



**Welcome to the  
Johnson Space Center  
Human Health & Performance Contract 2  
(HHPC2)  
Industry Day**

**Yaranet Marquez  
Contracting Officer**

**April 2, 2024  
Gilruth, Destiny Ballroom  
8 a.m. CDT**



# AGENDA

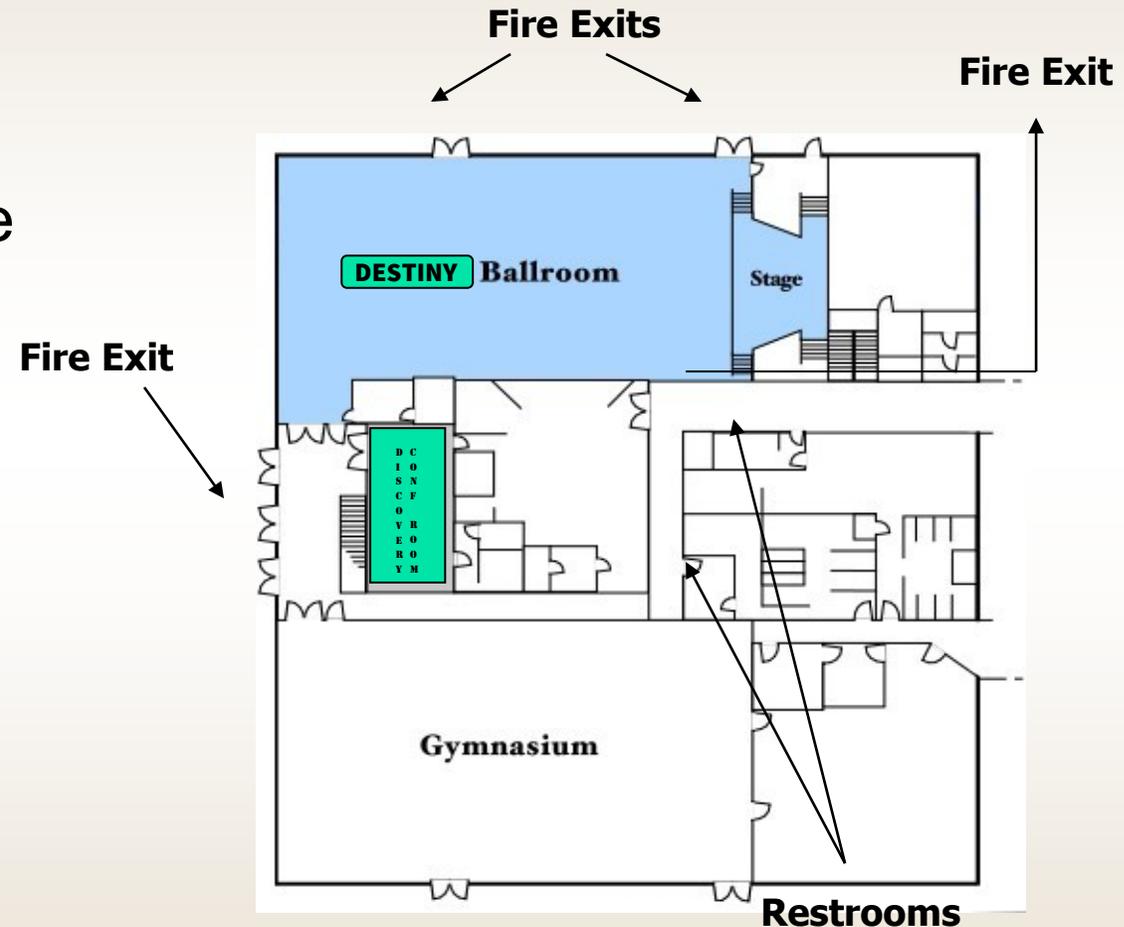
<b>SPEAKER</b>	<b>SUBJECT</b>	<b>TIME (MIN)</b>
Yaranet Marquez, Contracting Officer	Welcome to Industry Day, Introductions	15
Stephen Janney, Manager, Projects Procurement Office	Procurement, Welcome	10
Monica Craft, Small Business Specialist	Welcome, Small Business Point of Contact	10
JT Ocampo, Contract Specialist	Current Contract Overview, Proposed Contract	15
JT Ocampo, Contract Specialist	Procurement Schedule, Industry Day One-on-One Meetings	15
Rebecca Tures, Deputy Director, HH&P Directorate and David Baumann, Director, HRP	Organization Vision and Objectives	20
Kristine Ohnesorge, Requirements Development Team (RDT) Chair and Mihriban Whitmore, RDT Technical Lead	Technical Overview and DSOW	45
BREAK	Submit any initial questions	10
Chuck Lloyd, HHPC2 Industry Day Lead	Virtual and Physical Tour Schedule	55
Yaranet Marquez, Contracting Officer	HHPC2 Initial Question & Answer Session	15
Yaranet Marquez, Contracting Officer	HHPC2 Industry Day Presentation Closing and Physical Tour to begin	5



