



Museums: Connecting People and Technology

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Placing people and social interactions at the core of any technology development framework is central to enabling greater access and inclusivity. This essay will elaborate on the National Museum of Singapore's approach to introducing technology as an enabler towards deeper engagement with its audiences.

The National Museum of Singapore is Singapore's oldest museum, and has been located at Stamford Road since 1887. In 2006, the building was revamped and a new annexe block added, increasing gallery space by about 4000 sqm. In 2015, to celebrate Singapore's 50th Jubilee anniversary of independence, the museum took the opportunity to update its permanent galleries, marking the first major refurbishment of those galleries since the term "digital" became mainstream lingo that encompasses both mobile and internet technology¹.

Within the decade between 2006 to 2015, visitors' behaviour in museums has shifted from passive consumption to a desire for active engagement with the exhibits and content on display. Visitor and focus group studies have shown consistently that visitors desire interactive

and immersive experiences. This sparked substantial introspection and deliberation about how we as a museum communicate with our audiences, and how we can design for greater inclusivity and accessibility. Most of all, we noted that what visitors want is a place that is enjoyable and relaxing, while still having a chance to learn something along the way.

With the world of knowledge at our fingertips today, museums are no longer just places of scholarship and repositories of information and learning—much of which can be obtained online. Increasingly, many see museums as social and civic spaces which need to cater to a wide variety of social groups and demographics. As such, it only makes sense to always have that consideration at the forefront of any planning.

This is why we were clear that we had to place the audience at the centre of our development framework. At the heart of this is the belief that we need to make visiting the museum a social and not just intellectual experience. But what do we mean by making it social? It means to place people rather than the technology at the forefront of exhibits. It means considering

how people engage with the artefacts and the artworks and looking beyond what they get out of it to understand what they put into it as well.

Story of the Forest

Acknowledging the shift in expectations and behaviours, the National Museum of Singapore embarked on its first major digital project, *Story of the Forest* to bring the prized but largely overlooked 200-year William Farquhar collection of natural history drawings to “digital life”. This collection comprises 477 drawings of flora and fauna that documents the natural environment of Malaya some 200 years ago, so the question we had to answer was: How could we make a dated collection relevant and engaging to a contemporary audience who have access to a world of content at their very fingertips?

We worked with multidisciplinary artist collective and technologists, teamLab, to recreate the collection digitally and present it in an immersive environment that visitors could walk through and physically navigate. Visitors were also given the option to participate virtually through a mobile application where they could “catch” and collect the animals they encounter, similar to *Pokemon GO*™ created by Niantic Inc, that had launched the same year.

While the art and technology behind the digital installation were impressive, the social interactions evoked by the exhibition were even more remarkable. We started to see instances of people bonding and sharing moments of excitement and awe. The outcome showed that we had succeeded in bringing our audiences into a reimagined, digitally constructed space,

allowing them to gain a fresh new take on a prized but dated collection in the museum.

This success both encouraged and inspired us—and we started to create programmes to allow us to engage with different target groups like families with young children, people with additional needs and seniors, just to name a few. We believe that by bringing the audience into our work, we can foster a deeper level of connection and engagement compared to if one experiences a more traditional and didactic display. Now we have successfully moved away from a passive visitor experience into an engaging and participative experience where conversations and shared experiences take precedence.

New immersive media

Our first venture into immersive technologies came about in early 2015, when we proceeded to experiment with Augmented Reality (AR) via the then-fledgling Google Tango® development kit. At that point, we felt that AR brought a greater potential than Virtual Reality (VR). While VR presented the more empathetic environment for engaging with individuals, it was still primarily a solitary experience due largely to the limitations of its development at that time. In this respect, AR as a social connector was a more powerful tool. With this in mind, we used the Tango® platform to develop an AR-based architectural tour showcasing the historic rotunda of the National Museum of Singapore recreated based on 1950s photographic images. This allowed visitors to use the application to travel back in time and explore various digitally reconstructed spaces within the museum.

Once again, while in itself an interesting use of technology, what made the application successful was that we had chosen to place the people responsible for delivering the work at the centre of the development effort. We worked closely with the museum docents to design the experience, and ensured that technology did not lead the experience, but acted a tool to the docent-led tours, complementing and enhancing an already engaging experience to drive deeper interactions and connections. This meant that AR featured as part of an overall guided tour experience—ultimately, the human aspects and social interactions led the way for users to navigate the application. Users were also not completely dependent on the technology; they appreciated that they had the choice and were aware that they could still have meaningful conversations with each other in the process. The pilot was successful, but the limitations of the platform, which we knew upfront, meant that the application would be discontinued soon after.

DigiMuse: Pioneering innovation in the culture sector

It is with these experiences under our belt that we launched the DigiMuse programme in 2016 to pilot, prototype and testbed ideas and initiatives in new technologies. DigiMuse does not stand for “digital museum”, as this would imply an ambition to transform or create a digital museum as an end-state. Instead, we settled on the name with the etymology of the word “muse” in mind, as the muses in Greek and Roman mythology refer to the nine goddesses who preside over the arts and sciences. The name therefore has reference to creativity and inspiration, and was developed through a very deliberate and careful thought process.

