Beauty connects People

David's digital twin at Osaka

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Today, when the passage of spatial continuity seems in many ways impossible due to the geopolitical crisis and the weakening of multilateralism, Michelangelo's 3D David becomes the symbolic Renaissance agent capable of fostering inter-sectorial, inter-generational, inter-religious evolutionary processes by transversely intercepting culture, engineering and data sciences.

The first worldwide appearance of a 3D David statue reproduction in the Italian Pavilion at Expo 2020 Dubai set the central role of digitization and big data in the management, protection and reconstruction of cultural heritage. Furthermore, it suggested to international authorities and opinion makers how important would be the search for innovative tools and skills monitoring heritage sites abandoned and destroyed in war zones or damaged by natural disasters and climate changes, not just for their conservation but most importantly for the reconstruction of national and territorial identities.

CHEDAR: A SCIENTIFIC LEGACY BORN FROM EXPO 2020

Michelangelo's digital David gave birth to CHEDAR, the first Expo's legacy in recent history by inspiring a long-term scientific research and educational project, designed for professionals and students, which will be presented at Expo 2025 Osaka and 5 years later at Expo in Riyadh in an itinerary of events, meetings, seminars, academies and museum presentations.

This unprecedented legacy of an Expo has its core in the 'large' Mediterranean area and marks a milestone in history, reinforcing commercial, cultural, religious interactions amongst these nations since the start 60 years ago of archaeological excavations in the United Arab Emirates.

FROM DUBAI TO OSAKA: A JOURNEY OF CULTURAL INNOVATION

A sign of this trend has been the world's only Biennale, this year at its second edition, dedicated to the arts of Islamic civilization taking place in Jeddah, with hundreds of striking artworks and artifacts on display, more than 600,000 visitors attending the inaugural event and more than 500 pieces, both historical and contemporary, being showcased. David's digital twin proves to global audiences the importance of new competitive multi-disciplinary soft skills, technological and collective intelligence, AI applications not as a one-shot case study but as a guide to the contemporary significance of digital cultural heritage.

The Michelangelo's David in the Age of the Digital Reproduction (YouTube video)

DIGITAL DAVID: A CATALYST FOR GLOBAL CULTURAL COLLABORATION

What impressed most visitors at Expo 2020 Dubai was the inter-connecting value of aerospace technologies used in downloading thousands of data from the original statue in Florence and the manual artisan's work used for covering its bio-plastic surfaces with marble powder exactly as Michelangelo did between 1501 and 1054.
Referring to David's digital twin, as it was well captured in the Italian Government decree setting the CHEDAR project led by Florence University, may foster the true value of unconventional partnerships with cultural content creators, artists and even gaming and virtual reality platforms, where media and influencers can help generate public trust nourishing new waves of cultural tourism.

FROM MARBLE TO METAVERSE: THE FUTURE OF HERITAGE

This cultural-technological algorithm will be able to make the forthcoming global events processing machines of the present time to think of the future, vectors of a rediscovered diplomatic, scientific and educational collaboration between countries, universities and research centers. Digital David shows how cultural and art heritages reproduction can generate opportunities for collaboration and sharing on a broad front. Digital David will help build collective intelligence by leveraging cultural and technological intelligence in a metaverse of arts, archaeology, historic buildings, ancient metropolitan sites.

From Real to Digital: The Expo 2020 Dubai project, Michelangelo's David. Courtesy GeCo Lab