# Safety and Administrative Information

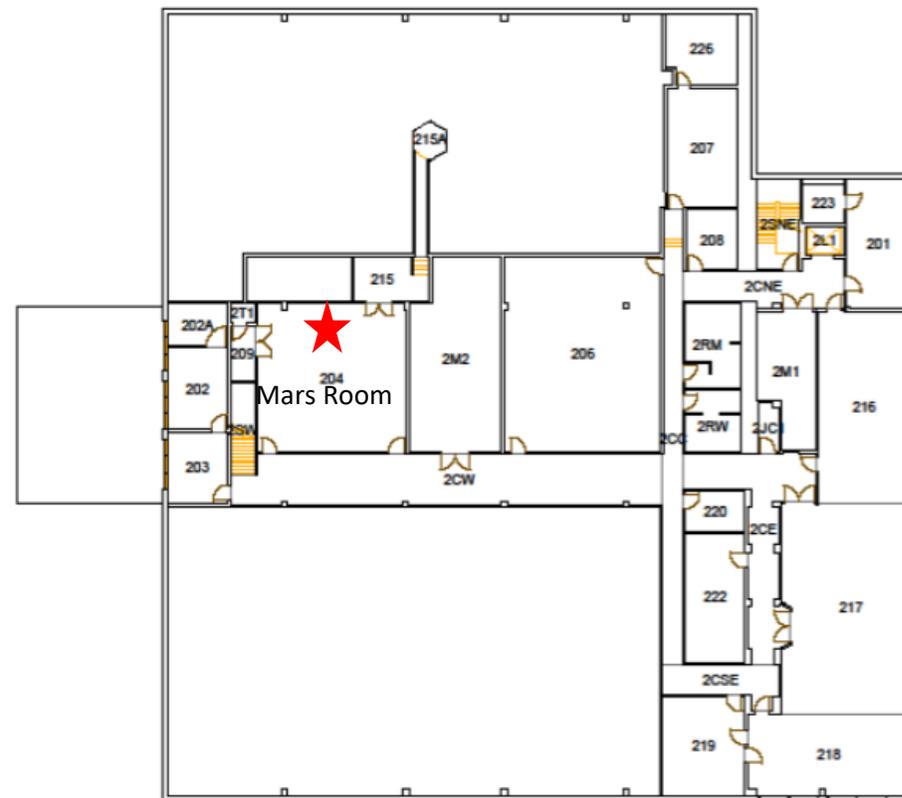
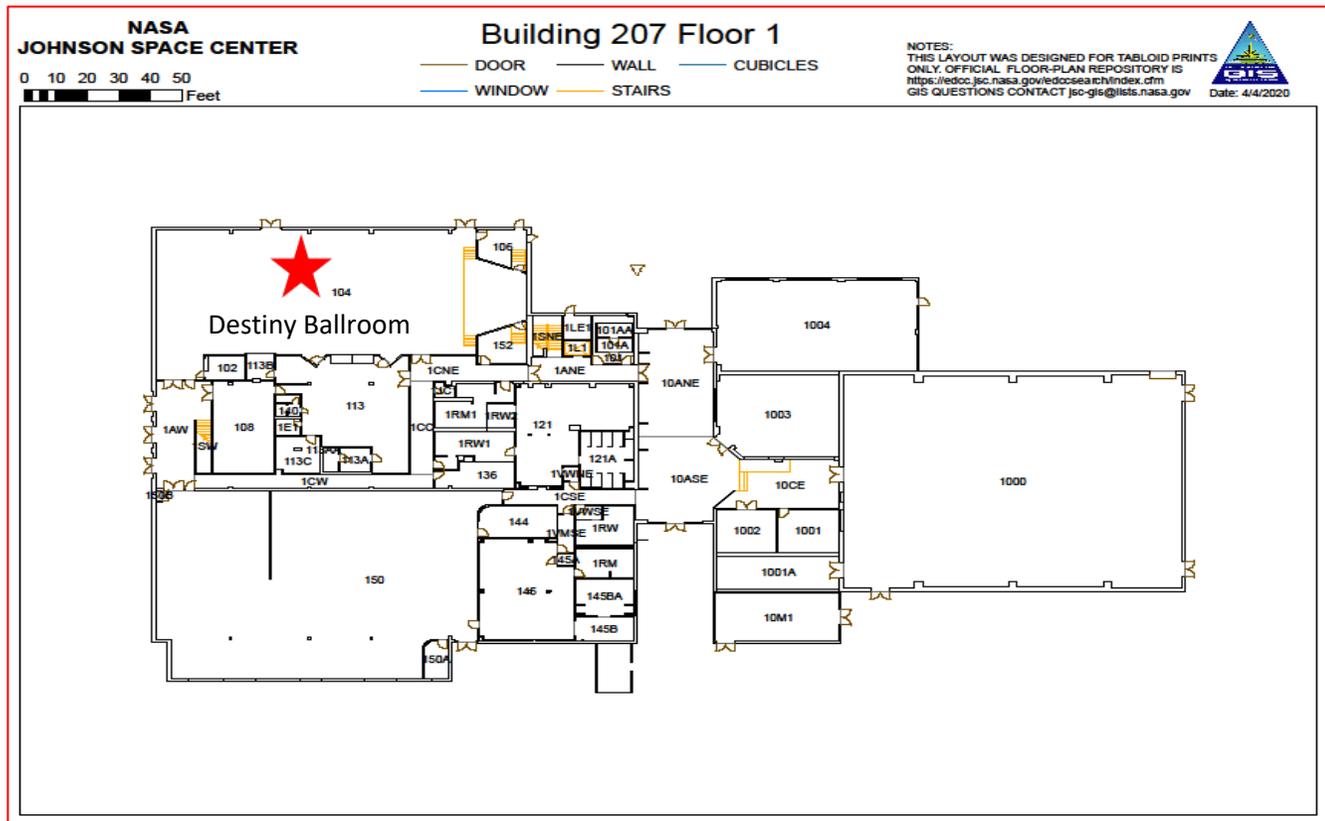
Restrooms can be found in the hallway outside this ballroom.

