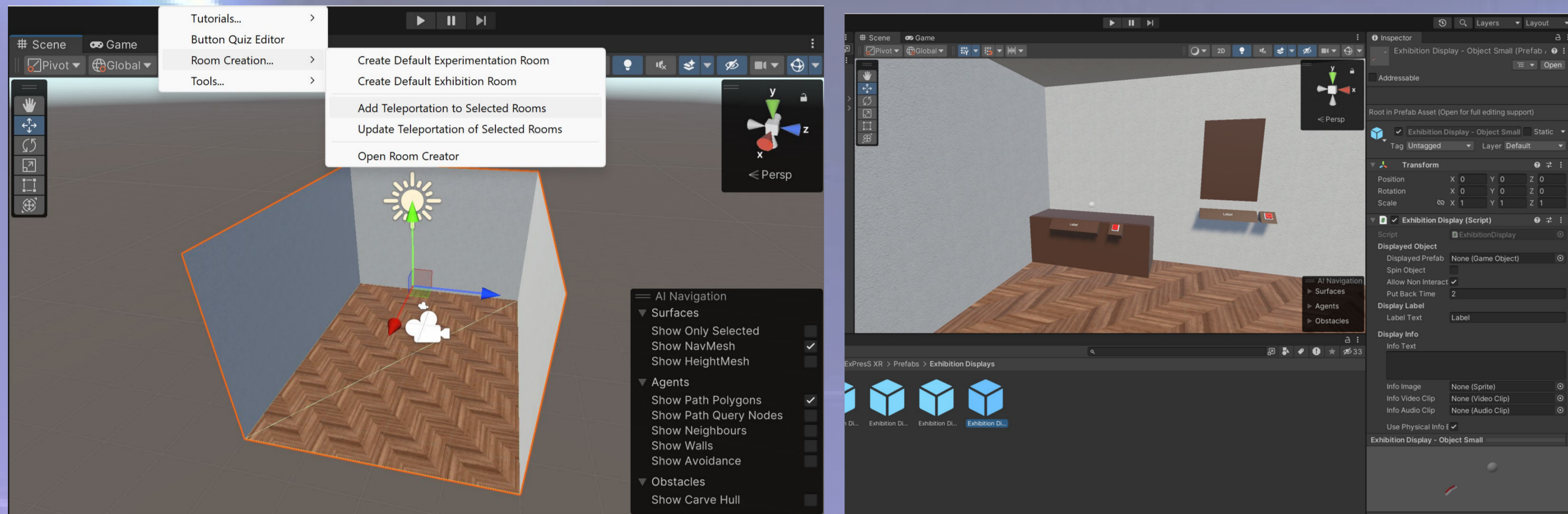




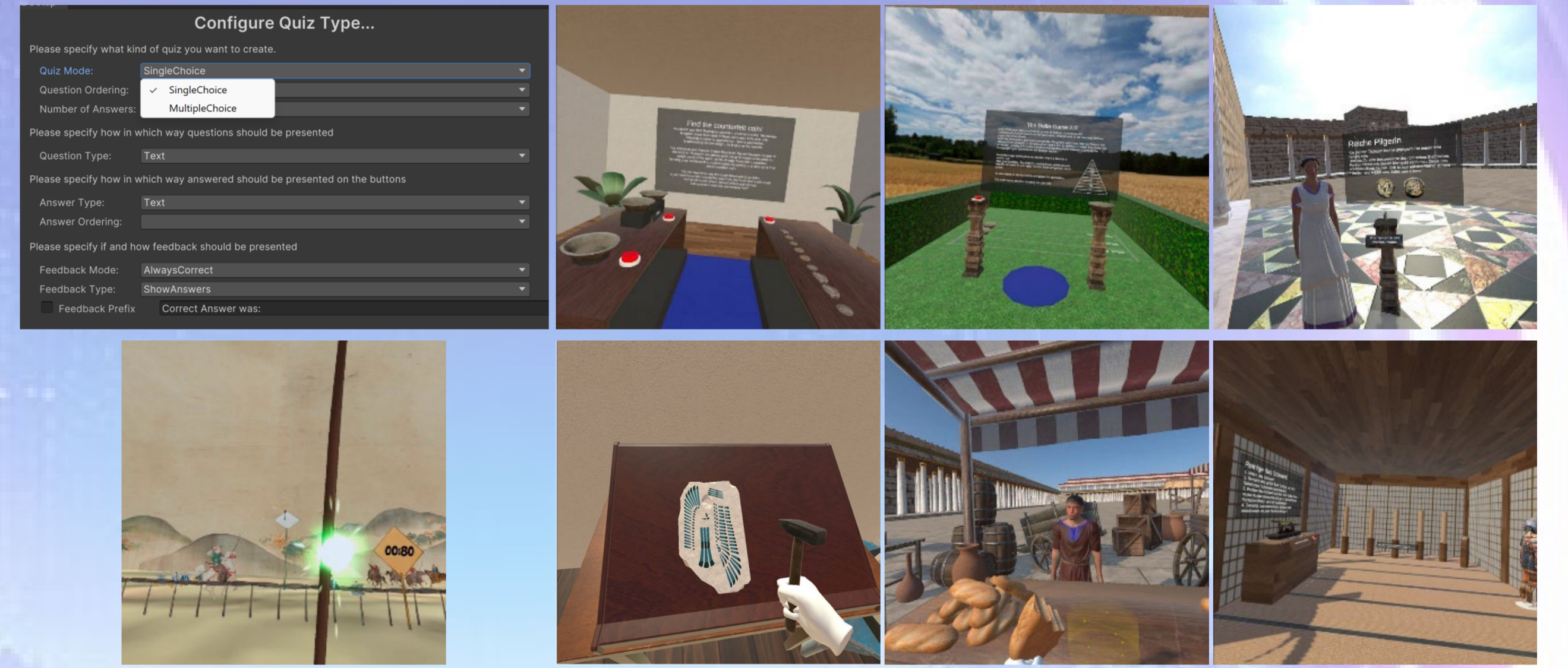
Experimentation and Presentation for Science with OpenXR

WYSIWYG Creation



GLAMs play a vital role in preserving the cultural, social, and technological achievements of past societies. To support them in the development of extended reality (XR) experiences, the M.A. specialization in Digital Humanities and the Numismatic Research Center and Collection at the Faculty of Humanities, University of Tübingen, developed **ExPres XR**: a framework that enables the creation of XR experiences without the need for programming.

Game Based Learning



Built on the Unity game engine, ExPres XR utilizes Unity's What-You-See-Is-What-You-Get (**WYSIWYG**) editor to support the efficient development of virtual worlds. Beyond Unity's native functionality for virtual environment creation, ExPres XR incorporates a room-creation system that enables the design of exhibition-like spaces navigable in six degrees of freedom, thereby serving as a structural foundation for immersive XR experiences. In addition, the system facilitates the integration of configurable interactive showcases, which can be populated with a variety of media formats, including text, audio, images, video, and 3D models. Moreover, to support game-based learning approaches, a set of freely configurable minigames can be embedded within the environment.

ExPres-XR provides functionality to collect data from XR sessions, such as eye tracking, interaction behaviour, and success rates. These data can be exported in data formats (e.g., CSV) commonly used by statistical analysis software. To achieve the long-term sustainability of developed experiences, the Khronos Group's **OpenXR** application interface is used to ensure the functionality of the developed application across a wide range of XR hardware.

Showcases

