

Emergence of a Digital Mobile Museum – Reaching Underserved Audience

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Abstract. The mobile digital museum built by the Inner Mongolia Museum has been in operation for a period of two years. During these two years, it has received overwhelming responses from all age groups of audiences and all walks of life. Besides documenting the process of building China's first entirely mobile digital museum (with no physical artefacts), this paper aims to share the experiences and achievements attained after two years of service.

Keywords: Mobile museum, Digital Museum, Portable Museum, Digitization, 3D artefact

1 Introduction

In 2013, the International Council of Museums (ICOM) announced “Museums (memory + creativity) = social change” as the theme for the 2013 International Museum Day. ICOM General Director, Julien Anfruns adds: “Reconciling their traditional mission of preservation with cultivation of the creativity necessary for renewal and visitor growth is the evolution that museums are striving for, with the firm conviction that their presence and their actions can change society in a constructive manner.” The theme reminded museums to effectively engage culture and heritage to contribute to community development and establishing society cohesiveness.

Inner Mongolia Museum serving a hugely grassland region, decided to respond. A task force was set up to brainstorm and research what better ways are available for Inner Mongolia Museum to celebrate the International Museum Day 2013. After considering several critical factors including its geographical location, the intended class audience to be served, budget available, mode of presentation, it was decided that a mobile digital museum best suits the current aim of the Inner Mongolia Museum.

1.1 Objectives of the paper

Besides documenting the process of building China's first entirely mobile digital museum (with no physical artefacts), this paper aims to share the experiences and achievements attained after 2 years of service.

2 Design and Build

2.1 The design process

The entire design process start with analyzing the 3 generic main issues the museums faced. The team aims to work out a feasible solution to address all 3 issues.

First is the inaccessibility of the physical museums to potential visitors. Most, if not all museums are physically located in the city center. Visiting them becomes both a time consuming and expensive activity for people living in the suburbs. Residents living in the countryside of modest purchasing power will not be able to benefit..

Second is the lack of connection between the visitor and the artifacts. Museums are not mere storage places of cultural properties. Museums also serve as knowledge centers. ICOM President, Prof. Dr. Hans-Martin Hinz once said “Museums are an important means of cultural exchange, enrichment of cultures and development of mutual understanding, cooperation and peace among peoples”. However, the rich diverse information behind the artefacts remains inaccessible to visitors due to our museums being too traditionally focused on a oneway flow showcase rather than engaging the visitors via a twoway flow. Typical charts, information tags for artifacts provide very limited details, creating barriers for laymen visitors to learn about an artifact, and to find its relevance to other artifacts or to themselves.

Third is the safety of transporting physical relics during travelling exhibitions. To set up a exhibition requires the loan and transport of valuable cultural objects. Whether it is by air, sea or land transport, any form of museum transfer would pose a risk to damaging the artefacts.

With these issues in mind, a mobile digital museum concept was derived at. This will enable museum programs to travel to remote places, imparting cultural and historical knowledge to audiences and equipping them with information they previously had no access to. In addition, due to the absence of physical artefacts, damage to and loss of physical artefacts are no longer a critical consideration.

2.2 The building process

The concept of building a mobile digital museum entails the following considerations:

- that the museum is a portable platform with mobility to travel great distances and to remote areas
- that the entire museum comprises 3D digital data of artefacts
- that the contents of the exhibition can be easily changed

The final design comprises a vehicular platform that carries with it no physical artefacts but high resolution 3D digital representations of artefacts which can be easily installed and uninstalled. An external LED screen acts as a temporary stage to host multi media events.