Fire exits are at the front entrance and side exit doors. In the event of a fire, you must move at least 75ft. away from the building.





# Gilruth 1<sup>st</sup> and 2<sup>nd</sup> Floor Layout





# Disclaimer

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- These slides are for information and planning purposes only. No solicitation exists at this time.
- This presentation shall not be construed as a commitment by the Government or as a comprehensive description of any future requirements.
- If a solicitation is released, it will be synopsisized on the Government-wide point of entry (GPE), as defined by FAR 2.101.
- No pictures or recordings of any kind are permitted of the Industry Day presentation, JSC Facility Tour, or One-on-One meetings.



# Goals of Industry Day

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- Promote competition on the proposed acquisition.
- Develop Industry's understanding of the Government's current vision and objectives.
- Provide Industry with the opportunity to meet with the Government early enough in the procurement process to provide input into the HHPC2 procurement strategy.
- Encourage offerors to submit questions and comments electronically via an email to the Contracting Officer, or in person during Industry Day.
- The Government will respond officially to all questions submitted by posting them to the GPE and the HHPC2 website.



# Responses to Questions

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- Verbal questions will be answered during the Industry Day presentation.
  - However, responses to verbal questions will not be considered official. The Government requests that Industry follows-up by submitting any verbal questions in writing to obtain an official response. If a difference exists between verbal and written responses to questions, the written responses shall govern.
- Submit questions to Yaranet Marquez at [yanet.marquez-1@nasa.gov](mailto:yanet.marquez-1@nasa.gov) and Joseph (JT) Ocampo at [joseph.t.ocampo@nasa.gov](mailto:joseph.t.ocampo@nasa.gov) by 4:00 p.m. Central Daylight Time (CDT) on Friday, April 5, 2024.
- The Government will officially respond to all questions by posting responses to sam.gov and they will be linked to the HHPC2 website after Industry Day and Industry Day One-on-Ones are conducted.
- The One-on-One meetings are intended to be question and answer sessions in which neither side will make a formal presentation.
  - Relevant verbal responses to questions from this session will also be posted to sam.gov and they will be linked to the HHPC2 website. If a difference exists between a verbal and written response to questions, the written responses shall govern.



