



**Digital documentation for data
Storage & digitization of cultural heritage
For the Old City of Mosul (Mosul Art and Life)**

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Abstract: City of Mosul in Iraq has a rich and diverse history. It is the cradle of Iraq's civilizations and dates back to the twenty-fifth century BC. In order to help preserve the famous heritage monuments in the city of Mosul and highlight the beauty and richness of its civilization, and to preserve the vanishing cultural heritage in Mosul after the war, and because Nineveh Governorate was exposed to great destruction, which made the heritage urban environment in old Mosul vulnerable to gradual disappearance. With the aim of preserving the heritage of old Mosul and contributing to documenting and reviving the old city, through a group of international projects that include research activities and the production of architectural documentation of heritage buildings in old Mosul for display. Through electronic documentation of the heritage of the old city of Mosul. The problem arises in how to protect digital content from electronic attacks such as hacks, viruses, and electronic fraud. Digital data must be stored in a safe place that protects it from loss or damage. In this way, the heritage of ancient Mosul can be preserved safely and sustainably. Another problem is how to develop a sustainable strategy for digital documentation targeting future generations. The study presented how to digitally document cultural heritage and preserve cultural memory by using modern technologies to transfer and preserve cultural content in digital form.

Keywords: digital space, digitization and storage of heritage and culture data, the old city of Mosul.

Introduction: The digital space for cultural heritage in old Mosul is an

important requirement for preserving the rich cultural heritage of this historical region, as the city of Mosul can be considered one of the distinctive cities because it contains the archaeological city represented by the Assyrian capital, Nineveh, and the ancient heritage city.

The project includes digitizing immovable cultural heritage, such as (old houses, baths, castles, forts, places of worship, and markets). In addition to (digitizing the monuments and statues of Mosul), it can be said that the process of “digitizing the heritage” of the old city of Mosul requires converting traditional cultural resources into digital formats

Structural : The project entails the digitization of immovable cultural heritage, such as old houses, baths, castles, forts, places of worship, and markets, along with monuments and statues in Mosul.

The process of digitizing heritage involves transforming traditional cultural resources into digital formats. In the case of Old Mosul, this encompasses:

- Capturing, storing, and documenting 3D images, videos, and relevant historical and cultural information digitally.
- Enabling individuals worldwide interested in heritage to access and comprehend this legacy remotely, without the need to visit the physical site.
- The advantages of digitizing heritage become evident, as it facilitates better preservation and documentation of cultural heritage for future generations. Moreover, this digital data can be utilized in academic research and the development of educational and tourism programs, thereby fostering greater understanding and mutual respect among cultures.

☒ First axis: steps of planning and preparation

The commencement of digitizing the cultural heritage of ancient Mosul initiates a crucial endeavor aimed at preserving the rich historical legacy of this venerable city and ensuring its accessibility to contemporary audiences worldwide. Typically, this process commences with meticulous planning and preparation

1. Identification of Cultural Resources: This initial phase involves a comprehensive examination of the monuments, landmarks, and cultural assets existing within the confines of ancient Mosul. It necessitates the identification and documentation of the elements slated for digitization.

2. Establishment of Objectives and Outcomes: Clear and distinct objectives are delineated for the digitization initiative, encompassing goals such as heritage preservation, monument documentation, and facilitation of global access. Furthermore, anticipated outcomes, including the creation of a digital repository, virtual tours, interactive applications, or platforms for virtual tourism, are outlined.

3. Procurement and Preparation of Tools and Technology: This pivotal stage encompasses the meticulous selection and preparation of requisite tools and technological apparatus essential for the digitization endeavor. This includes the acquisition of 3D cameras, high-resolution photographic equipment, and specialized software for image and video editing.

4. Training of Team Members: The personnel entrusted with spearheading the digitization effort undergo comprehensive training to proficiently utilize the designated tools and technology. Additionally, they acquire skills pertinent to effective information documentation.

5. Acquisition of Necessary Approvals: Adherence to official protocols is imperative in securing requisite approvals from local governmental bodies or

relevant authorities, particularly when engaging with historically protected monuments or antiquities.

