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## WOODCARVING CATALYST HUB: PROPOSING AN ARCHITECTURAL DESIGN PROJECT FOR THE REVITALISATION OF THE MALAY WOODCRAFT HERITAGE

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### ABSTRACT

Woodcarving stands as one of Malaysia's oldest and most intricate traditional art forms, renowned for its elaborate motifs and deep-rooted cultural significance. Known as Malay woodcarving, this craft is characterised by meticulous floral, geometric, and calligraphic patterns. The Malay woodcarving is historically tied to the Malay archipelago, encompassing the present-day Malaysia, Indonesia and Thailand. Beyond its aesthetic appeal, woodcarving holds spiritual and cultural symbolism, with motifs often conveying specific meanings tied to the Malay identity. Traditionally adorning mosques, palaces, homes, and furniture, these carvings blend artistic expression with functional design, serving both practical and symbolic roles. However, modernisation and waning interest among younger generations threaten the survival of this heritage. In response, this research has the initiatives to explore architectural design potential of a place, for the revitalisation of Malay woodcarving, by establishing a Woodcarving Catalyst Hub in Kuala Terengganu, Malaysia. Designed as a collaborative space, the architectural design project aims to revitalise the craft by providing places for artisans, enthusiasts, and researchers to foster innovation, enhance skill preservation, and promote cultural exchange. Equipped with modern tools and workshops, the proposed architectural design offers training programmes to pass down traditional woodcarving techniques while encouraging contemporary adaptations. Additionally, the hub strengthens cultural tourism by showcasing local craftsmanship to global audiences and supports economic opportunities for artisans. Through partnerships with educational institutions and cultural organisations, the hub is hoped to drive research and development to align traditional practices with modern demands. By merging preservation with innovation, the Woodcarving Catalyst Hub aspires to sustain the relevance of this art form, ensuring its transmission to future generations while positioning Kuala Terengganu as a dynamic centre for Malay cultural heritage.

**Keywords:** Woodcarving, Malay Traditional Art, Heritage Craftsmanship, Heritage Catalyst, Cultural Heritage.

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### INTRODUCTION

Malay woodcarving, a cornerstone of Malaysia's cultural heritage, faces an existential threat. Globalisation and dwindling intergenerational interest have eroded the practice of this centuries-old craft, once central to architectural, spiritual, and communal identity. In response, this design research has the initiatives to design a place for revitalisation of Malay woodcarving, by establishing a Woodcarving Catalyst Hub in Kuala Terengganu, Malaysia. The establishment of the Woodcarving Catalyst Hub has the objectives to empower artisans through skill-sharing, attract younger generations via adaptive training programmes, and reposition woodcarving as a dynamic, economically viable practice.

The Woodcarving Catalyst Hub is proposed as an architectural solution to the crisis: a purpose-built space in Kuala Terengganu designed to revive and sustain Malay woodcraft through innovation, education, and community engagement. Combining workshops, exhibition areas, and collaborative zones, the hub integrates traditional craftsmanship with modern design principles. Merging preservation with innovation, the Woodcarving Catalyst Hub aspires to sustain the relevance of this art form. The project could ensure the transmission of the Malay heritage craft to future generations while positioning Kuala Terengganu as a dynamic centre for Malay cultural heritage.

### DESIGN ISSUES

The Woodcarving Catalyst Hub responds to a critical juncture in Malaysia's cultural landscape, where the survival of Malay woodcarving, a craft steeped in heritage, is threatened by interconnected challenges of livelihood, education, and preservation. In term of livelihood, high demand for authentic woodcarving products clashes with a shrinking workforce. Artisans struggle to meet market needs due to labour shortages and time-intensive production processes, stifling economic growth in this craft sector. The hub addresses this by integrating streamlined workshop layouts and shared fabrication technologies, enabling artisans to scale production without compromising quality. Collaborative spaces will foster partnerships between craftsmen and designers, while a marketplace connects their work to local and global buyers, transforming woodcarving into a sustainable livelihood.

A lack of skilled labour stems from dwindling intergenerational knowledge transfer and limited training infrastructure. The hub combats this educational issue through apprenticeship programmes led by master carvers, paired with modern vocational training in design, entrepreneurship, and digital tools. The provision of flexible studios and open workshops will invite youth and visitors to hands-on engagement, demystifying the craft and nurturing a new generation of artisans.

As traditional woodcarving risks obsolescence, the hub acts as a living archive. Exhibition galleries and interactive installations will celebrate the craft’s history, symbolism, and regional variations. By collaborating with the Ministry of Tourism, the project amplifies woodcarving role in cultural tourism, positioning Kuala Terengganu as a heritage destination. The Ministry’s involvement ensures policy support, funding, and nationwide promotion, embedding woodcarving into Malaysia’s cultural identity.

### ARCHITECTURAL DESIGN VISION

The Woodcarving Catalyst Hub will have spatial design that merges traditional Malay architectural elements—such as ventilated façades inspired by floral motifs—with adaptive, modular spaces. Production zones, training studios, and public areas are woven into a cohesive ecosystem, fostering dialogue between artisans, learners, and tourists. Green technologies and locally sourced materials underscore a commitment to sustainability, mirroring the craft’s harmony with nature.

Based on thorough design research, the hub is formulated to have these three (3) main spatial categorisations:

- 1. Livelihood cluster - to provide proper working spaces for wood carving production with new technology.
- 1. Education cluster- to provide authorised learning spaces for the training of youngsters, to learn and earn from wood carving industry.
- 1. Preservation Cluster - to propose architectural solution that promotes the woodcarving art revitalisation and assist in developing awareness towards preservation of cultural heritage.

