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Abstract— In this work, we present a serious VR game named “Lunar Roving Adventure.” This game is based on the activities of the Apollo 16 lunar exploration mission in the 1970s. In the Apollo 16 mission, astronauts landed on the Moon and drove the lunar rover. The goal of this game is to motivate them to learn more about the lunar exploration missions and gain interest in space science. The game includes three gaming phases: planning, preparing, and driving. The screenshots of the three gaming phases are shown in Fig. 1. In the Planning phase, the player plans and creates the route of the mission by placing tokens on a 3D lunar terrain map. They need to learn to use the coordinate system and do some calculations. In the Preparing phase, the player selects and loads devices onto the lunar rover based on the requirements of the mission. In the Driving phase, the player drives the rover through all the stop stations to the end of the route. They need to operate the navigation devices to determine the direction. They also need to control the speed to avoid overheating problems. As shown in Fig. 2, the lunar terrain is converted from the Lunar Reconnaissance Orbiter (LRO) data of Descartes Highlands. That was the place where the real Apollo 16 Lunar Module landed.

Keywords— Virtual Reality; Serious Game; Educational; Lunar Exploration

The Transeuntis Mundi Project proposes to capture the sound and visual memory of peoples, cultures and cities to tell the story of the millenials passersby crossing the world. In this way, it portrays diversity, mobility and generates an archive of human cultural heritage, which circulates worldwide in a

performative installation with immersive image and sound and VR.

Link: This video shows the basic game concept and gameplay: <https://youtu.be/hra9i0xHrE>

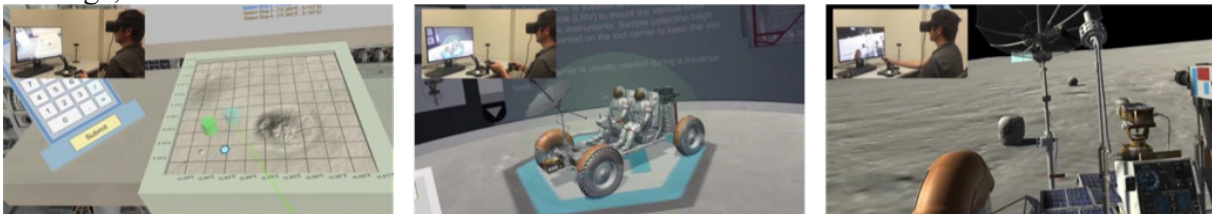


Fig. 1 Screenshots of the gameview. From left to right are the planning phase, the preparing phase, and the driving phase.

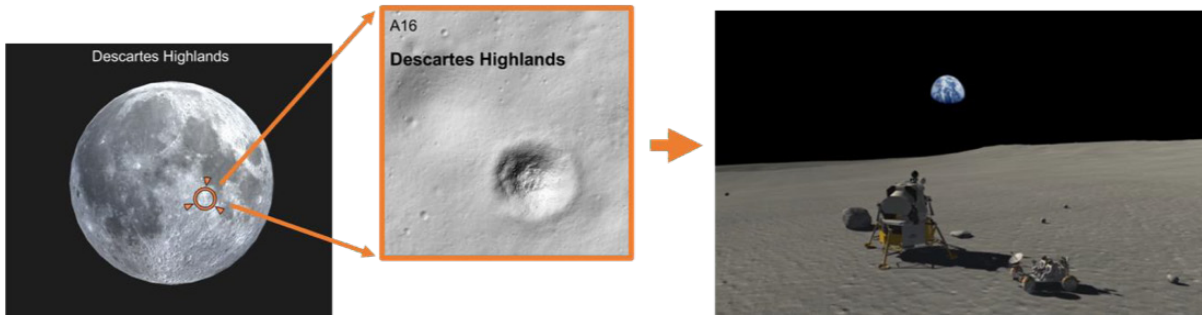


Fig. 2 The left one is the player reading the navigation devices in the control console, and the right one is the operation with the flight stick to bring up the mini-map.

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