



Redesign of Traditional Heritage Center in AL-Mirani Fort in Oman

Ebaa Qasim AL Hinai ¹, Dr. Mohamed Alnejem ^{2*}

^{1,2} Department of Design, Oman College of Management and Technology, Muscat, Oman

* Corresponding Author: Dr. Mohamed Alnejem

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Abstract

This research reimagines Al-Mirani Fort in Muttrah, -Oman, as a dynamic cultural and educational center that bridges heritage preservation with modern functionality. Grounded in the principles of adaptive reuse and aligned with Oman Vision 2040, the redesign integrates traditional Omani architectural elements with contemporary spatial strategies to enhance visitor engagement and cultural representation. The design incorporates interactive features such as workshops, storytelling spaces, a cultural performance courtyard, and digital exhibits to provide an immersive experience of Omani history and lifestyle. By addressing environmental, spatial, and accessibility challenges, the project ensures sustainability while respecting the fort's historical integrity. Careful material selection, eco-conscious interventions, and strategic programming, the fort becomes a living heritage site that fosters tourism, supports local artisans, and educates future generations. Ultimately, the revitalized Al-Mirani Fort will serve as a vibrant symbol of Oman's cultural pride and forward-looking identity.

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1. Introduction

The redesign of the traditional heritage center at Al-Mirani Fort seeks to create an immersive cultural and educational experience ^[1] that celebrates Omani history ^[2], while adapting to contemporary visitor needs ^[3]. The project focuses on preserving the fort's architectural authenticity, utilizing traditional materials such as stone and carved wood ^[4], and blending them seamlessly with modern interior solutions. Through careful spatial planning, the project addresses challenges such as limited natural lighting, space constraints, and environmental impacts like humidity and salt exposure.

The research discusses these questions

- How many visitors can the space accommodate while ensuring a comfortable experience?
- What is the best interior design that makes visitors want to return?
- What accompanying events can be organized, and how can an official schedule be structured for them?
- What additional spaces can be added to enhance the value of the place?
- How can the color scheme make Al-Mirani Fort more visually appealing for tourists while preserving its historical authenticity?
- Which colors have cultural significance and can be used to support the traditional Omani style?

Research Objectives

- Presenting the special things about Oman civilization.
 - To create a place that provides educational and entertainment.
 - Giving general idea about Oman lifestyle.
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- **Preserve Historical Integrity:** Make sure that the original architectural character of the fort is respected and preserved for all expected changes.
- **Improve Cultural Representation:** Make use of design components that honor Omani customs, workmanship, identity, and materials.

Multipurpose and Adaptable Spaces Provide flexible spaces for gatherings, workshops, performances, and exhibitions.

2. Methods

This study uses an analysis and descriptive approach with a literature study method. The instrument used in this study is collected data and visiting the case study conducted by the author himself where the author will conduct a literature search that is in accordance with the topic of the problem discussed.

3. Literature search

Interactive spaces, including craft workshops, storytelling courtyards, a cultural performance area, and digital exhibitions, are integrated to foster visitor engagement. The inclusion of a café and a traditional Omani restaurant not only enhances visitor comfort but also encourages longer stays and deeper cultural immersion. These elements transform the fort into a lively cultural hub where visitors can experience the lifestyle, arts, and traditions of Oman firsthand.

The project aligns with Oman Vision 2040, which emphasizes the preservation of national heritage, the development of a diversified knowledge-based economy, and the promotion of sustainable tourism. By integrating eco-friendly materials, energy-efficient systems, and smart heritage technologies ^[6], the design supports sustainable development goals while enhancing cultural education. Furthermore, the revitalized fort will contribute to economic growth by creating new job opportunities for Omanis in cultural management, guiding services, and artisanal crafts.

Ultimately, this adaptive reuse project demonstrates a thoughtful balance between preserving the spirit of the past and embracing the opportunities of the future. It positions Al-Mirani Fort not only as a historical monument but as a dynamic symbol of Oman's proud heritage and forward-looking aspirations.

A heritage village is a place where visitors and tourists can know one hundred percent about the history of the country they visit in a single location. They can find everything related to that country such as traditional food, clothing, customs, and buildings. It's like stepping into another era and becoming momentarily amazed. This project aims to give tourists an integrated view of the Omani lifestyle and how ancient people lived ^[5]. Visitors can experience everything in one place. Although Oman has many sites that reflect its civilization, there is no single place that fully consolidates the essence of the Omani lifestyle ^[5]. Muttrah, with its prime location near Muscat Marina, is a perfect cultural gateway. Tourists can engage in traditional crafts such as pottery making ^[7], explore ancient clothing and tools, and savor authentic Omani cuisine. Its strategic location, where many tourists' ships dock, enhances its accessibility and attractiveness ^[8]. With features like a small traditional performance theater, a cultural restaurant, and historical workshops, the project becomes an interactive and immersive experience.