Ultimately, the Woodcarving Catalyst Hub is more than a building—it is a catalyst for cultural continuity. By addressing systemic gaps in livelihood, education, and heritage stewardship, this architectural intervention reignites pride in Malay woodcraft, ensuring its relevance in a modern, globalised world. By bridging heritage and contemporary needs, this architectural project seeks not only to preserve a fading art form but to reimagine its role in Malaysia’s cultural and creative future.

### BACKGROUND RESEARCH

#### Malay Traditional Wood Carving

Malay traditional wood carving is an art form deeply rooted in Malay culture and heritage. It is not only aesthetically pleasing but also serves functional purposes, such as in the design of traditional Malay houses for filtering daylight (Denan et al., 2015). The craftsmanship and symbolism in Malay wood carvings reflect the cultural and belief values of the Malay people, and these art forms are considered essential to be preserved (Yusof et al., 2021). The motifs and designs of Malay wood carvings are influenced by Islamic principles and are associated with specific periods and the skills of the craftsmen (Yusof et al., 2022). Furthermore, the wood carvings in traditional Malay architecture, such as at the Istana Lama Seri Menanti (*Seri Menanti Old Palace*), exemplify the architectural influences and expertise of Malay carvers (Abidin et al., 2017).

The wood carvings in traditional Malay architecture are crucial in deciphering Malaysia’s architectural identity, contributing to the sustainability and preservation of architectural heritage (Azmin et al., 2021). The architectural uniqueness of Malay buildings, including specific façade geometries on walls, roofs, and motifs, can be effectively captured through the fusion of photogrammetry and laser scanning, showcasing the importance of wood carving in preserving architectural heritage (Ahmad et al., 2025).

Additionally, the visual composition of Malay wood carvings in vernacular houses of Peninsular Malaysia serves both functional and aesthetic purposes, defining the character of regional architecture (Said, et al., 2008). The use of first-class timber, such as Belian, in the building structures of Malay traditional dwellings further emphasises the importance of wood carving in ensuring the structural integrity and longevity of the architecture (Zain & Putro, 2021). Figure 1 shows an intricate carved wood panel with the motive of ‘Bunga Mas.



Figure 1: A Carved wood panel with main flower with the motive of ‘Bunga Mas, designed by Mohd Zamri Jusoh



## Type of Wood Used for Wood Carving

The types of wood used for Malay traditional wood carving are diverse and carefully selected to ensure the quality and suitability for the intended purpose. The selection of wood for traditional Malay wood carving is influenced by various factors, including the durability properties, cultural significance, and sustainability. Native wood species such as *Belian*, *Cengal*, and *Merbau* are commonly used in Malay traditional wood carving due to their durability, resistance to decay, and suitability for intricate carving. These woods are known for their strength and are often used in the construction of traditional Malay houses, reflecting the cultural value placed on the durability and longevity of the wood. Figure 2 shows an intricate carved wood panel with the motive of *Bunga Kerawang* (cutwork flower).



Figure 2: A Carved wood panel with 'Bunga Kerawang' motive, designed by Mohd Fadlullah bin Awang

## The Usage of Wood Carving on Building

The incorporation of wood carving in traditional Malay building construction is also associated with environmental considerations. For instance, wood carving is ingeniously used as a form of daylight filtering device, addressing issues such as glare and heat from sunlight, thereby contributing to the sustainable and passive thermal design of the buildings (Azmin et al., 2021). Most of the times, wood carving panels also have openings to allow cross ventilation, to ensure dwellers of the buildings to have optimum comfort level. These consideration are aligned with the principles of sustainability and ecological responsiveness, to minimise the buildings' impact on the surrounding environment. Figure 3 shows images of a Grave-marker, a hilt of *Tajung kris* ( and a top-window ventilation panel, made with wood carving.

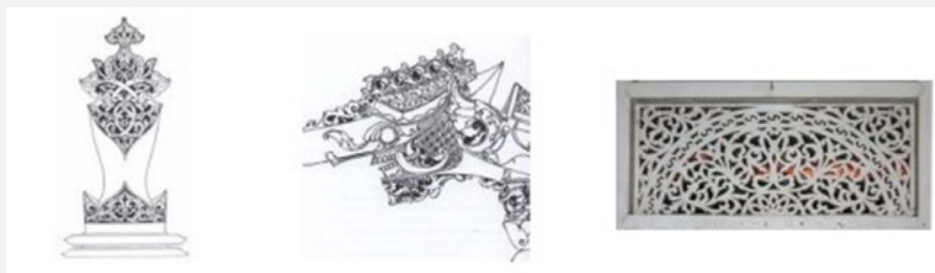


Figure 3: A Grave-marker, a hilt of *Tajung Kris* and a top-window ventilation panel (Source: <https://core.ac.uk/download/pdf/11777532.pdf> )

## SITE SELECTION

### Site Location

The chosen site for the proposed Woodcraft Catalyst Hub is located at Kuala Terengganu, Terengganu, Malaysia. Kuala Terengganu is a city strategically located on the eastern coast of Peninsular Malaysia, facing the South China Sea. As the capital of Terengganu state, it serves as a gateway to the rich cultural and natural attractions of the region. The city is well-connected by road, with the East Coast Expressway linking it to major cities like Kuala Lumpur. Sultan Mahmud Airport, located just 15km from the city centre, provides regular domestic flights and occasional international flights, making it accessible to travellers and tourists. The site's coastal position not only offers scenic beaches and waterfront views but also positions it as a central point for tourists and the local people to explore the surrounding traditional Malay villages, islands, and natural parks. This geographical setting enhances the site's appeal as a heritage tourism destination, blending urban amenities with cultural and natural experiences.