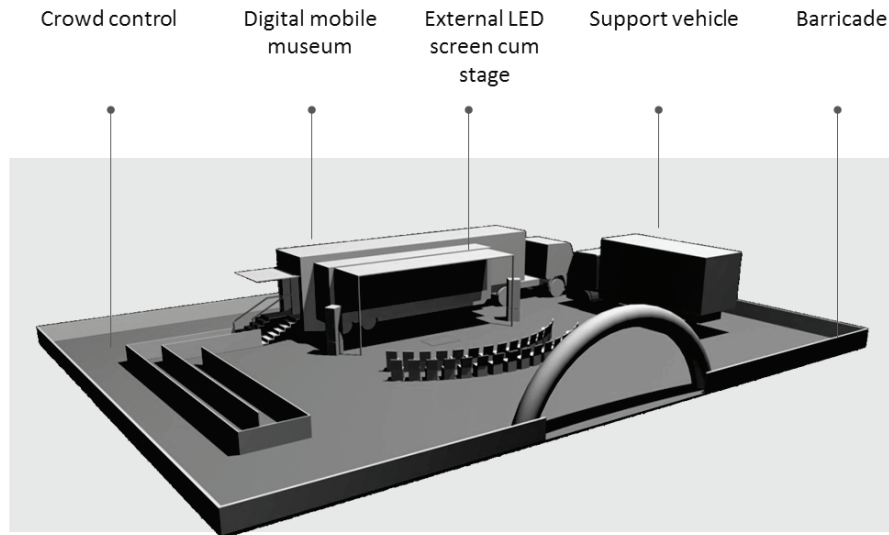


Fig. 1. Overall concept of a mobile digital museum

It measures 13m in length and 2.5m wide. To accommodate as many visitors as possible, an expandable space comes into our plan. By the push of a button, both sides of the mobile museum are retractable to expand the space from 30m² to 45m². A central computerized system was designed to control all the advanced interactive screens and contents of the museum. It is by far the biggest and most versatile mobile museum in China.

