



Overview of Crew Operations for Transit to Mars

AIAA ASCEND Presentation

Nicole Piontek

NASA Langley Research Center

Clare Luckey

NASA Johnson Space Center

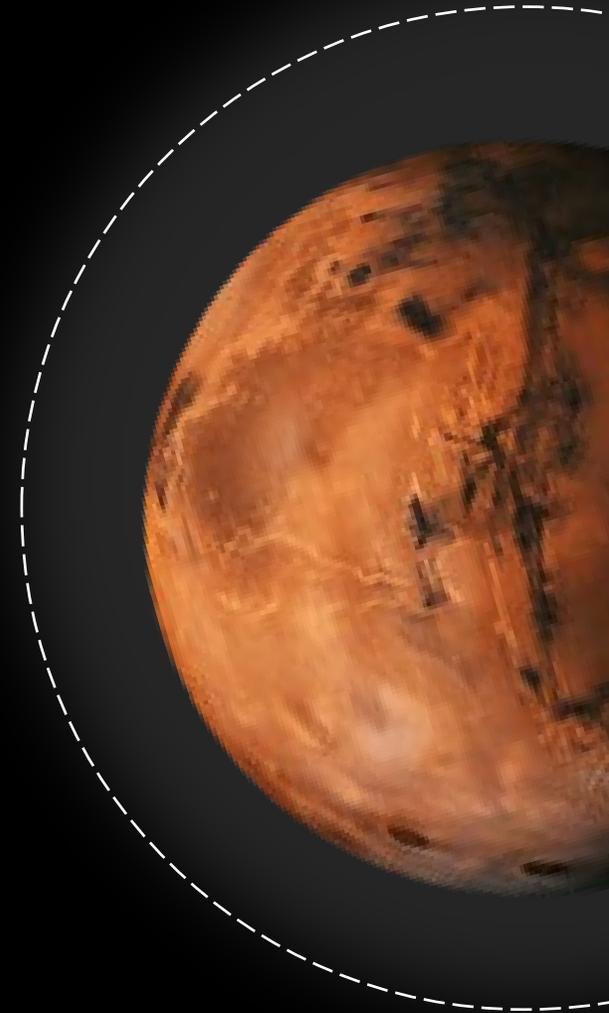
October 23, 2023





Overview

- Background
- ISS Operational Experience
- Human Mars Missions
- Crew Operations for Mars Transit
- Summary
- Questions





Background

Moon to Mars Recurring Tenants (RT)

RT-3

“**Return crews safely** to Earth while mitigating adverse impact to crew health”

RT-4

“**Maximize crew time** available for science and engineering activities within planned mission durations”

RT-5

“**Maintainability and reuse**: when practical, design systems for maintainability, reuse, and/or recycling to support the long-term sustainability of operations and increase Earth independence”