Muttrah, with its prime location near Muscat marina, serves as the perfect culture gateway for visitors to experience than just an exhibition- it's a living experience that takes visitors on a journey through time. They can engage in traditional craft like pottery making and Omani sweet preparation, explore old clothing and tools that once shaped daily life in Oman, and immerse themselves in the country's rich history. Its strategic location near the marina, where many tourists' ships dock, offers a great opportunity to attract visitors. With small theater for tradition performances, a restaurant serving authentic Omani cuisine, and an old Omani workshop, this project will be a true window into Omani culture in an engaging and interactive way.

Al-Mirani Fort's restored traditional heritage center is a major step forward for Oman's technological development and cultural preservation. In keeping with Oman Vision 2040, this project bridges the gap between Oman's past and its future by converting the fort into an interactive area that integrates smart technologies, such as climate management, controlled lighting systems, and digital displays. These technology upgrades increase energy efficiency, lessen the environmental impact of the fort, and give guests a more engaging experience. Additionally, they make Oman's rich history more accessible to a worldwide audience, guaranteeing that the fort will continue to be a symbol of pride and cultural identity. In addition to supporting Oman's objectives of sustainable growth, a knowledge-based economy, and the preservation of its cultural heritage, this adaptive reuse offers a platform for educating future generations.

4. Previous cases

This chapter focuses on a case study of different culture spaces in different countries. We must take this step before starting the project to know more about what it will include, what are the important spaces we should have, what are the criteria we should follow and so on.

4.1 Rehovot Community Center

Architects: Kimmel Eshkolot Architects, Location: Rehovot, Palestine, Project Team: Etan Kimmel, Michal Kimmel Eshkolot, Ilan Carmi, Vered Konigsberg Bengio, More Gelfand, Area: 2500.0 m², Project Year: 2016

The main building has two floors, where the upper floor is hovering over the ground floor providing shading from the hot summer sun. It is also designed in a way that exposes the activities, such as the dance studios, to attract people to come and participate. The library is designed around a wall of books, which also projects to the facades. Its roof serves as a terrace which provides separate access to the youth wing through a small bridge. The stairs climbing to the roof include seating areas, creating an intimate amphitheater space for small outdoor performances ^[9, 10].

Advantage:

- It has a unique shape of building.
- More use of natural lighting.
- Comfortable site location
- It contains different types of activities in the same block ^[11].

Disadvantages:

- Direct sunlight to the building and it has large opening ^[12].



Fig 1: Rehovot Community Center (Palestine)



Fig 2: Rehovot Community Center, interior views

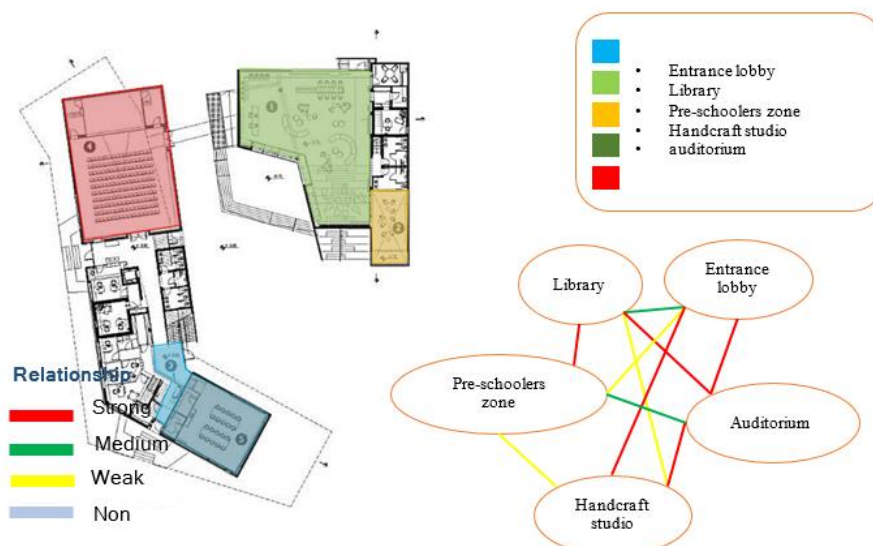


Fig 3: Ground floor plan of Rehovot Community Center, highlighting key spaces.