At the macro level, the site is located at Kampung Tiong in Kuala Terengganu, Terengganu. It is strategically situated in the main commercial zone of Kuala Terengganu and surrounded by heritage precincts. The site has a size of 5 acres, with the plot ratio of 1: 6. Figure 4 shows an aerial view of the site.



Figure 4: Aerial view of the site.

### Site Heritage Value

Kuala Terengganu is an area of historical interest which has been established as an eminent spot for heritage tourism. With its rich cultural heritage, historical landmarks and natural beauty, the city provides a realistic cultural immersion for heritage tourism. Therefore, the scenario offers great opportunities for the Terengganu's authority to promote wood carving industry and to generate the state's economic endeavors.

Currently, there are as many as 500 wood carving entrepreneurs throughout Malaysia. The state of Terengganu also has the highest number of wood carvers, compared to other states of Malaysia, such as Kedah, Kelantan, and Pahang.



## Site Neighbourhood Context

The neighbourhood context of Kuala Terengganu has both heritage and culture that are intricately intertwined, reflecting a blend of traditional Malay identity and multicultural historical significance. Building landmarks such as the iconic Crystal Mosque and the historic Istana Maziah showcase the fusion of Islamic and Malay architectural styles. Meanwhile, *Kampung Cina* (Chinatown) boasts well-preserved traditional wooden houses, temples, and vibrant street art, highlighting the historical multiculturalism of the city.

In Kuala Terengganu city centre, especially at the area of *Pasar Payang* (Payang Market), residents actively engage in cultural practices, such as producing traditional batik clothes and woodcarving craft. The market bustles with activity, offering a variety of local crafts, textiles, and delicacies that provide a sensory immersion into Terengganu's cultural heritage. Additionally, *Pulau Warisan* (Heritage Island) serves as a cultural hub, hosting events and exhibitions that further promote and preserve the region's rich heritage, making Kuala Terengganu's neighbourhoods as a vibrant centre, where history and tradition thrive. Figure 5 and 6 show the bird eye views of the site and its neighbourhood context.



Figure 5: The site and its neighbourhood context, looking from the east side.



Figure 6: The site and its neighbourhood context, looking from the north side.

## DESIGN IDEATION

The design brief for woodcraft catalyst hub in Kuala Terengganu. seeks to establish a dynamic centre for the preservation, innovation, and promotion of traditional Malay woodcarving. This state-of-the-art facility will serve as a nexus for master craftsmen, artisans, researchers, and enthusiasts to collaborate, innovate, and educate. The design must prioritise functionality and accessibility, providing dedicated spaces for workshops, training programmes, and exhibitions that showcase the intricate techniques and cultural significance of Malay woodcarving. Incorporating sustainable practices and utilising local materials accentuate the hub's commitment to environmental stewardship and community engagement. Furthermore, the hub should be amalgamated with modern technologies such as digital archives and interactive displays to enhance visitor experiences and facilitate global outreach. By fostering creativity, preserving heritage, and nurturing talent, the Woodcraft Catalyst Hub will not only safeguard Malaysia's cultural legacy but also position Kuala Terengganu as a premier destination for heritage tourism and artistic innovation.

### Design Concept

*Bunga Bakawali* (Bakawali Flower) is chosen as the design concept of this project because it represents creativity, resilience, and growth. Traditionally, Bunga Bakawali has been used as one of the traditional Malay wood carving motif in Terengganu, as the flower symbolises the identity of Terengganu wood carving. The flower implies that architecture could be built close to nature, with stunning aesthetic value and well functioning facilities.

The *Bunga Bakawali* concept is aligned with architectural principles of dynamism, radial organisation, and hierarchy. Devising these vibrant design principles would govern the design exploration into having organic shapes and forms in the building's design. This so-called biomimicry design would express the sense of growth and enthusiasm in the building design. Architecturally, the concept of *Bunga Bakawali* incorporates earth colours for the building, which will generate the sense of calming for the dwellers. Based on Architectural Perspective, *Bunga Bakawali* could be elucidated as the followings:

**Symbolism and Cultural Identity:** - In Malay tradition, *Bunga Bakawali* represents grace, tenacity, and the transient aspect of existence. A sense of cultural identity and pride can be evoked by incorporating this motif into the hub's architecture, honouring Malaysia's rich tradition of woodcarving and craftsmanship. A visually metaphorical narration that appeals to visitors can be created by incorporating the flower's symbolism into architectural features, such as façades, entrances, or interior spaces. Figure 7 shows illustration of *Bunga Bakawali*.

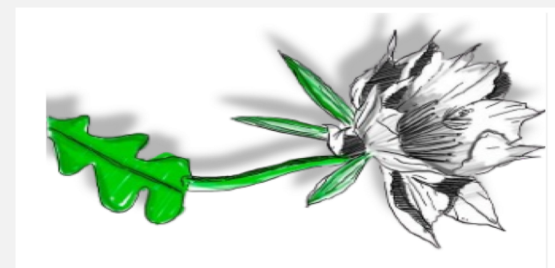


Figure 7: An illustration of Bunga Bakawali (Author)



**Aesthetic Integration:** - *Bunga Bakawali* has the ability to affect the hub's overall aesthetic as a design motif. Building facades, interior finishes, and landscaping elements can all benefit from the use of architectural forms and patterns that are inspired by the flower's delicate petals, graceful curves, and twisting vines. In addition to improving the hub's aesthetic appeal, this integration creates a unified design language that captures the organic beauty of the natural world. Figure 8 shows the intricate design of Bunga Bakawali, used for building finishes.



