display style in order to assess the level of immersion experienced by the viewers.

Figure 17: Exhibition of Multi-Screen Folklore Storytelling.

An augmented reality book, designed in a comic style, was created to complement the multi-screen installation. This book was made available to guests who wished to revisit the stories presented on the multi displays, although in a different format. Each medium of storytelling generates a distinct experience for viewers or readers. The book was designed by the researcher by utilizing the purpose of comic books that aims to create the imagination of readers but via augmented reality.

Figure 18: Augmented Reality Version of Folklore Storytelling.

Figure 19: Screen Recording of AR App From 2017 Version.

The 3D Masks that were generated by photogrammetry were then used in building an AR prototype for the public.

Figure 20: Screen Recording Video of Mah Meri AR Prototype.

In 2016, the researcher has also produced an augmented reality book using data that was captured from the traditional Pangkor Boatbuilder.

Figure 21: Screen Recording of 2016 AR App Demo.

In 2023, the researcher has updated the AR application of the same data from the Pangkor boatbuilder. The new AR application has integrated a new interaction in experiencing the AR and the cultural content.

Figure 22: Screen Recording of 2023 AR App from the Pangkor Boatbuilder.

Conclusions

Last but not least, public interaction with cultural heritage in the digital age can be greatly enhanced and digitization initiatives can be advanced through the integration of creative arts within the GLAMs sector. Professionals in the creative arts are indispensable throughout the whole digitization process, from data collection to content development and public consumption, thanks to their knowledge of media production, design, storytelling, and audience engagement.

Museums and other GLAM organizations may help people of all backgrounds better understand and appreciate cultural heritage by using digital technology and innovative ideas to design accessible, immersive experiences that go beyond the constraints of time and geography. Artists and cultural workers provide people new opportunities to experience and understand the world's history and culture through multimedia storytelling platforms, virtual tours, and interactive exhibitions.

But we need to work together to encourage creativity, inclusivity, and collaboration in the GLAMs sector if we want to see the creative arts reach their full potential. Among these goals is the encouragement of diverse and inclusive interpretations of cultural artefacts, the provision of opportunities for the professional development of individuals working in the creative arts, and the promotion of interdisciplinary cooperation between those working in the creative arts and those working in heritage.

In addition, standards, guidelines, and best practices for incorporating creative arts into digitization projects should be developed, as should ongoing study and exploration into the nexus of cultural heritage digitization and the creative arts. The survival of the global learning and arts museums (GLAMs) sector and the preservation of our cultural heritage depend on the creative arts, hence it is imperative that policymakers, heritage professionals, and practitioners of the creative arts work together to stimulate discourse and collaboration.

Finally, GLAMs' incorporation of creative arts offers a game-changing chance to rethink cultural institutions' function in the digital era and foster global solidarity, empathy, and cultural understanding. The power of digital technology may be used to preserve, promote, and celebrate our shared cultural history in new and exciting ways if we are willing to be creative, innovative, and collaborate.

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