NASA's Moon to Mars Objectives

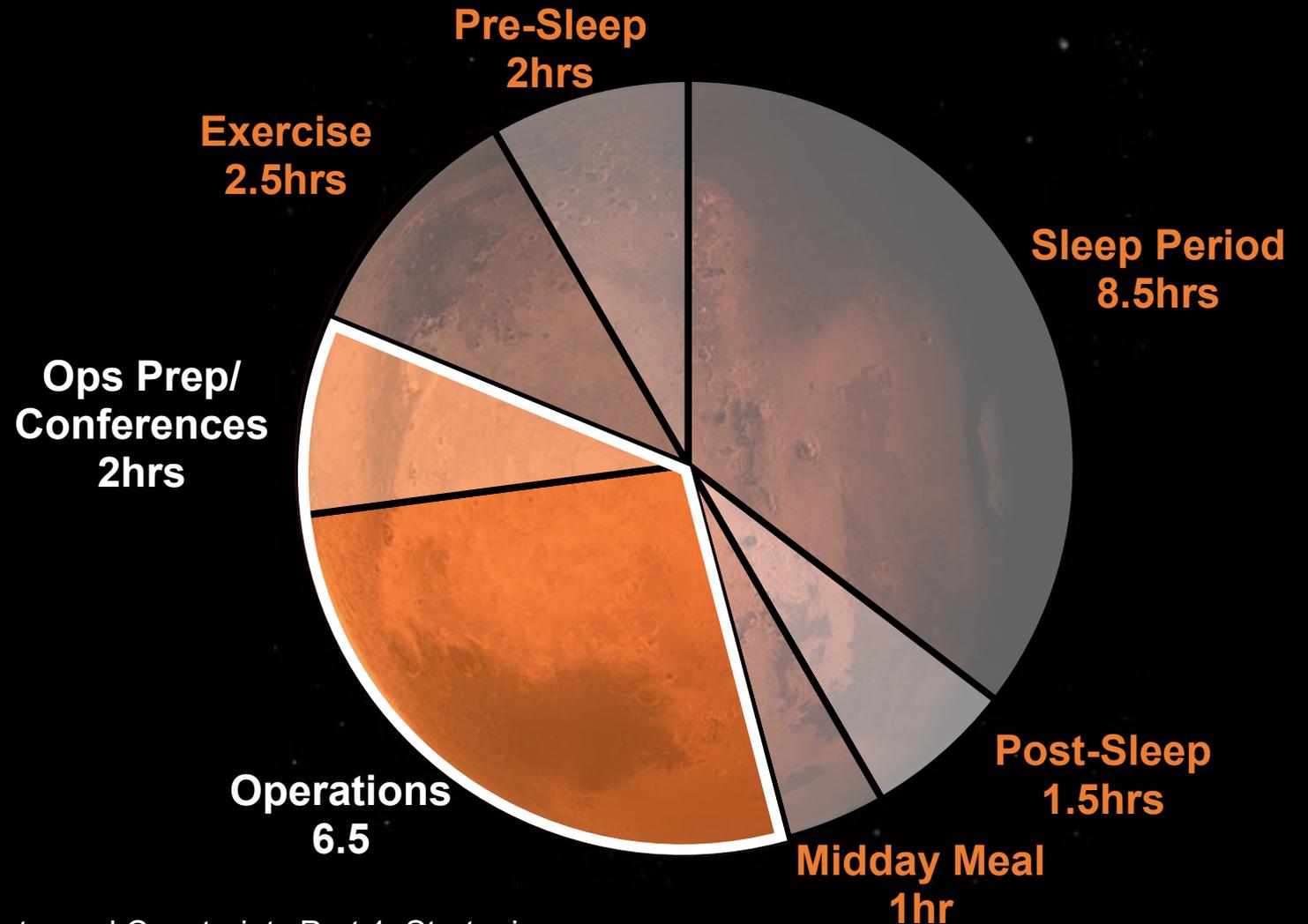


ISS Operations Guidelines for Crew Time per Day



Crew time is a valuable resource that must be managed

- In current ISS Operations Planning, only ~8.5 hours are available for flexible planning in any 24-hour period



Source: "SSP 50261-01 Generic Groundrules, Requirements, and Constraints Part 1: Strategic and Tactical Planning. International Space Station Program." NASA, 2022.