Figure 8: An intricate design of building finishes.  
( Source: <https://www.threads.com/@zarirhabdullah/post/DDWcKptvXU4>)

**Functional Interpretation:** - Beyond aesthetics, the hub's design's functional elements can be influenced by the *Bunga Bakawali* concept. For example, the structure and growth patterns of the flower can stimulate creative thinking in the areas of sustainability, circulation, and spatial planning. To emulate the adaptable characteristics of the flower, features like natural lighting schemes, ventilation systems, and green infrastructure can be incorporated, encouraging a peaceful coexistence of the built environment and the natural world. Figure 9 shows woodcarving element is used for the railing of staircase.



Figure 9: An intricate design of a woodcarving element, which is used for the railing of staircase  
(Source: [https://www.instagram.com/p/C1DsK5OSVNI/?img\\_index=1](https://www.instagram.com/p/C1DsK5OSVNI/?img_index=1))

## DESIGN DEVELOPMENT

### Islamic values

For any Muslim's architectural design, the inception of Islamic values are essential to ensure architects and designers to comply with shariah compliance design. Islamic values concerning wood carving emphasises on the responsibility of human as the stewards of the earth. Ethical conduct must be observed in utilising natural resources, guided by Quranic principles and Hadith. Quranic verses such as Surah Al-Baqarah (Al Quran 2:164) highlights the creation's signs and the importance of using resources wisely, while Surah Al-A'raf (Al Quran 7:31) cautions humankind against excessiveness in consumption. Prophet Muhammad (peace be upon him) emphasised the virtue of planting trees and benefiting others, illustrating the concept of Sadaqah (charitable act) through environmental stewardship (Sahih Muslim, 1559). These Islamic teachings encourage woodcarvers to source materials sustainably, minimise waste, and uphold integrity in craftsmanship, reflecting a reverence for nature and responsible use of its blessings in accordance with Islamic values.

### Design Exploration

Only after divine guidance is sourced, the designer could explore the creation of architectural design enthusiastically, whilst observing factors of constraints. Figures 10 to 17 show images of design explorations and development, manifold in challenging integration between design constraints, sovereignty and forms.

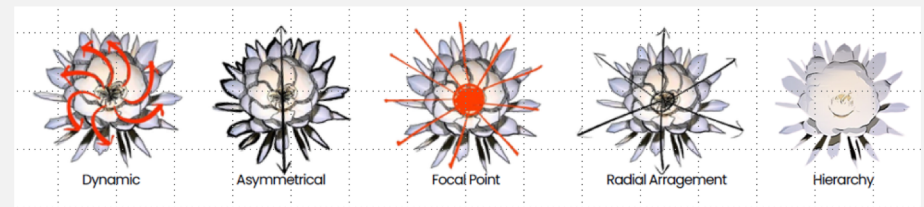


Figure 10: Exploration of architectural forms, based on the concept of Bunga Bakawali

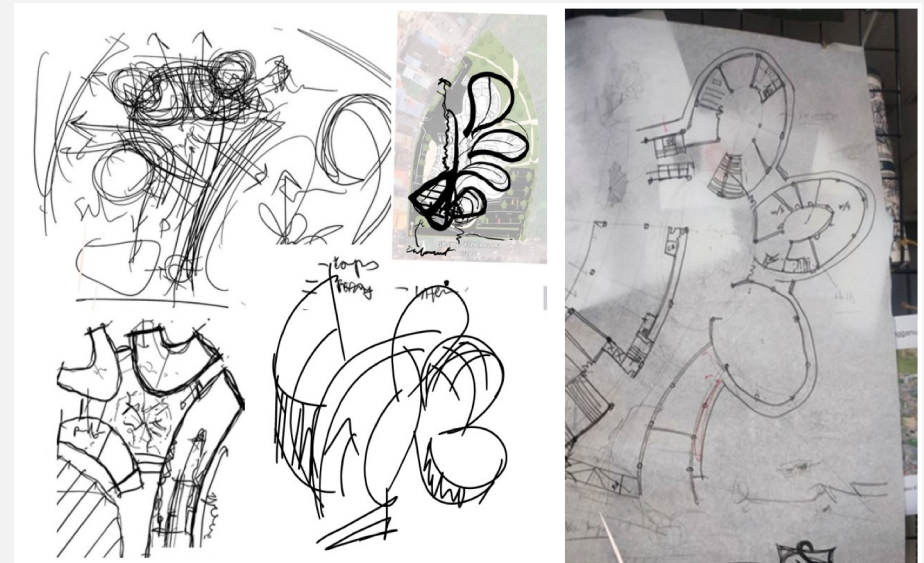


Figure 11: Exploration of architectural forms using 2 dimensional sketches.





Figure 12: Parts of Exploration on Site Zoning.

