



Space Rats UI & Rover Development

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Abstract

The Space Rats developed a modular AR spacesuit and pressurized rover interface to improve navigation and mission activities on the lunar surface. The interface enhances learning about the lunar environment, supports tasks, and maximizes tool efficiency.

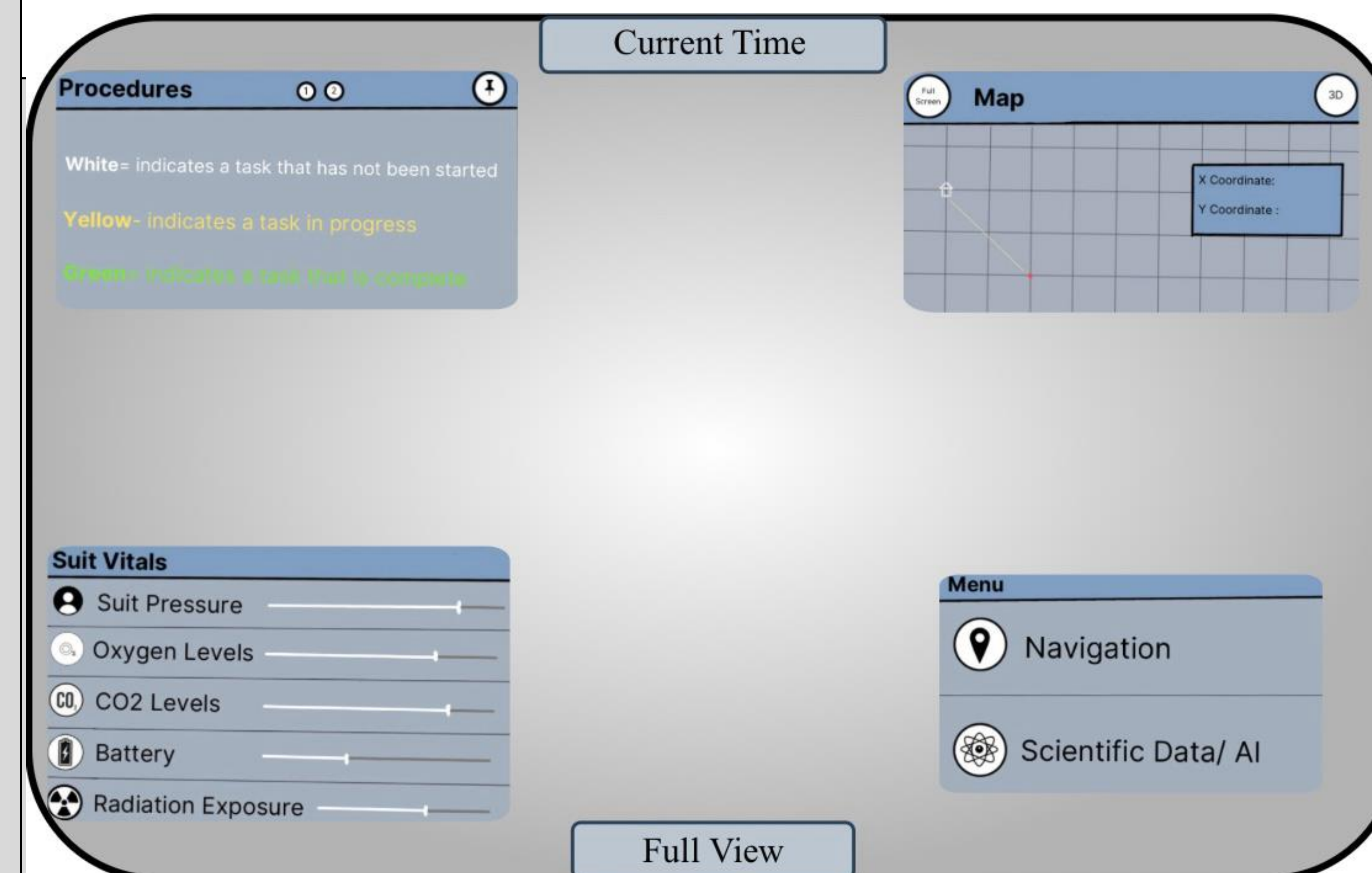
Project Background

The NASA SUITS challenge was introduced in 2017. It was designed to crowdsource ideas from college level students with developing augmented reality (AR) systems for use in future lunar missions. By holding this challenge on an annual basis, NASA encourages new students to continue to innovate their own ideas.

Objective

Our project focuses on creating an AR system for both spacesuits and pressurized rover interfaces, designed to simplify mission tasks and ease mental workload for astronauts. By presenting essential information in a clear and context-aware manner, our interface boosts crew performance and promotes safety during lunar surface operations.

