

PROJECT CONCEPT NOTE

Project Acronym: DigiKastel **Full Title:** Digital Preservation, Climate Resilience, and Participatory Revitalization of Gaziantep's Underground Water Heritage **Target Call:** Horizon Europe – Cluster 2: Culture, Creativity and Inclusive Society (**Destination: Innovative Research on European Cultural Heritage and the Cultural and Creative Industries**)

Duration: 36 Months **Planned Start:** Q1 2027

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1. Concept & Ambition

Gaziantep hosts a unique, millennia-old underground water management system consisting of "Livas" (channels) and "Kastels" (public water hubs). This heritage represents an ancient "Net-Zero" solution to water scarcity. **DigiKastel** aims to safeguard this endangered intangible and tangible heritage by creating a **synergy between advanced digital technologies and community-led preservation**, aligned with the **New European Bauhaus** principles.

2. Strategic Objectives

The project addresses the triple challenge of *Climate Change*, *Digital Transition*, and *Social Inclusion* by:

- **Digitizing the Invisible:** Creating high-fidelity digital twins of underground structures using LiDAR and Photogrammetry.
- **Democratizing Access:** Making heritage accessible to all via AR/VR, overcoming physical limitations.
- **Building Resilience:** Monitoring structural health against climate risks using IoT.
- **Fostering Ownership:** Engaging citizens and youth in "co-creation" processes to keep the heritage alive.

3. Methodology & Work Packages

WP1: Digital Documentation & Cloud Heritage (3D/Twin)

- Development of high-resolution **3D Digital Twins** for scientific research and restoration planning.
- Creation of the "**Gaziantep Water Heritage Digital Archive**" (Open Access) to integrate with European cultural heritage clouds.

WP2: Immersive Experience & Edutainment (AR/VR)

- **Augmented Reality (AR) App:** Visualizing the historical water flow and function of Kastels on-site.
- **Virtual Reality (VR) Tours:** Enabling remote visits to inaccessible underground tunnels.
- **Gamification:** "Journey of Water" interactive game for youth education on water sustainability.

WP3: Smart Preservation & Green Deal (IoT)

- Installation of **smart sensors** (humidity, temperature, vibration, water level) to monitor climate impact and structural integrity.
- Data-driven **Preventive Conservation** strategies to mitigate climate change effects.

WP4: Inclusive Society & Co-Creation

- **"Kastel Stories" Workshops:** Empowering local women and youth to create digital content (podcasts, videos), blending oral history with digital media.
- **Cultural Diplomacy:** Promoting the results through digital exhibitions at the European level.

4. Impact & EU Added Value (Cluster 2 Alignment)

- **Preservation:** Saving a unique example of Mediterranean water architecture from disappearance.
- **Innovation:** Demonstrating how digital tools (AI/IoT/XR) can serve heritage conservation.
- **Inclusion:** Strengthening the link between local communities and their heritage through participatory methods.
- **Policy Contribution:** Supporting the **European Green Deal** (sustainable water culture) and **Digital Decade** targets.

5. Consortium & Regional Coordination Capacity Regional Coordinator / Hub:

İstasyon Gaziantep As a strategic regional hub, İstasyon Gaziantep is fully prepared to undertake the regional implementation and coordination of this project. We act as a bridge between public authorities (Municipality, Governorship), the private sector (OSB), and NGOs.

Call for Partners: While we have secured the local ecosystem, we are actively open to new National and International partnerships. We invite universities, research centers, SMEs, and technology providers to join us in this consortium to strengthen the project's technical and dissemination capabilities.