4.2 Cultural Centre of La Hague

Architects: Peripheriques Architects, Marin + Trotti Architects.

Location: 8 Rue des Tohagues, 50440 Beaumont-Hague, France

Project Team: Charlotte Lefebvre Wirth, Anne Clerget,

Emily Murphy, Alfredo Luvison, Camille Isaac-Dognin, Gabriele Motta, Anatole Jeannot, Kirsten Elliot, Thomas Dantec, Yann Peter, Alexandre Pascal, Mehrnoush Nuraghi, Estelle Grange-Dubellé

Area: 2560.0 sqm Project Year: 2015

The building has a modern concept incorporating all the

modern materials and construction methods. The building is simple and not very complicated. The outer fabric is not conventional and has different materials like metal covers. The building is surrounded by green areas and housing. The shape of the building looks simply. There is a big landscape inside the site. And there are two roads and parking areas nearby ^[10, 9].

Ground floors consist of two blocks and between them there is a hall with a sitting area. The required components include a reception, academy of music, management offices, and a concert hall ^[11].

Advantage

- It has a unique shape of building.
- Use of different materials and colors for elevation ^[12].

Disadvantages

- Plans are very simple.

- There are some sharp edges.

This part offers insightful information for the Oman Lifestyle Gallery project by examining the interior rooms and workshops of three cultural facilities. In Palestine, the Rehovot Community Center has interactive areas like music and dance rooms, handicraft workshops, and a library for education and community involvement. To promote artistic expression and cultural events, the Cultural Centre of La Hague in France provides a range of creative facilities, such as music studios, training rooms, and multifunctional halls ^[9, 13]. To create a dynamic setting for cultural exchange, the Bishan Cultural and Art Centre in China incorporates useful interior spaces like meeting rooms, movie theaters, and multipurpose lounges. These case studies demonstrate how crucial designed interior areas and workshops are to improving visitor experiences and encouraging cross-cultural learning ^[2, 11].



Fig 4: interior views of Cultural Centre of La Hague

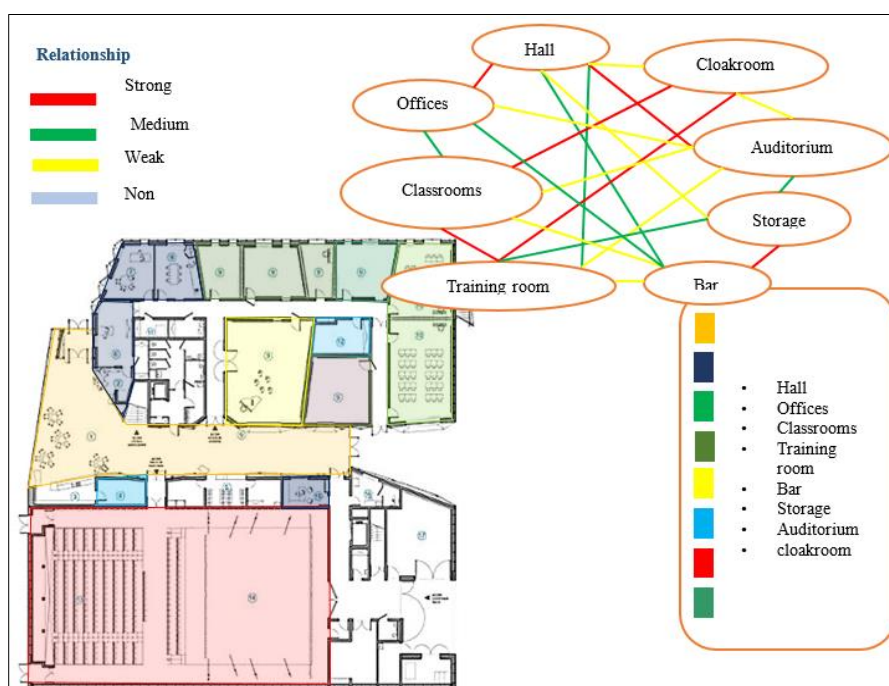


Fig 5: Ground floor plan of Cultural Centre of La Hague

5. Case study (AL-Mirani fort, Muttrah, Oman)

5.1 Location

The site is in Muttrah as I mentioned before, near Muscat Marina, an area known for its historical significance and tourist appeal. It is located close to the Muttrah corniche, a

major attraction, and is easily accessible via Al Bahri road. The surrounding landmarks, such as Al Alam palace and Al Jalali fort, make this a prime location for a culture and heritage project ^[14, 4, 15].