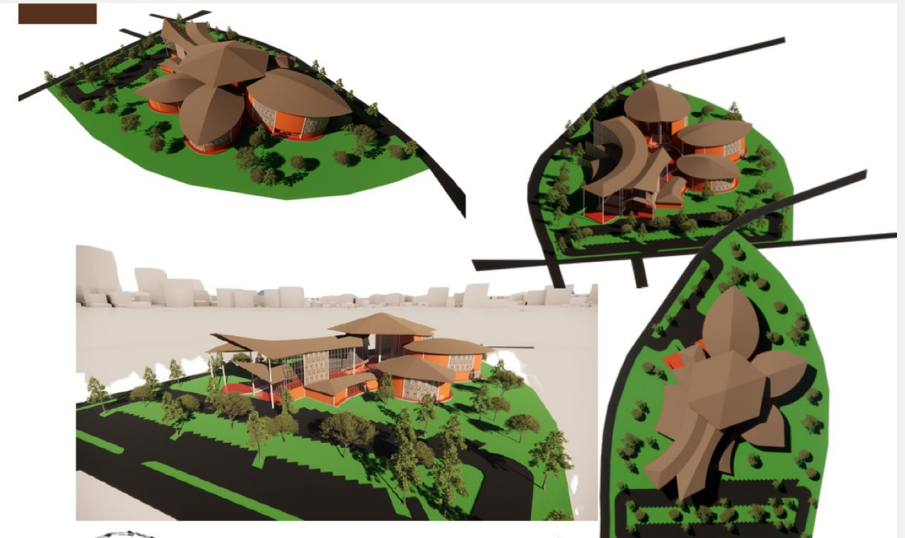


Figure 15: Form Transformation during Design Process, shown in 3-Dimensional forms.



Figure 13: Feasibility Analysis of the Neighbourhood's Context.

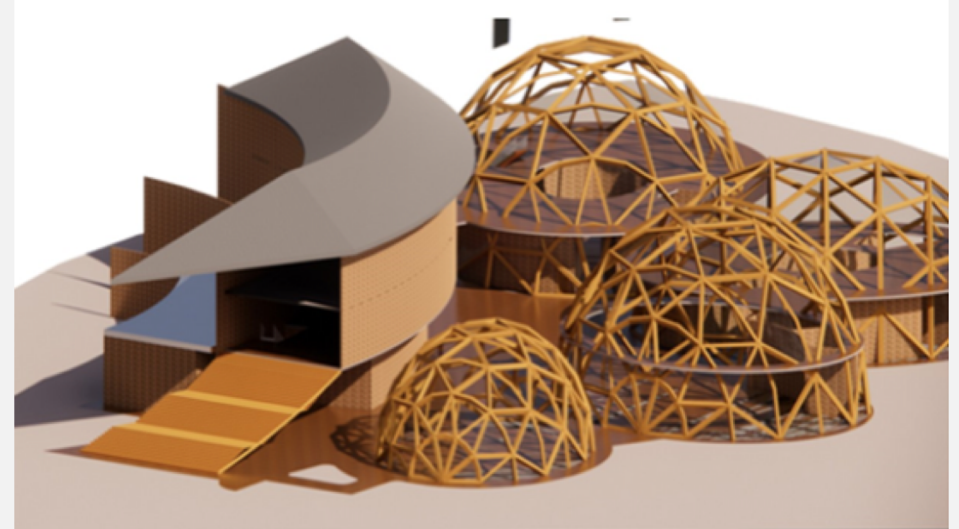


Figure 16: Structural Exploration of the Design Scheme

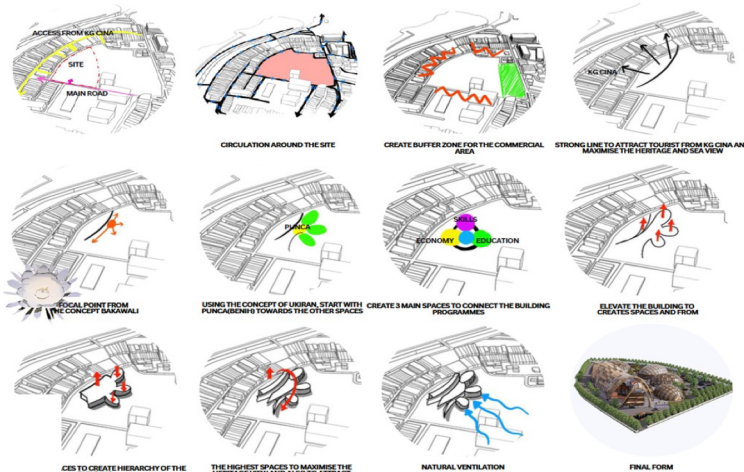


Figure 14: Process of Problem Solving to integrate Design Constraints, Sovereignty and forms.