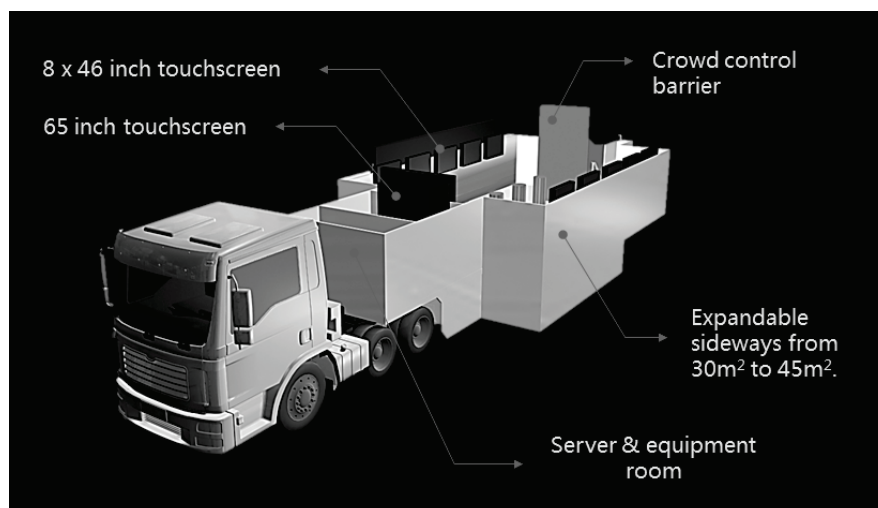


Fig. 2. Front view of the mobile digital museum

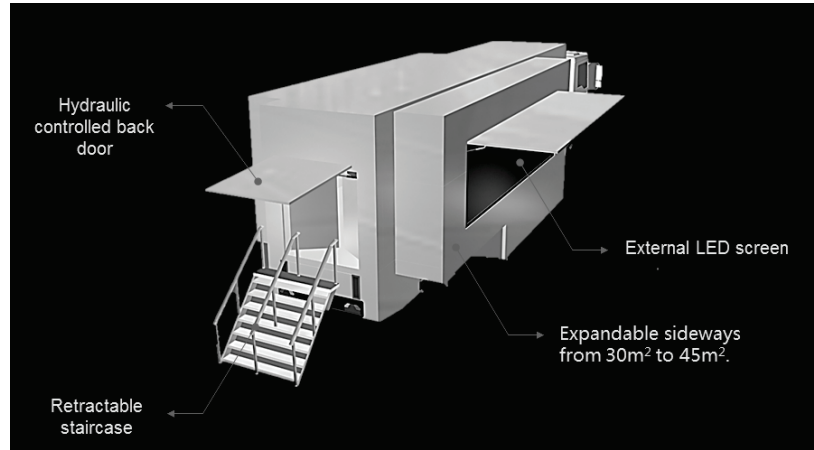


Fig. 3. Rear view of the mobile digital museum



Fig. 4. Side view of the mobile digital museum



Fig. 5. The mobile digital museum in operation

3 Advantages of a digital mobile museum

A mobile digital museum offers the following advantages:

Mobility – Perhaps the best way to reach underserved audiences is to drive directly to them. By traveling to remote areas, schools and underprivileged communities, a digital mobile museum can help share the diverse facets of a country's culture and show the people of different ages and social status that they play a significant role in contributing to the country's rich heritage and diversity.

Connection - To bridge the gap between artifact information and visitor engagement, an interactive digital platform is essential for increasing engagement through resonant, rich, and interactive experiences. Our digital relics provide a platform for interactivity and access to an unlimited amount of information, presentation of rich media, and flexibility for customized experiences both inside the museum and beyond.

Interaction - Our mobile digital museum provides more options for visitors such as different ways to view collections, interactive games, quizzes to increase knowledge, customise our exhibitions and even surveys, resulting in many more opportunities for visitors to find connections to artifacts.



Fig. 6. A visitor interacting with a 3D artefact

Empowering Visitors – By providing an interactive platform, visitors can decide on their own as to how they want to learn about the artifacts and to explore exhibitions and related content. By placing the visitors in the driving seat can help visitors discover their own connections to the exhibitions.



Fig. 7. Visitors are empowered to view, interact and learn about the artefacts at their own pace

Unlimited Content - Our mobile digital museum can present to visitors many options to engage with the collections. Information in the form of text, audio, video clips and animation can now be provided on one single platform. Our interactive platform allows visitors to manipulate the digital artifact freely, view them in any angle and zoom in to view details. Visitors can now interact with the artifacts and explore beyond basic facts about them. They can even now “hold” the valuable artifacts in their palms and keep a screen capture for remembrance. This is not possible with physical relics.



Fig. 8. The 3D data can be easily applied to the Augmented Reality application.

Safety – Unlike the traditional mobile museums where physical relics must be carried along, a mobile digital museum carries digital artifacts. Issues on safety and security of the relics are reduced to a minimum.



Fig. 9. Interior of the digital mobile museum



Fig. 10. Another view of the interior of the digital mobile museum

4 Results

The Mobile Digital Museum was opened to the public on 18 May 2013 to commemorate World Museum Day. It was widely reported in the news as this is the first of a kind mobile museum in China where no physical artifacts are exhibited but only high resolution 3D models of them.

Till date, the digital mobile museum has achieved the following:

- travelled to more than 37 provinces within Inner Mongolia Autonomous Region
- travelled a distance of 15,000km
- visited by 80,000 people
- staged 148 exhibitions
- visited 34 educational institutions
- visited 44 town centers
- visited 12 local communities
- visited 2 mining quarries
- visited 1 forestry
- visited 3 factories
- visited 4 tribal communities