Fig 6: location of the AL- Mirani fort

5.2 Site analysis

Total area: approximately 1,000 square meters. The fort is distinguished by its unique geographical location; it is located near Al Alam palace and overlooks the sea. The fort has been restored and completely modified from the

inside. With the addition of an elevator for easy movement from one floor to the other. The site of the fort is very large, so I decided to choose the top floor in line with the appropriate spaces I need for my project ^[14, 8, 9].



Fig 7: Pictures from AL- Mirani fort

5.2 Problems

- The space is relatively small, so the number of visitors is limited. To manage entry, advance booking is required for any of the available facilities ^[16].
- The fashion show area can accommodate a maximum of 30 people, so the ticket price will be moderate to slightly expensive ^[16].
- Traditional Omani clothing and the old tools that Omanis once used for daily life are difficult to find ^[4].
- Al-Mirani Fort's current color palette is largely determined by historical preservation regulations, which restrict the use of vivid or contemporary hues that could improve the experience of visitors while preserving authenticity ^[14, 8].
- The preservation methods needed for the fort's original materials—such as stone and old wood—might not be

able to meet the demands of contemporary comfort, safety, and functionality ^[14, 9].

- Durability, sustainability, and maintenance issues must be balanced with historical accuracy when introducing new materials for interior refunctioning ^[10, 16].
- Because of the thick walls and narrow windows that block out natural light, the fort is a gloomy place that needs artificial lighting solutions that maintain the historical atmosphere while providing enough illumination ^{[12][16]}.
- The coastal environment's humidity and salt exposure can hasten material deterioration, requiring particular treatments and cautious material selection ^[16].

5.3 Challenges and considerations

- Limited space: compact size means careful planning is

required for efficient space utilization ^[16].

- Noise and crowds: the nearby road and tourist traffic may require soundproofing or controlled visitor flow.
- Weather conditions: being a coastal location, considerations for heat and humidity must be incorporated into the design.
- Few parking spaces: there are other areas near the fort with plenty of parking spaces, so a bus can be allocated for transportation to and from the fort ^[15].

6. Suggested design

6.1 Design program

Al Mirani Fort's revival design initiative aims to turn the historic location into a multipurpose cultural hub that honors Omani tradition while incorporating modern applications ^[14, 8]. In addition to permanent and temporary exhibition spaces that highlight the fort's historical and architectural significance, the program also includes cultural experience areas like a storytelling courtyard and traditional costume studio, educational zones with lecture rooms and craft workshops, and a reception and orientation area to greet guests ^[14, 10]. Administrative facilities, a retail store for regional crafts, and a café with picturesque views are also included. To maintain accessibility, sustainability, and the respectful incorporation of contemporary elements without sacrificing the fort's architectural integrity, all interventions must be considered of its historic character ^[8, 16].

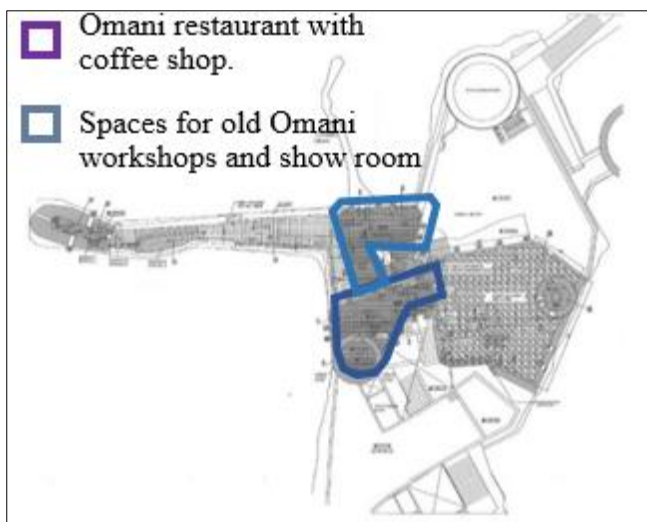


Fig 8: The area I will use it

The project contains different spaces such as:

- Reception and Orientation Area
- Permanent Exhibition Spaces
- Temporary Exhibition Spaces
- Educational and Workshop Areas
- Cultural Experience Spaces
- Café and Rest Area
- Retail and Souvenir Shop

This part describes the design factors for repurposing Al Mirani Fort into a multimodal cultural and educational attraction. To maintain functional efficiency and spatial harmony within the historical context, it will include a criteria matrix and use bubble and zone diagrams to depict the strategic arrangement of the planned spaces, including exhibition halls, workshop areas, and public facilities.

