### A mixed reality journey through an innovative interactive installation in the Silversmithing Museum

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\_Museums are integrated entities.

\_Museums are not always connected to the surrounding area.

\_The variety of cultural sites located in one place is not visible to the visitors.

The project aims to reveal to the public a **network of cultural spaces** in Northern Greece, and **connect the museum** with the surrounding area, using the **Mixed Reality** (MR) technology.

Case study Silversmithing Museum of Ioannina Physical installation using Mixed Reality technology

#### The Silversmithing Museum

Location	"Its Kale", west bastion of the northeastern acropolis of the old town of Ioannina, Greece
Former use	Old cookhouses
Objective of the museum	Preserve the knowledge of Epirote silversmithing and disseminate information about its technology to the general public
Established	2016
Exhibition Design	Kizi Studio

**Construction** Tetragon S.A.



### The Exhibition Design

The building's outer shell was left intact and the entire exhibition and museum space is attached to the shell in the form of hanging corridors and display cases.

The new use coexists with the old shell in harmony and respect to each other.

The exhibition's design use simple lines and forms to adapt to the existing building shell and at the same time reflect the rich silversmithing history and art.



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#### The old and the new

The museum constitutes a unique combination of traditional architecture and modern museographic concept.

### The physical and the digital

This combination gives opportunities for additional new experiences in both physical and digital environments.

loannina is an important city located on a main route that crosses northern Greece from one side to the other.

The location can function as an information center for visitors that want to explore more about the surrounding area.



#### What is Mixed Reality?

Uses special Head Mounted Display (HMD) with transparent monitors located in front of the user's eyes in order to project holographic digital content.

User can see the physical environment along with the digital content.

User can interact with the digital content like it was in the real world using his/her hands.

No connection cables or controllers.

Can identify the surrounding environment and adjust the digital content to it.



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#### The Microsoft Hololens 2 HMD

**Spatial Mapping Technology** to place digital content into the physical environment.

#### Types of interaction:

- Gaze
- Gesture
- Voice

#### Types of gestures:

- Air-tap
- Tap
- Grub

#### Field of Vision (FOV):

43° horizontal 29° vertical



hologram NOT visible



#### Application requirements:

- Physical map as an image target
- A vertical dark surface
- Appropriate lighting
- Charging spot
- Secure storage space
- User instructions





#### Design principles:

- Meet the application requirements
- Adapt to the museum's exhibition design
- Keep the colors and design of the second floor of the exhibition
- Keep the graphic design of the visual identity of the exhibition





Other requirements:

- Mobility
- Signage of the installation
- Information about the project
- Projecting the view of the user









#### The mixed reality journey

Main purpose of the application is to **project points of interest on the physical map** using the mixed reality technology.

Users can choose between **10 categories** of points of interest with cultural context.

Users can acquire information about various points of interest the form of **text and images**.



#### User Experience (UX)

- 1. The user wears the glasses
- 2. Terrain relief is projected on the physical map
- 3. The visitor selects between 10 categories of points of interest.
- 4. Points of interest are projected on the 3D terrain relief
- 5. Points of interest are projected on a list
- 6. The visitor selects from the map or the list
- 7. Information and photos about the points of interest are projected in front of the visitor

and repeat...





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#### User Interface (UI)

#### The 3D Interface

idle

• Used on the horizontal surface

hover

- Selection of the points of interest from the map
- Indication of active point of interest on the 3D terrain

Silversmithing Museum Joannina

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### User Interface (UI)

#### The 2D Interface

- Used on the vertical surface
- Selection of categories
- Selection of points of interest from the list
- View and interaction with information and photographs panel





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### User Interface (UI)

#### The 2D Interface

- Used on the vertical surface
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#### The experience in the museum





#### e-tracer research project: touristic routes in Northern Greece

Main purpose of the project is to gather a complete set of data in one platform in order to provide information about cultural points of interest and routes in Northern Greece.

Offers visitors a range of different experiences, on specific sites, using cutting-edge technologies, such as augmented reality (AR) and mixed reality (MR).



Project partners:





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augmented reality

mixed reality

### Conclusion

\_The museum is now a part of a larger **network of cultural spaces**.

\_The museum can become a **center of cultural information** about the surrounding area.

\_Visitors can view similar sites around them.

\_Visitors can learn more information about points of interest in the surrounding area.

\_The new technology attracts more visitors, especially younger ones.

\_The museum can provide a **unique experience** to the public.



1CON international council of museums

Thank you