Spacesuit UI Design



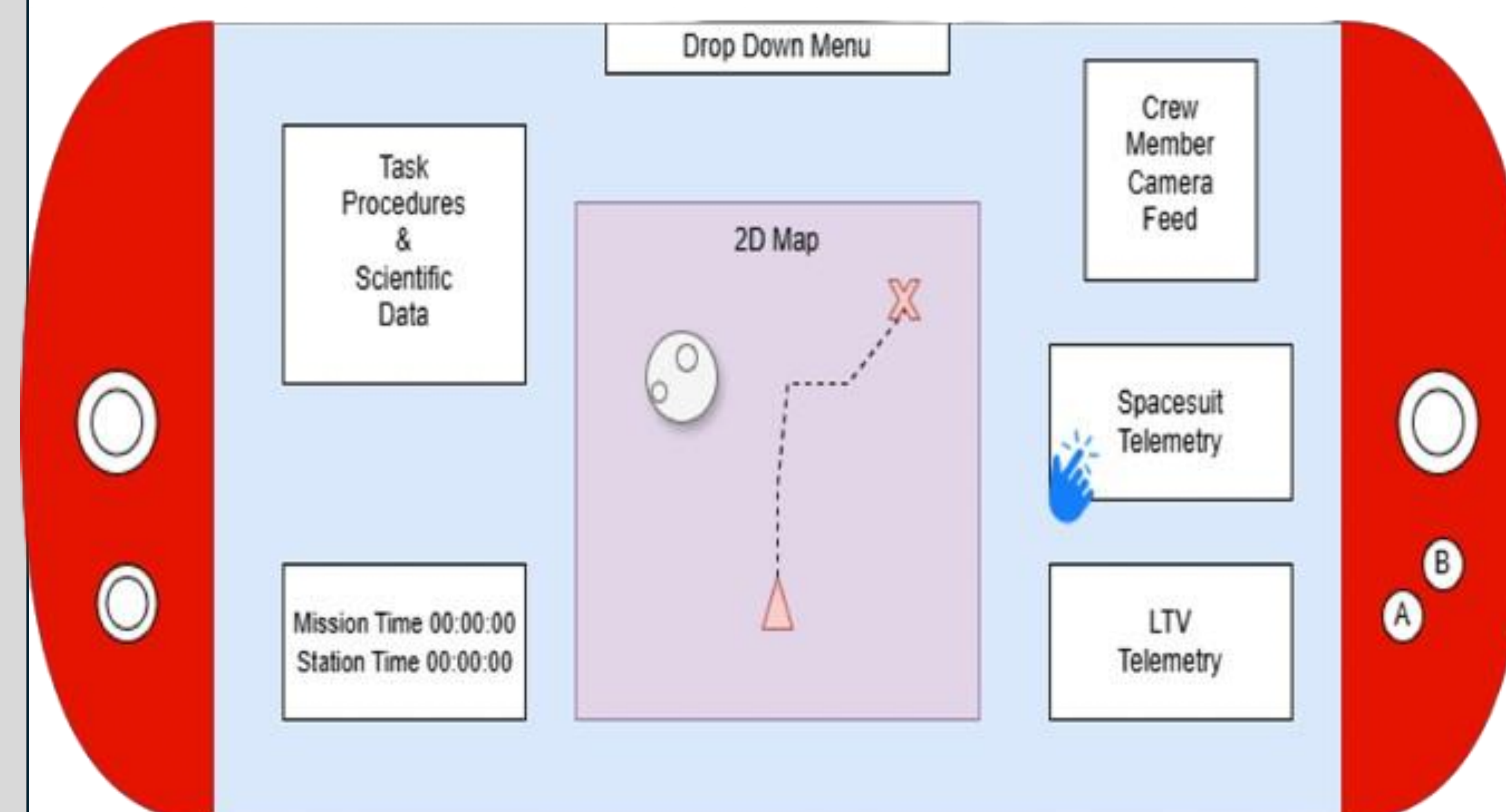
Spacesuit UI

To meet the design objectives for the spacesuit UI, we implemented a modular interface that consolidates all the data in a clear and accessible format. We employed togglable systems, voice commands, and visual warning systems to decrease the cognitive load of the personnel. Moreover, we utilized pop-up tabs to organize dense amounts of information in a straightforward way.

Pressurized Rover TCD

The TCD is used to control the pressurized rover using joysticks. The screen displays multiple menus accessible via a smaller joystick. While buttons are used to select or return to each menu. Each menu contains data and functions such as Spacesuit Telemetry, LTV Telemetry, autonomous resource utilization and more. The map is displayed on the home screen with options to expand.

Pressurized Rover Tablet-Controller Device (TCD)



Conclusion

The Space Rats modular AR interfaces enhance user learning, task completion, and tool utilization for lunar missions. Committed to research and development, we support NASA's Artemis mission and will continuously refine our design for the NASA SUITS challenge.

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