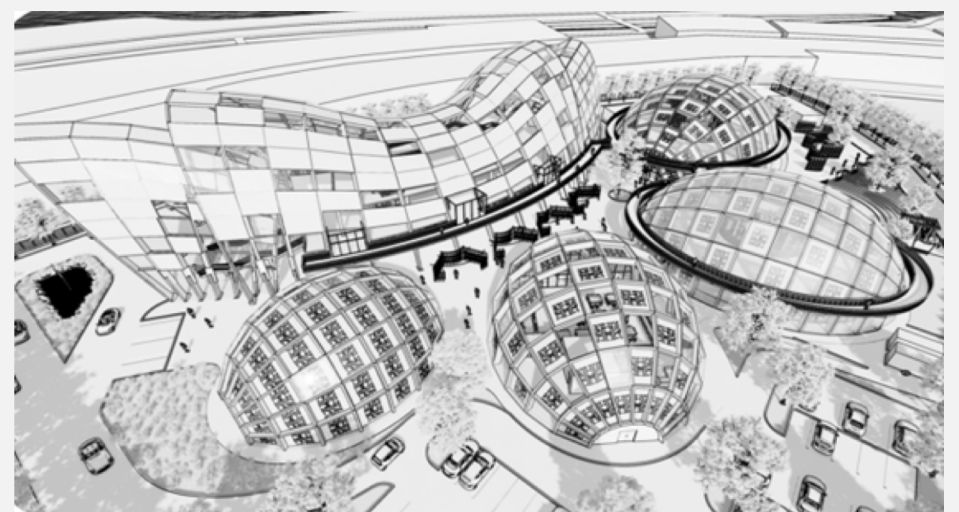


Figure 17: Final Design Scheme, shown in 3-dimensional Drawing



FINAL DESIGN SCHEME



Figure 18: Final Design Scheme, shown in 3-dimensional Physical Model

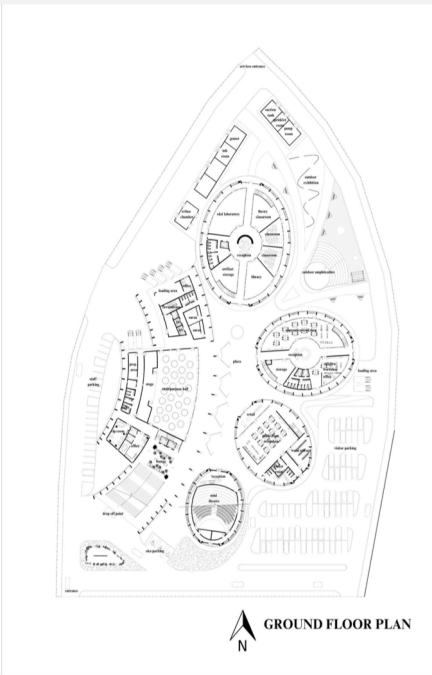


Figure 19: The ground floor plan

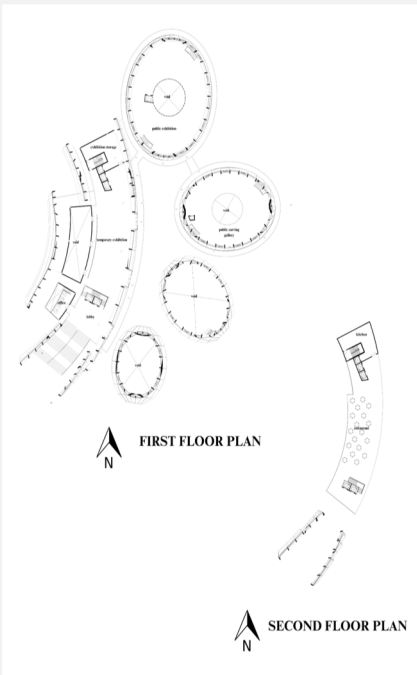


Figure 20: the first-floor plan and second floor plan

Thorough research and intensive design exploration have eventually produced final design scheme that worth to be exhibit to the authority of Terengganu State, and to the general public. Figures 18 to 26 show images of the final design scheme of the Woodcarving Hub.