Furthermore, mood boards will depict the chosen furnishings, color schemes, materials, and overall design ideas, demonstrating a harmony between modern practicality and heritage preservation ^[9, 10]. The adaptive reuse process will be guided with architectural correctness using precise measurements and scale references ^[14, 16].

6.2 Criteria Matrix

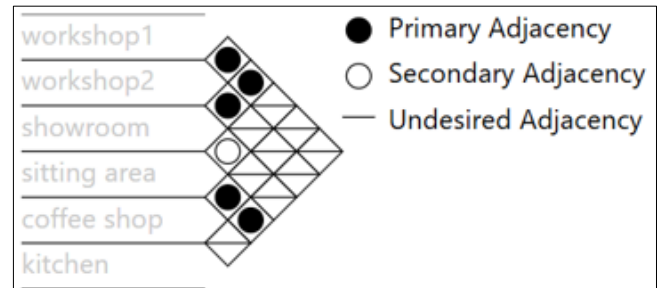


Fig 9: criteria matrix

6.3 Bubble and Zoning diagrams



Fig 10: Zoning diagram

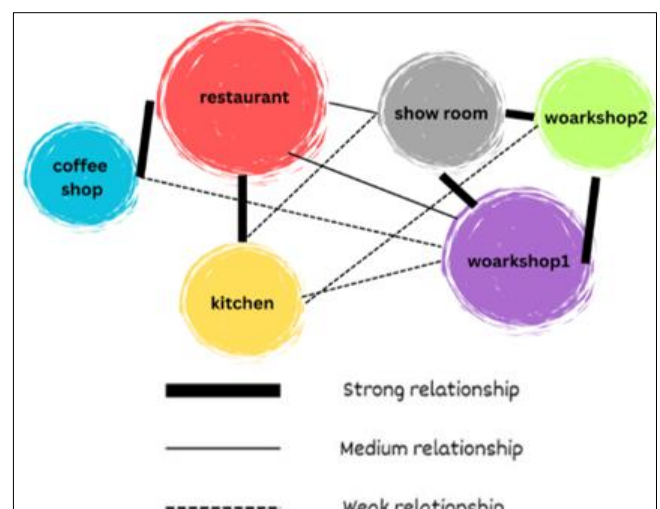


Fig 11: Bubble diagram

6.4 Concept

The concept of this project is a gateway to heritage, a unique architectural and design approach that revives the historic Al Mirani Fort by blending the depth of Omani traditional architecture with a touch of contemporary style ^[2, 11]. This concept aims to create spaces that celebrate the cultural richness, symbolism, and craftsmanship of Oman while introducing modern design elements that serve today's functional needs ^[14, 17]. Traditional features such as carved wooden details, stone textures, and cultural motifs will be central to the design, harmoniously integrated into a modern spatial language ^[14, 17]. The revitalized fort will not only preserve and honor its historical identity but will also transform into a dynamic cultural hub. By merging

authenticity with innovation, Al Mirani Fort will become an iconic destination that bridges Oman's proud past with its vibrant future.

6.5 Mood board: shown in Figure (12)

6.6 Fixtures & Furniture

Furniture and fixtures must be chosen carefully to enhance the fort's atmosphere without overpowering the historical context ^[9]. Items like low-profile seating, handcrafted wooden benches, movable exhibition walls, and discrete lighting fixtures can provide visitor comfort while ensuring that focus remains on the exhibits and architecture ^[12]. Traditional designs with a modern touch will blend harmoniously with the historical surroundings ^[11].



Fig 12: Mood board

7. Discussion

Based on site observations, project analysis, and case study comparisons, the design style best suited for the Al-Mirani Fort Heritage Center is a blend of traditional Omani architecture with modern functionality. The original materials such as stone, mudbrick, and carved wood are integral to preserving the fort's identity, while integrating contemporary elements like improved lighting, accessibility features, and climate control enhance visitor comfort. From analyzing case studies like Rehovot Community Center and Bishan Cultural and Art Centre, it was found that adaptive reuse strategies and interactive cultural spaces significantly improve visitor engagement and learning outcomes. Survey insights and interviews with local experts emphasized that visitors are more emotionally connected to spaces that are authentic yet accessible and offer cultural

immersion through activities, workshops, and storytelling experiences. It was also found that the current physical limitations of the fort, such as limited lighting, space constraints, and the coastal environment's impact on materials, must be carefully addressed without compromising the site's historical integrity. In addition, with a café provided, visitors can relax and stay longer while chatting with friends and exploring the gallery. Moreover, having a traditional Omani restaurant allows visitors to enjoy authentic local dishes, making their experience even more immersive and encouraging them to spend more time at the center. Additionally, the integration of a café, workshops, and cultural performance areas within the design program will enhance the visitor stay time and overall experience, encouraging repeat visits and broader cultural education.



