Scanario 5

BORN DIGITAL ARTWORKS

Born Digital Art refers to artworks created exclusively in digital formats, utilising technologies like **digital imaging and 3D modelling**. Unlike traditional art, it allows for **dynamic interactions** and is prevalent in digital installations and virtual reality. Conserving this art poses challenges due to t**echnological obsolescence** and **digital decay**, necessitating proactive preservation strategies.

PERCEIVE aims to enhance the digital capabilities of scientists and cultural institutions through a service-based AI toolkit and new design theories for VR/AR/MR experiences, focusing on “Care,” “Accessibility,” and “Authenticity.”

Scan the QR Code and learn more!

Funded by the European Union

Funded by the European Union's under grant agreement Nr. 101061157. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

PERCEIVE

TOOLS & SERVICES

SCENARIO 5 / PERCEIVING AND PRESERVING COLOURS IN BORN DIGITAL ARTWORKS

AR ARTWORK MIGRATION & PLAYBACK APP

Thi Anh Ngoc Nguyen (HSLU), Arthur Clay (HSLU), Warren Armstrong

This **Unity-based tool** provides a structured pipeline for **migrating AR experiences** originally authored on the LAYAR platform into Unity scenes that are fully compatible with the **Hoverlay Digital Sequence Plugin**. Leveraging exported JSON data from LAYAR's MySQL schema, the application reconstructs geospatial object layouts, interprets transformation and animation logic, and anchors them in a local coordinate system derived from averaged POI positions.

The result is a **modular, location-aware AR scene** that can be previewed in Unity and exported as an asset bundle for seamless deployment to the **Hoverlay AR platform**.

WORKFLOW OVERVIEW

1. Data Export (MySQL → JSON)
Original LAYAR-based AR scenes are stored in MySQL tables, including:

- POI – geospatial anchors (latitude/longitude).
- Object – 3D model and asset references.
- Transform – local position, rotation, and scale.
- Animation – movement logic, orientation changes, and timed transformations.

These are exported as structured JSON files for import into Unity.

2. Coordinate Anchoring in Unity
The application calculates the average of all POI coordinates to establish a single origin point for the scene. All POIs are converted into relative local coordinates from this internal anchor. Unity simulates the original real-world spatial arrangement using local coordinates, rather than using live GPS frameworks like AR Foundation or ARLocation.

3. Scene Reconstruction
Each AR object is instantiated and positioned based on:

- Local transform values from the Transform table.
- Additional animated translation from the Animation table (e.g., moving 1000 meters north).
- Time-based behaviours are rebuilt using Unity's Timeline or Animation system, preserving the narrative flow of the original experience.

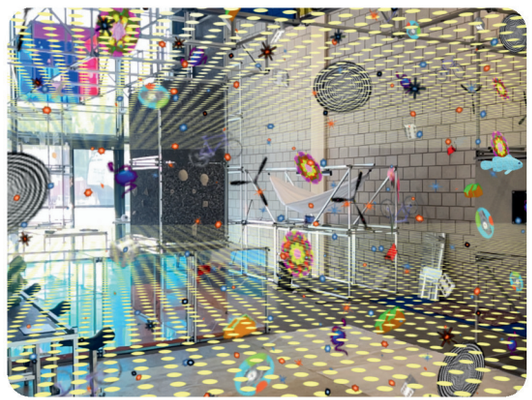
4. Hoverlay Digital Sequence Integration
To make the reconstructed AR artworks viewable through the Hoverlay AR platform, the application integrates the Hoverlay Unity Exporter plugin—a tool that allows Unity assets to be bundled and published as interactive digital objects in Hoverlay Spaces. This plugin bridges the Unity environment and the Hoverlay app, ensuring that scenes created in Unity can be delivered as lightweight, optimized sequences for mobile and AR glasses.

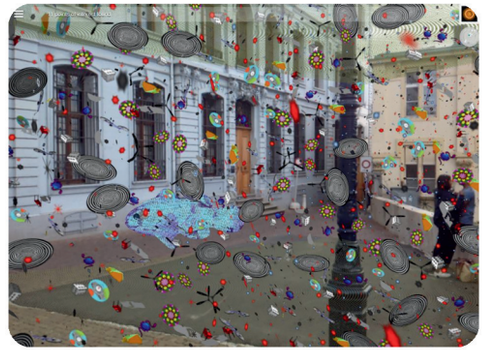
The fully reconstructed scene is wrapped into a Hoverlay Digital Sequence, which includes:

- 3D object hierarchy and animation logic
- Spatial metadata and initial placement
- Descriptive data (title, description, tags)

Sequences are prepared using the Hoverlay menu and formatted for upload to the Hoverlay backend.

This integration ensures that AR scenes designed in Unity can be made publicly accessible and viewed via Hoverlay's mobile AR interface.





Unity Export with the Hoverlay Exporter
> Supported: 3D Models, Animations, Particle Effects, Audio, Lights, URP-compatible Shaders
> Not Supported: Custom MonoBehaviour scripts, Cameras

Export Process:

- Install Unity 2022.3.19f1 with both iOS and Android Build Support modules.
- Create a new URP Unity project and import the Hoverlay Exporter package.
- Select the root GameObjects to be exported.
- Use the Hoverlay menu to export the project as platform-specific asset bundles.
- Upload the resulting ZIP files to Hoverlay Spaces as "Unity Asset Bundle" objects.
- Use the dashboard's QR code to preview the objects live in the Hoverlay AR app.

Deployment
Once published, AR artworks can be experienced:

- Through the Hoverlay Mobile App
- On AR glasses or tablets
- At their original or newly defined GPS locations

Key Features

- Migrates LAYAR-authored AR content using structured JSON exports.
- Anchors scenes in Unity using averaged POI coordinates, not live GPS.
- Accurately rebuilds visual, spatial, and temporal components of each AR scene.
- Exports to the Hoverlay platform for public, location-based viewing.