In the same vein, DigiMuse was created because of the belief that rather than to chase new technologies, we should have a platform to learn, engage and co-develop meaningful solutions that bring both the culture and technology sectors together. It was a pioneering and ground-breaking approach in Singapore as it demonstrated the potential of blending emerging technologies with regular museum audiences. The programme also targeted professionals in both sectors, seeking to build capabilities, knowledge and opportunities for collaboration.

We did not set too many ambitious Key Performance Indicators (KPIs), but instead allowed there to be freedom and space for creators to engage and experiment. Ultimately, DigiMuse enabled us to have continued conversations with people about how technology could play a meaningful role in transforming and inspiring new museum experiences. It successfully drew participants from diverse fields to participate, whether in digital conversations, co-developing ideas or exploring ways to make museum experiences better.

Technology and wine

In the initial stages of the DigiMuse programme, we brought in international projects created in VR and new technologies, and had them presented at the National Museum of Singapore as a way to engage with both our audiences, and the broader arts and culture sector. We took the time to reflect on their responses, and ease ourselves into understanding what we needed rather than what we wanted.

Often when it comes to technology, we tend to feel the need to let it take the lead. After all, if we have invested significantly in it, it should

speaking for itself! However, when the technology gets ahead of itself, the experience often leaves much to be desired. In a manner of speaking, technology is like wine. However great a bottle of wine might be, it is always better shared. A good vintage can be a good conversation starter and something that we look forward to with great anticipation. Unless you are in a wine appreciation course, the taste of wine should not be the only thing you take away or remember of the experience. Instead, it is the conversations that develop around it that create the emotional and social connections that stay in your memory for years to come. While you will almost definitely forget the vintage and the year of the wine, you will certainly remember the wonderful time you had sharing it and the people you shared it with. In the same way, technology provides a reason—it is a conversation starter, but not the dominant narrative. Rather, technology should be designed to fade into the background, prompting you but never being in your face. To achieve this, we must be deliberate about our usage of technology and not leave it to chance.

To allow our vintage to shine, DigiMuse made the first ever open call for prototype projects in the area of digital technologies. Instead of defining a clear set of problems, we left it vague and open, calling for submissions in two categories: One in the area of how digital technology can help transform the museum experience, and the other in how they have impacted art and creatives.

We received an overwhelming number of over 40 submissions and awarded 10 projects in total, seven of which were presented in August 2018 as part of the inaugural DigiMuse showcase. In evaluating these projects, great

value was placed in how human interactions would benefit from these digital interventions. The seven projects were diverse and explored the full range of available and emerging fields and technologies: VR, AR, mixed reality, Artificial intelligence, chatbots, behavioural analytics, 3D printing and gigapixel photography.

An excavation through time

The VR project we supported was called *An Excavation Through Time*. In the initial submission, the partnering company, Immersely Ltd, proposed a VR experience where visitors would be able to excavate virtual objects and discover treasures from our collection. It had promise but lacked a social element that we felt would extend conversations and interactions into the virtual plane. As such, we worked with the developer to incorporate a social component so the experience became a two-player set-up where both players had to communicate and work together to achieve the desired outcomes. We paired the developer up with actual archaeologists so that they had a better appreciation of actual conditions and paid great attention to authenticity. The experience was based on an actual dig site in Singapore, and users were able to virtually excavate actual objects found on that site. The experience was also conducted within the permanent gallery where the objects were displayed, so visitors that had gone through the VR experience were also able to view the physical artefacts and continue their conversations on the topic.

Project Insight

Another project that had promise was one in the area of mixed reality, called *Project Insight*. The partnering company, HelloHolo Ltd,

leveraged the Microsoft HoloLens® platform and worked with the museum to give visitors a deeper understanding about the process of conservation. Before an object goes on display, it undergoes many hundreds of hours of conservation and care, a process that despite being integral to museum work, is often not fully understood or appreciated. Through the use of the mixed reality platform, visitors were able to view a particularly striking portrait on display but also experience first-hand the conservation and restoration process.

This was done by overlaying X-ray and UV vision that showed the defects within the painting, allowing visitors to pick the appropriate tools and apply the correct rectification to the painting. A virtual conservator was also on-hand to guide them through the process. Visitors came away from the experience more appreciative of the work that went into conservation. We also see this as being a powerful tool to bring out of the museum and into schools for education purposes—something we would not be able to achieve with a physical lab—and that has the potential to help in conservation training.

In both these projects, the outcomes demonstrate the potential of how immersive reality can add to museums, not merely by adding on a fancy layer of technology onto an existing process, but by creating additional value and encouraging deeper conversations and engagement with our audiences, curators, and conservators. In blurring the lines between the physical and the virtual, we should be clear on what we hope to get out of that process and the responses we aim to provoke from our audiences.

Conclusion

Ultimately it is not about what the technology can do, but what people can do with the technology. By placing people and social interactions at the heart of our development framework, we just might be able to naturally transit from a space of blurred realities, into one where all forms of reality are intuitive, social and relevant. By bringing together artists, creators and developers into the same space, we aim to allow for meaningful use of technology to bring about more accessible and inclusive spaces in all our cultural institutions.

¹ The Apple iPhone was commercialised in 2006, thus bringing mobile digital technologies into mainstream culture and acceptance

² <https://www.pokemongo.com>