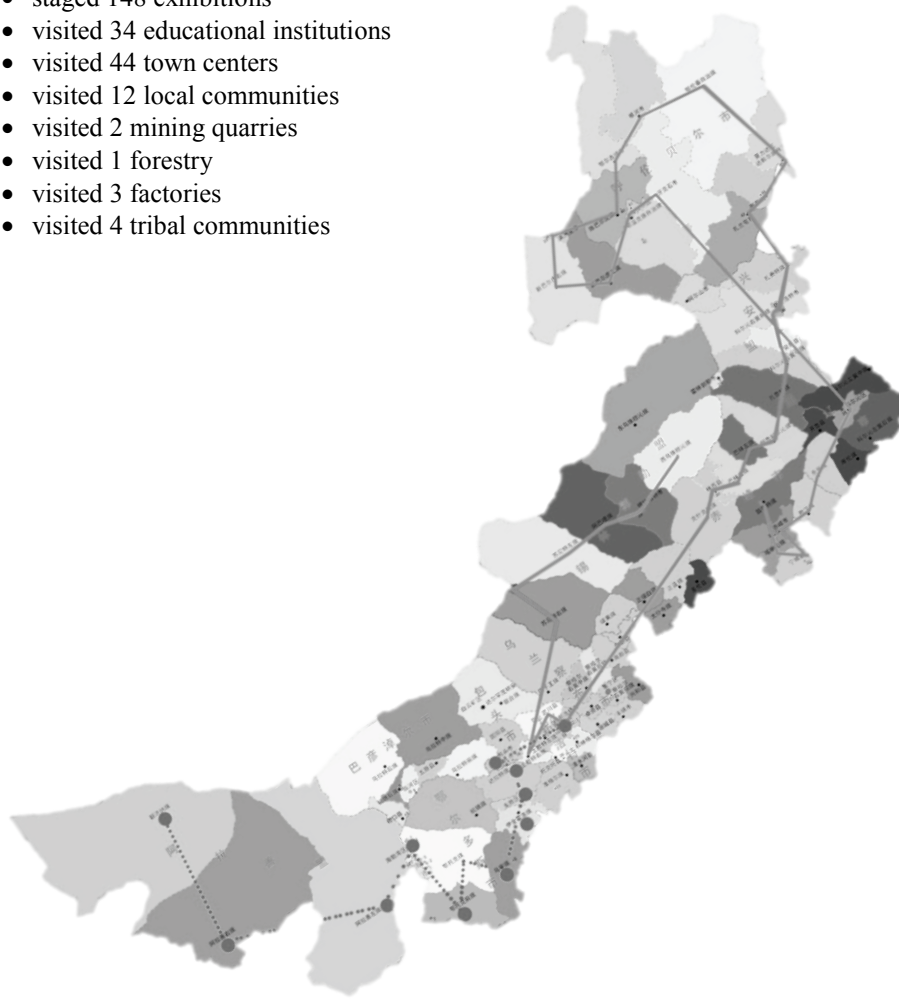


Fig. 11. Map depicting the travelling plan of the digital mobile museum



Fig. 12. The digital mobile museum visits the schools



Fig. 13. The digital mobile museum visits the tribal communities





Fig. 14. The digital mobile museums visits the major town centres



Fig. 15. The digital mobile museum visits the military



Fig. 16. The digital mobile museum visits the quarries





Fig. 17. The digital museum visits the local communities

5 Conclusion

The digital mobile museum is not designed to replace the traditional museum. It serves as a tool to complement the traditional museum by extending its benefits through a larger network of digital exhibitions. It helps to disperse culture and knowledge to places where the traditional museum fails to reach or has no access to. It can be operated at any places and at any time. It has broken the barrier of time and space effectively.

The digital mobile museum permits the contents to be changed easily to cater to different classes of audiences. Because no physical artefacts are required, safety of artefacts is never an issue. Organizing a temporary travelling exhibition becomes easy and costs minimized as compared to organizing a physical travelling exhibition.

The mobile digital built museum by the Inner Mongolia Museum has been in operation for a period of 2 years. During these 2 years, it has received overwhelming responses from all age groups of audiences and all walks of life. This has spurred the museum to continue this meaningful educational outreach program that bring the museum to the people rather than the vice versa.