ISS Operational Experience



Maintenance



Crew Health



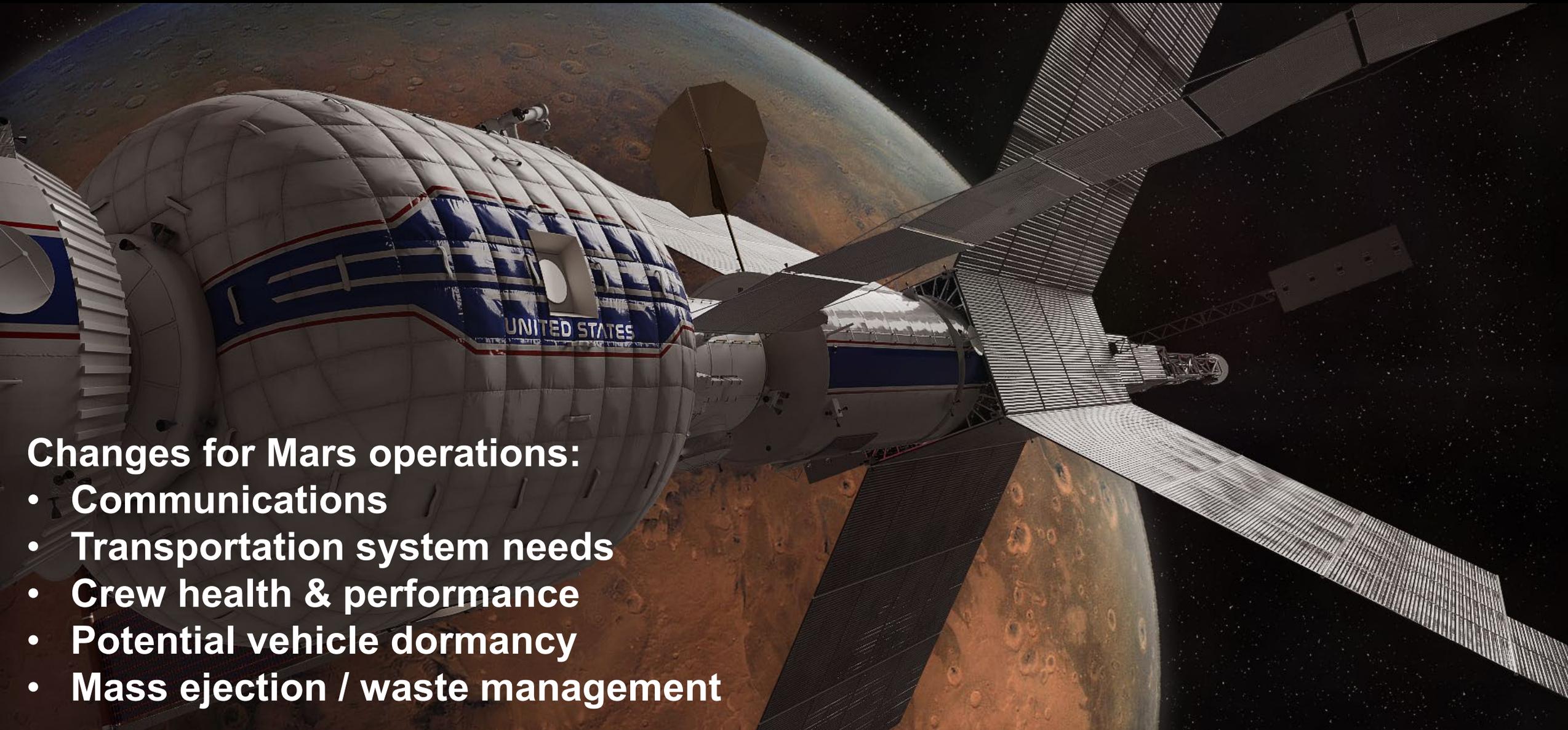
Utilization



https://www.nasa.gov/mission_pages/station/images/index.html

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Crew Operations for Mars Transit



Changes for Mars operations:

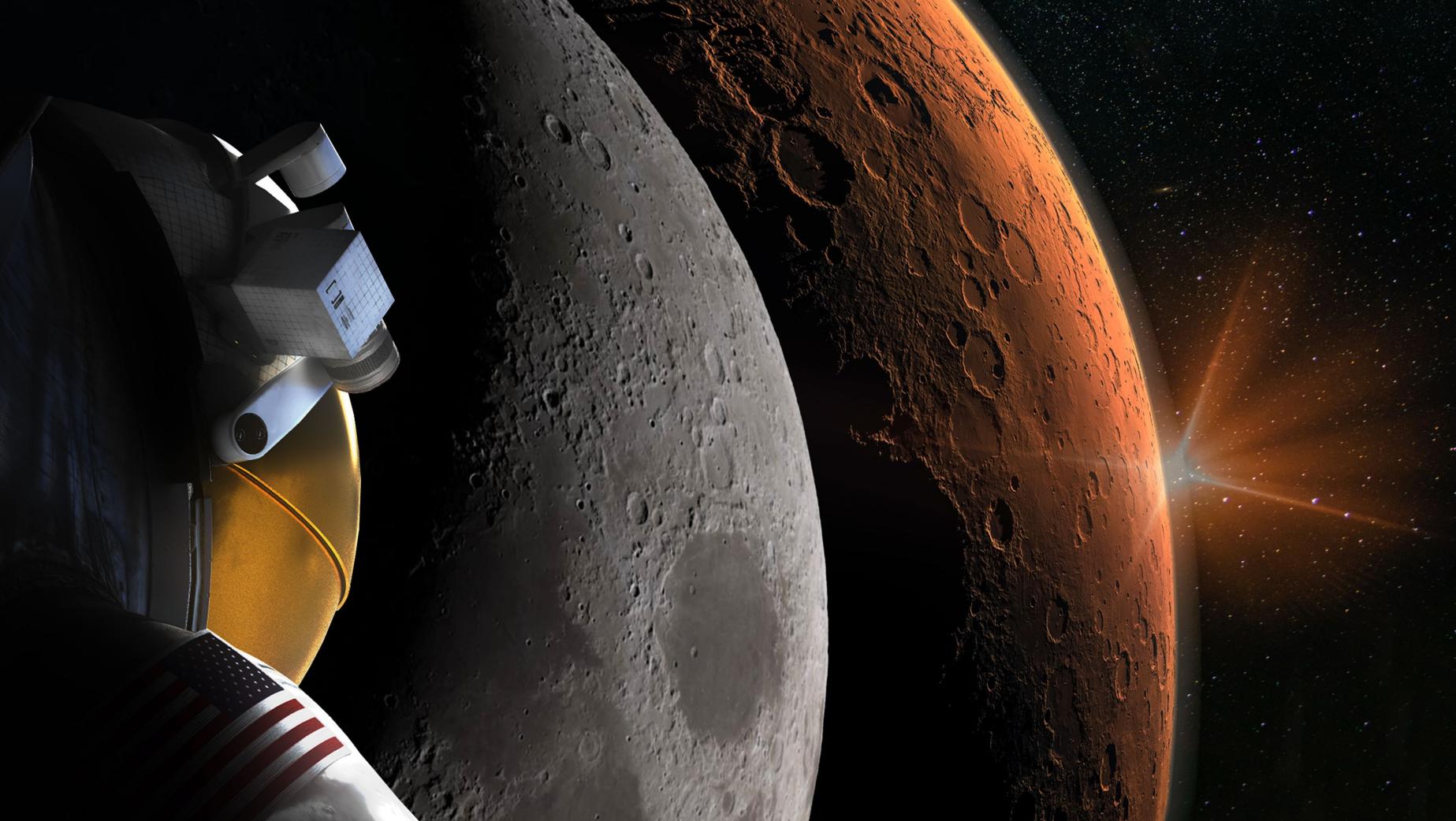
- Communications
- Transportation system needs
- Crew health & performance
- Potential vehicle dormancy
- Mass ejection / waste management

Summary



- **Crew time is a limited resource**
- **Mars mission will have several new operational challenges**
- **Understanding crew operations and the time required is a critical part of Mars mission architecting**





Questions?



Nicole Piontek
nicole.e.piontek@nasa.gov



Clare Luckey
clare.m.luckey@nasa.gov