

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Show Us Space: Demonstration of Hands On Education and Outreach (8)

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LUMARNITY VR: OUTREACH ACTIVITY OF LUNAR ISRU PLANT THROUGH IMMERSIVE
VIRTUAL REALITY

Abstract

JGC Corporation aims to develop a lunar ISRU (In-situ resource utilization) plant in collaboration with JAXA (2021-). JGC Corporation also envisions a smart community named "Lumarnity™" (Lunar Smart Community™) with the Lunar ISRU plant, equipped with a circulatory infrastructure for a long-term human residence on the Moon.

However, the lunar surface remains largely unexplored, particularly for the general public, who often perceive lunar society as a distant prospect. To bridge this gap, we have developed Lumarnity VR[1] to provide the public with a more immersive experience of Lumarnity.

Lumarnity VR, hosted within the social VR platform "VRChat". People can access Lumarnity by wearing the VR goggle, visitors can freely explore inside Lumarnity, the visitors can also board a prepared lunar rover to observe the process from upstream to downstream of the lunar ISRU plant. Lumarnity VR made its debut at IAC 2023 in Azerbaijan and was subsequently released online. Since its launch on October 1, 2023, it has garnered over 4,300 accesses (as of the end of February 2024), generating diverse feedback. Notably, there has been significant interest from the education sector, with many elementary and junior high school students experiencing Lumarnity VR (smartphone VR using YouTube for elementary school students[2]). The initiative even sparked the "Lunar VR School Trip" at Kawakami Junior High School in Nagano Prefecture, Japan, where students were enthralled by the immersive lunar experience, fostering aspirations for space exploration[3]. Evaluations and feedback obtained from the students are included in this paper.

In this session, attendees will have the opportunity to experience Lumarnity VR firsthand through VR goggles with high-speed internet connection. Participants will embark on virtual lunar rover rides, observe the lunar ISRU plant, and even simulate a lunar surface jump, replicating the Moon's gravity(1/6G). Time permitting, visitors can explore additional lunar facilities, including lunar construction equipment, lunar solar panels, and a lunar 3D printer.

This paper outlines the outreach initiatives undertaken in Japan using Lumarnity VR, highlighting achievements and future endeavors to further engage and inspire audiences.

[1] "Lumarnity™" (VRChat world),

URL:https://vrchat.com/home/launch?worldId=wrlld_dea560af-cc20-4cab-83c1-326420915e38

[2] Lunar Plant VR tour 360 Movie,

URL:<https://www.youtube.com/watch?v=xXS9Juq51Ls&t=29s>

[3] Lunar VR School Trip” at Kawakami Junior High School in Kawakami Village, Nagano Prefecture, Japan (Japanese),

URL:<https://www.jgc.com/jp/news/2024/20240115.html>