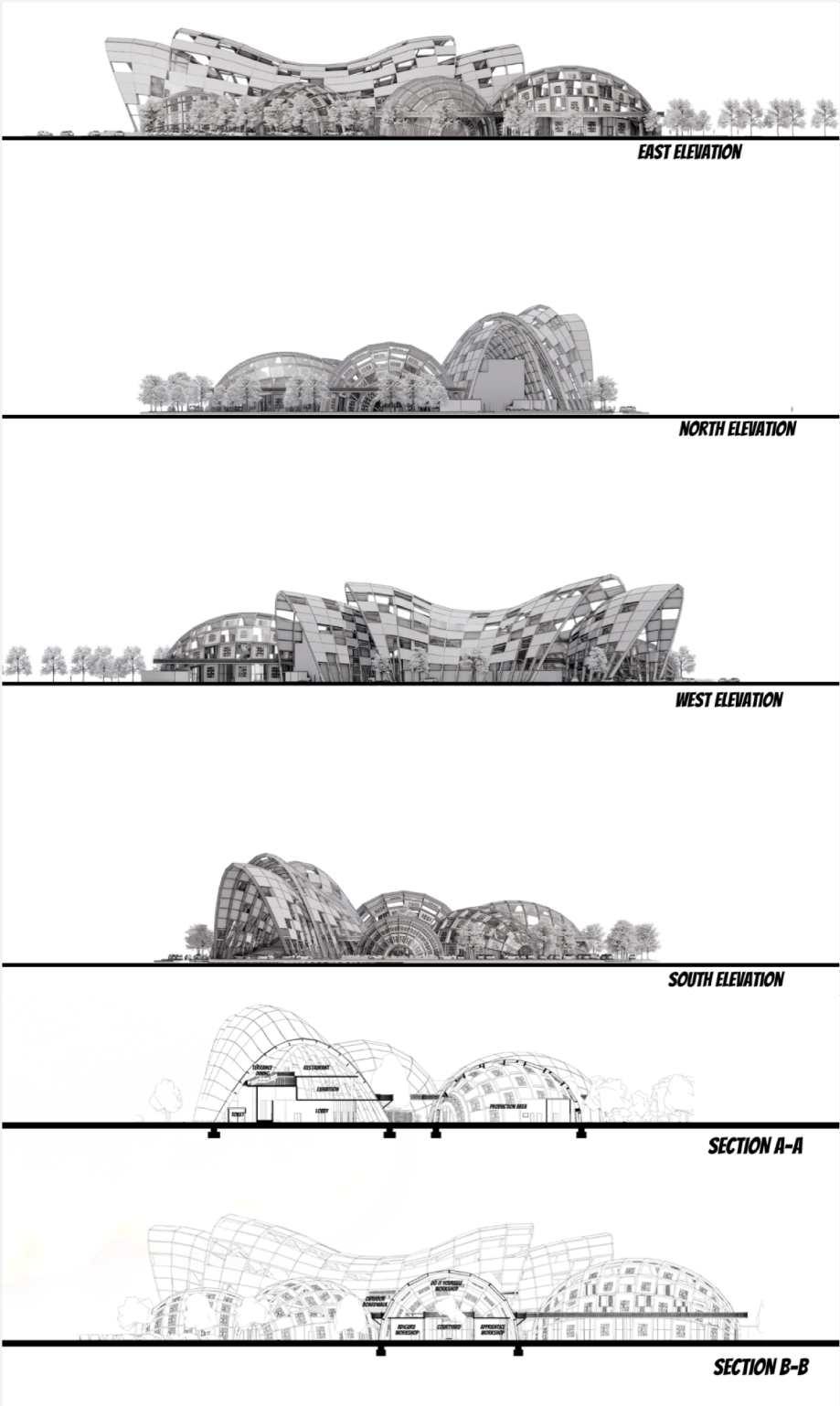


Figure 21: shown the elevations and sections of Woodcraft Catalyst Hub





Figure 22: A view of the outdoor Amphitheatre of the Woodcarving Catalyst Hub.

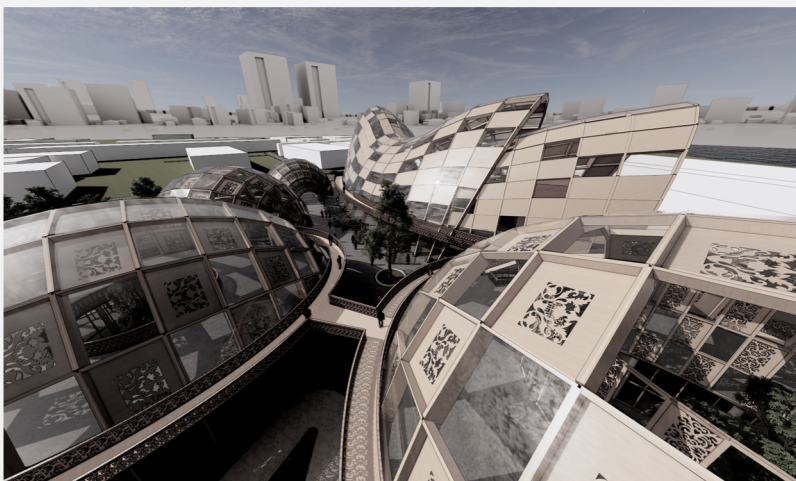


Figure 23: A view of the open plaza in between the three capsules and the main building.