6. Formulation of Funding Strategies: A comprehensive funding plan is devised to sustain the digitization initiative, encompassing the identification of potential funding sources such as local government allocations, international organizations, and United Nations entities. These initial strategic measures for digitizing the cultural heritage of ancient Mosul serve as a compass guiding the endeavor towards fruition and operational efficacy.

❓ The second axis: Practical measures to build the digital space for the heritage of the ancient city

The process of documenting and digitizing the heritage of the Old City of Mosul entails a series of meticulous steps:

1. Photography and Documentation: The initial phase involves the organized capture of photographs and documentation, emphasizing crucial details and archaeological sites. Utilization of high-quality photography tools like 3D cameras and high-resolution lenses is imperative.

2. Data Analysis: Following the capture of photos and videos, the subsequent crucial step involves meticulous data analysis to ensure its quality and the accuracy of documentation. Image and video analysis software can be employed to enhance and rectify the results.

3. Editing and Production of Images and Videos: Subsequently, captured images and videos undergo editing to enhance their quality and prepare them for digital presentation. This process encompasses adjustments in lighting, contrast, and the removal of visual imperfections.

4. Creation of a Dedicated Digital Repository: A structured system is established to manage and analyze the vast volume of data generated from

the photography and videography processes, including the conversion of 2D images into 3D models. Adequate storage space is essential to securely and systematically store photos, videos, and other digital data.

5. Formation of a Specialized and Trained Team: A proficient team comprising 3D image engineers, photographers, digital editors, and experts in cultural and historical heritage is assembled and trained to execute the digitization project effectively.

6. Acquisition of Requisite Approvals: Compliance with legal and regulatory requirements is ensured by obtaining necessary approvals from local authorities and relevant bodies to conduct digitization operations in a sanctioned manner.

7. Swift Launch of Digital Platforms: Rapid deployment of digital platforms facilitates seamless data exchange and enables public access to digitized materials over the internet.

8. Allocation of Adequate Funding: Sufficient financial resources are allocated to cover expenses related to resources, software, training, marketing, and other associated costs of the digitization process.

Through the meticulous implementation of these essential steps and resources, teams engaged in digitizing the cultural heritage of the Old City of Mosul can execute their project with proficiency, effectiveness, and success.

☒ Third axis: Facing obstacles and challenges:

The work team may encounter numerous obstacles and challenges that could impede the comprehensive and effective implementation of the digital space. These challenges include:

1. Security and Stability Requirements: The lingering political and security conflicts and tensions in Old Mosul may restrict the team's ability to operate

freely on the ground, posing significant obstacles to the digitization process.

2. Destruction and Natural Erosion: Some monuments and historical sites in ancient Mosul might have suffered damage or destruction during past conflicts, compounded by natural erosion, thereby impacting their preservation and condition.

3. Availability of Financial Resources: Digitizing cultural heritage demands substantial financial investments in resources, technology, and training. However, the availability of financial resources may be limited, posing challenges to executing the process adequately.

4. Weak Technological Infrastructure: In areas targeted for digitization, inadequate technological infrastructure, such as limited high-speed internet access or frequent power outages, may hinder the smooth progress of the endeavor.

5. Technical Challenges: Technical teams involved in the digitization process may encounter hurdles related to imaging techniques, 3D modeling, and editing software. Overcoming these challenges may necessitate specialized skills and advanced equipment.

6. Cultural and Legal Hurdles: Local cultural laws and regulations concerning intellectual property rights and cultural heritage preservation may present significant challenges that need to be navigated during the digitization process.

7. Environmental Challenges: Environmental factors, such as pollution and climate changes, can pose additional challenges that must be addressed during the digitization and preservation of cultural heritage, ensuring the longevity and integrity of the digitized assets.

☒ **Fourth axis: Addressing challenges:**

Addressing the challenges necessitates extensive cooperation and

coordination among diverse stakeholders, including local government entities, non-governmental organizations, and the international community. This collaborative effort is crucial for ensuring the success of the cultural heritage digitization process in Old Mosul and the preservation of its rich cultural legacy. Various initiatives are underway to tackle these challenges and breathe life back into Mosul's heritage and ancient civilization, both physically and virtually. These initiatives encompass:

1. UNESCO Initiative to Revive the Spirit of Mosul:

UNESCO is actively engaged in the reconstruction of several of the city's pivotal religious landmarks, such as the Al-Nuri Mosque, the Church of the Clock, and the Church of Al-Tahira. This intervention represents a significant stride towards rejuvenating the city's cultural heritage and identity. It stands as a testament to international collaboration, bolstered by the support of the United Arab Emirates and the dedicated efforts of local and international experts.