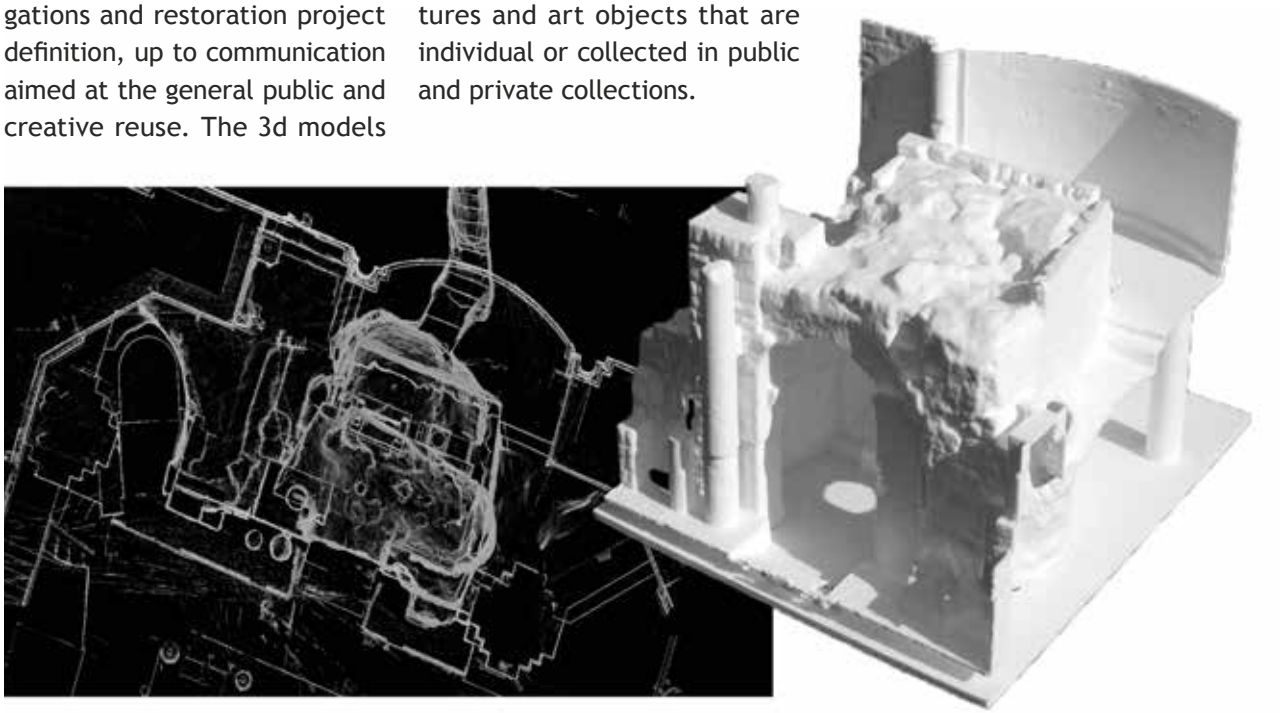
Digitizing Memory for looking into the Future

COORDINATED BY
UNIVERSITY OF FLORENCE

The acquisition, processing and management of three-dimensional spatial data are key aspects of the knowledge journey and thus the domains of documentation and preservation of tangible cultural heritage. Methods and techniques specific to geomatics are now commonly used tools for documenting cultural heritage. The different types of spatial models obtained (point clouds, 3D models, H-BIM...) are used throughout the conservation cycle, to deepen knowledge and support diagnostic investigations, as models for structural investigations and restoration project definition, up to communication aimed at the general public and creative reuse. The 3d models thus created provide a kind of digital twin of reality: this concept constitutes the contemporary and technologically up-to-date declination of the "Open System of Knowledge" and, as such, for its creation requires a very diverse range of data, quantitative and qualitative, geometric and thematic, to be obtained and investigated in order to produce accurate, comprehensive and reliable digital representation. The classes of artifacts considered will be both archaeological and built heritage sites (buildings, settlements, etc.) and ancient and contemporary sculptures and art objects that are individual or collected in public and private collections.

The quality of the proposal offered resides:

- *in developing workflows appropriate for assets of different sizes and characteristics and also sustainable in critical scenarios such as assets at risk, emergency relief, developing countries, etc. (in conjunction with WP3);*
- *in the preparation and dissemination of best practices for data processing and 3D modeling, including those aimed at visualization in extended reality and physical reproduction contexts (in conjunction with WP3, WP4 and WP6);*



From the point cloud model to the physical replica: Nazareth, the Church of the Annunciation. Courtesy GeCo Lab