Fig 13: 2D furniture plan

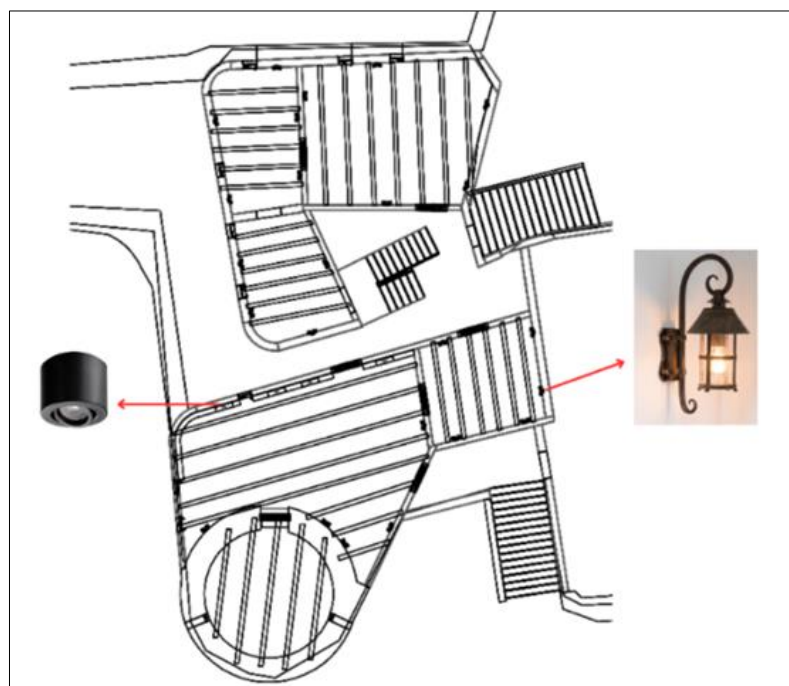


Fig 14: Ceiling and Lighting Plan



Fig 15: Section A-A and B-B



Fig 16: 3D rendered workshop



Fig 17: 3D rendered restaurant



Fig 18: 3D rendered workshop



Fig 19: 3D rendered café

8. Conclusion

The redesign of the traditional heritage center at Al-Mirani Fort successfully integrates the preservation of Omani cultural identity with the implementation of modern design principles. Traditional architectural features such as stone walls, wooden beams, and intricate carvings have been maintained to ensure historical authenticity, while being complemented by contemporary materials and strategies to enhance functionality, reflecting the goal of combining modern and traditional design. The spatial layout was carefully planned to ensure smooth circulation and functional zoning, allowing for flexible multi-use areas that accommodate exhibitions, performances, workshops, and educational initiatives, thereby maximizing area utilization. The center aims to introduce the unique features of Omani culture through immersive displays that highlight the nation's customs, crafts, and daily life. As a result, Al-Mirani Fort is envisioned to become a cultural landmark and one of Oman's leading tourist destinations, attracting both local and international visitors. The project will also contribute to the local economy by creating job opportunities for Omani citizens in roles such as tour guides, artisans, and event coordinators. Through hands-on workshops, visitors will be able to engage directly with traditional Omani crafts such as

weaving, silverwork, and ceramics, enhancing learning and appreciation of local heritage. Furthermore, through digital storytelling, live demonstrations, and interactive exhibitions, visitors will gain a deep and engaging understanding of the traditional Omani way of life. The redesign also prioritizes visitor comfort and accessibility by incorporating shaded seating areas, climate control systems, ramps, and clear wayfinding features. Financial sustainability is supported through cultural activities and events, including exhibitions, performances, workshops, and the sale of traditional foods and crafts. Lastly, the project emphasizes long-term sustainability and preservation using eco-friendly materials, energy-efficient lighting, and conservation strategies, aligning with Oman Vision 2040. In essence, the Al-Mirani Heritage Center stands as a model of adaptive reuse, offering a dynamic, educational, and welcoming space that honors the past while fostering cultural pride and future development.

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