2. ICCROM's Capacity Building Program:

ICCROM is executing a comprehensive program aimed at enhancing the skills and capabilities of Mosul's young architects, engineers, and craftsmen. This initiative seeks to empower them to contribute effectively to the restoration and preservation of the city's cultural heritage, spanning both its ancient and contemporary facets.

3. "Reconstructing the Mosul Museum" Project:

This project is geared towards bridging Mosul's cultural heritage with its storied past, spanning ancient civilizations to recent history, through the redesign and revitalization of the Mosul Museum. By reconfiguring the museum, this endeavor aims to offer a comprehensive narrative of Mosul's rich heritage to visitors and locals alike.

4. Local Cooperation and Economic Development:

Significant strides are being made through local cooperation and initiatives focused on fostering economic development within Mosul. Many residents of Mosul are actively involved in construction projects and other endeavors, contributing to the upliftment of the local economy and enhancing livelihood opportunities for the community.

These collaborative endeavors underscore a concerted effort to preserve and celebrate Mosul's cultural heritage, safeguarding its legacy for future generations to cherish and appreciate.

❓ Fifth axis: The benefits of the digital space for the heritage and ancient civilization of Mosul.

Digitizing the heritage and ancient civilization of Mosul yields numerous goals and benefits, encompassing:

1. **Documentation of Heritage:** The digitization process plays a pivotal role in preserving and meticulously documenting the cultural heritage of old Mosul. By doing so, it affords present and future generations the opportunity to delve into and comprehend the rich history and cultural tapestry of the region with precision.

2. **Global Accessibility:** Digitization facilitates the dissemination of Old Mosul's cultural heritage on a global scale, fostering heightened awareness and enabling individuals worldwide to access and explore it. This global accessibility serves to bridge geographical barriers, promoting cross-cultural understanding and appreciation.

3. **Promotion of Cultural Tourism:** Digitization serves as a catalyst for augmenting cultural tourism in Old Mosul by providing virtual avenues for visitors to engage with cultural monuments and landmarks prior to

physically experiencing them. This immersive digital experience enhances anticipation and fosters deeper connections with the cultural heritage of the region.

4. Facilitation of Research and Education: The provision of meticulously documented digital data through digitization serves as a valuable resource for academic research and educational endeavors. Researchers and scholars can leverage this digital repository to conduct in-depth studies, contributing to the advancement of knowledge and understanding of Mosul's cultural heritage.

☑ **Sixth axis: Some photo documentation of the heritage sites of the Old City during the period of darkness (ISIS's destruction of the heritage of the Old City):**

Photos taken by the researchers



Khan Alkmark خان الكمرك



The Totingi House بيت التونجي



alsaeih Church



altahira Church



Pashtabiya Castle



Al-Nuri Mosque



The locality of Prophet Yunus

Conclusion:

The process of digitizing the cultural heritage of old Mosul holds the potential to enrich various facets of life in the region, including cultural, social, economic, and intellectual dimensions, while also fostering enhanced communication and cultural understanding among diverse peoples. The digital space project aimed at storing data and digitizing the cultural heritage of the Old City of Mosul will leverage Google Arts technologies and modern cultural tools to aid in the preservation of Mosul's heritage monuments. This initiative entails a comprehensive exploration of the Al-Nuri Mosque complex, which suffered destruction during the dark reign of ISIS, as well as virtual tours and 3D rendering of other heritage sites at risk, such as Mosul's oldest mosque and one of its ancient churches. Additionally, it will offer video tours highlighting the artistic endeavors within Mosul, while also featuring heritage and cultural pieces that narrate the tales and secrets of the ancient city, including the experiences of women and children during the oppressive regime of ISIS.

Consequently, the project is geared towards safeguarding the city's heritage and documenting it for posterity. The fusion of technology and culture underscores the concerted efforts directed at preserving the cultural identity of ancient Mosul. Through these collective endeavors, Mosul is poised to rejuvenate, with its illustrious and enduring cultural heritage reinstated and preserved for generations to come

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