Figure 24: A view of the main entrance of the Woodcarving Catalyst Hub



Figure 25: An interior view of a classroom for education section



Figure 26: An interior view of a workshop for Woodcarving production

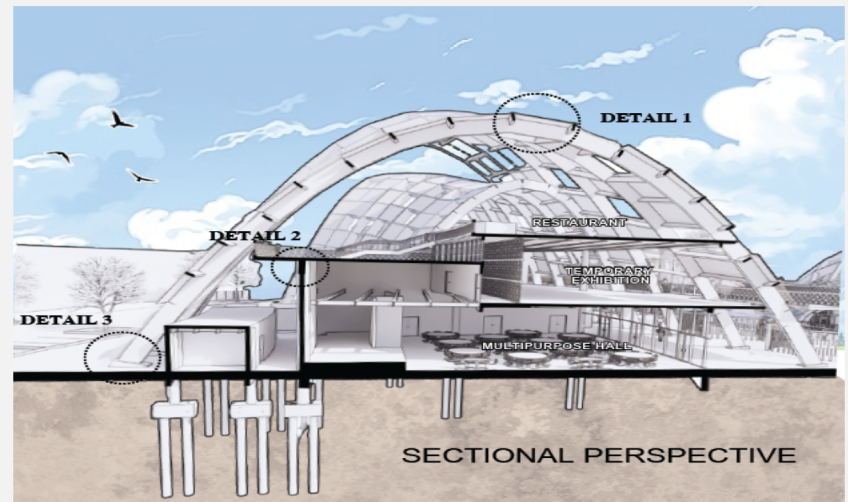


Figure 27: An illustration of the structural system of the main building



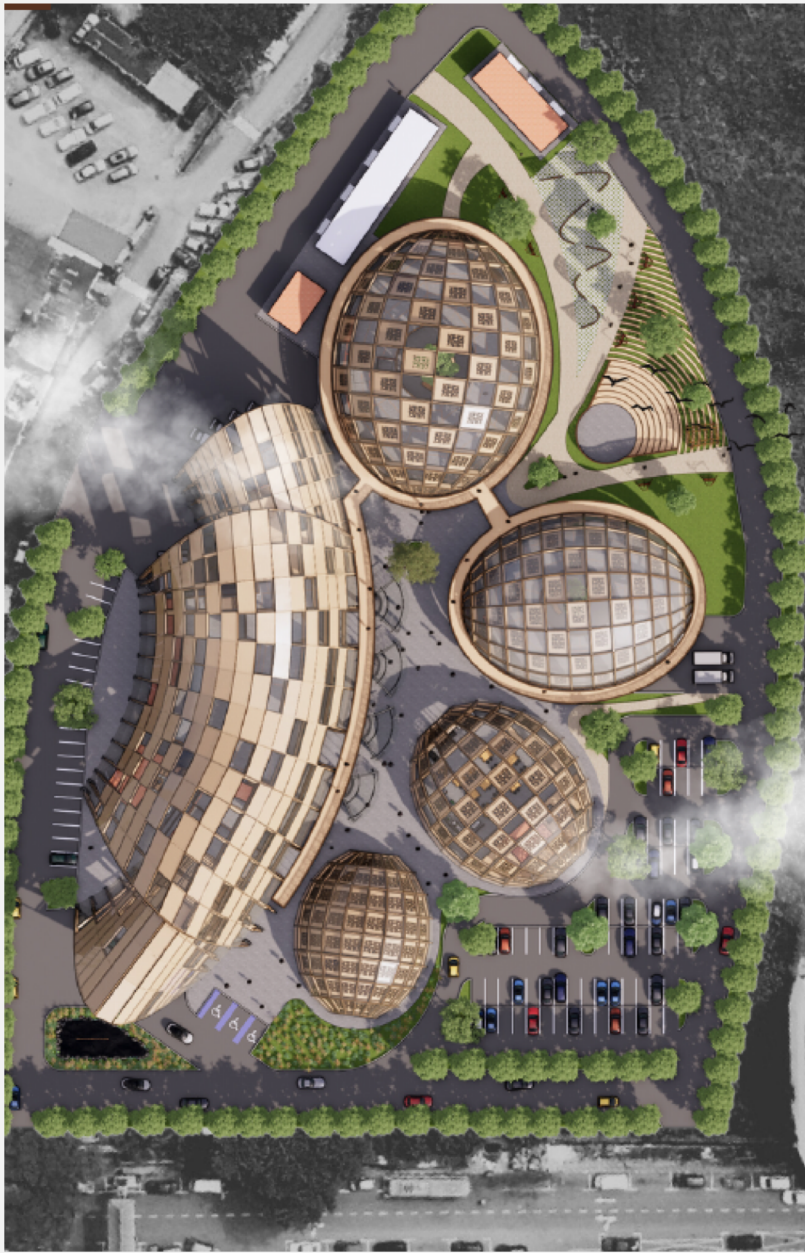


Figure 28: An aerial view of the whole complex of the Woodcarving Catalyst Hub

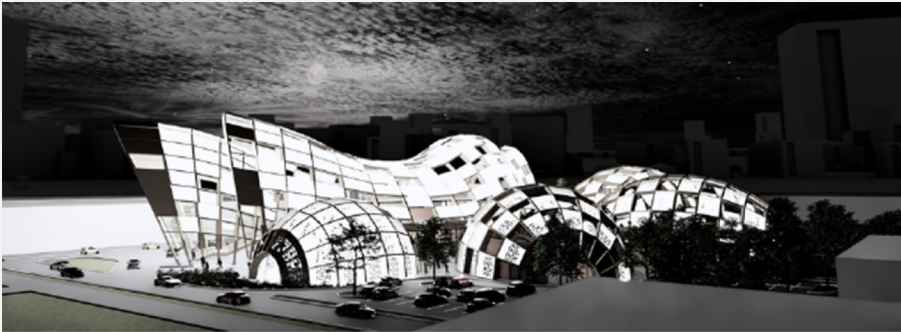


Figure 29: An illustration of the complex at night



Figure 30: An illustration of the main entrance of the complex at night



Figure 31: A bird eye view of the open plaza in between buildings

CONCLUSION

The proposed design of the Woodcraft Catalyst Hub in Kuala Terengganu represents a pivotal initiative, aimed at preserving and revitalising the traditional art of woodcraft. This architectural design endeavour has explored the multifaceted dimensions of designing a facility that responds to the crucial need to sustain cultural heritage, while promoting sustainable practices and modern innovation. Through a detailed analysis of sustainable building materials, advanced construction techniques, and the integration of renewable energy systems, this project not only honors the traditional craftsmanship of woodcarving but also sets a precedent for environmentally responsible design. The use of locally sourced and recycled wood products, coupled with modular construction methods, ensures that the hub embodies the principles of sustainability and resource efficiency.

Moreover, the incorporation of interactive displays, educational workshops, and collaborative spaces within the hub, fosters an environment of learning and cultural exchange. By engaging the community and providing a platform for artisans to showcase their work, the Woodcraft Catalyst Hub serves as a vibrant cultural centre that bridges the gap between tradition and modernity. The strategic location of the hub in Kuala Terengganu, a region rich in woodcarving history, further enhances its significance. The Woodcarving Catalyst Hub acts as an inspiration for preserving woodcraft traditions and stimulates local economic growth by attracting tourists and promoting local craftsmanship. Indeed, the Woodcraft Catalyst Hub is more than just a building; it is a symbol of cultural resilience and innovation. It stands as a testament to the enduring legacy of woodcarving and the potential of sustainable design to create spaces that honor the past while embracing the future. This project underscores the importance of such initiatives in ensuring that traditional arts continue to thrive in a rapidly changing world, providing inspiration for similar projects globally.

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