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# **Welcome**

**Stephen Janney, Manager  
Projects Procurement Office**



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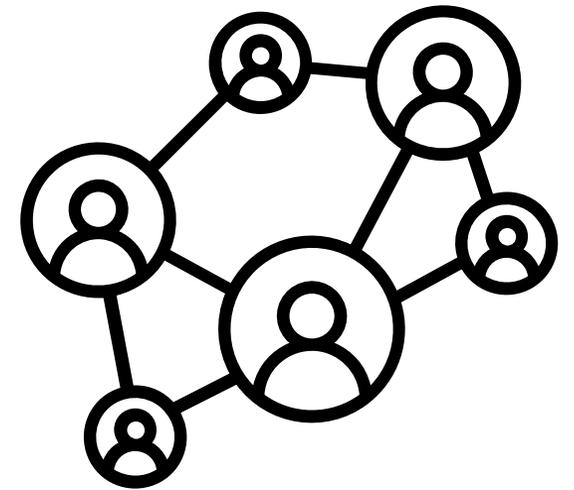
# **Welcome**

**Monica Craft, Small Business Specialist  
Office of Small Business Programs**



# Office of Small Business Programs

- Main phone number: (281) 483-4512
  - Robert Watts, Senior Small Business Specialist
  - Tumarow Romain, Small Business Specialist
  - Monica Craft, Small Business Specialist
- All emails should be sent to: [jsc-smallbusiness@mail.nasa.gov](mailto:jsc-smallbusiness@mail.nasa.gov)
- Location: Building 1, Suite 453
- Address:  
NASA Johnson Space Center,  
Office of Small Business Programs  
Mail Code: BA  
2101 NASA Parkway  
Houston, Texas, 77058-3696





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**Current Contract Overview, Proposed Contract, Procurement Schedule  
and  
Industry Day One-on-One Meetings**

**JT Ocampo, Contract Specialist  
Office of Procurement**



# Current Contract Overview

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- Contract Number: NNJ15HK11B
- Prime Contractor: KBR Wyle Services, LLC
- Contract Type: Single-Award, 100% Indefinite-Delivery Indefinite Quantity (IDIQ) Cost-Plus Award Fee (CPAF)
- Period of Performance: November 1, 2015 – October 31, 2025
- Skills currently provided on contract include:
  - Section 1: Contract Management and Administration
  - Section 2: Health, Research and Laboratory Services
  - Section 3: Engineering, Research and Project Management
  - Section 4: Integration



# Proposed Contract

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- Solicitation Number: 80JSC024HHPC2
- NAICS Code and Size Standard
  - The NAICS Code is 541715
  - The size standard is 1,000 Employees
- Period of Performance contemplated is 11/01/2025 – 10/31/2030
- Contract Types: To Be Determined
- In accordance with FAR 16.301-3(a)(3), a cost-reimbursable contract may only be used when the contractor's accounting system is adequate for determining costs applicable to the contract or order. This requirement also extends to subcontractors performing under a cost-reimbursable subcontract.
- Offerors should review Chapter 8 of the DCAA Audit Manual to determine if they are subject to full or modified Cost Accounting Standards (CAS) coverage and if they require an adequate Disclosure Statement prior to award. The link is: [Chapter 8 - Cost Accounting Standards \(dcaa.mil\)](https://www.dcaa.mil/Chapter8)



# Proposed Contract

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- Anticipated contract requirements:
  - Section 1: Contract Management and Administration
  - Section 2: Medical, Health, and Laboratory Services
  - Section 3: Laboratories and Other Facilities
  - Section 4: Engineering, Health and Medical Operations, and Research Capabilities
  - Section 5: Life Cycle Development and Management
  - Section 6: Directorate Services and Program Integration
  - Section 7: External Collaborations and Special Projects
- Anticipate update to the NASA FAR Supplement (NFS) Appendix A to codify and implement the Occupational Health Product Service Line (PSL) strategy



# Special Consideration

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- **NOTE TO PROSPECTIVE OFFERORS**

Prospective offerors are reminded not to contact incumbent personnel (either directly or through electronic means) during duty hours or at their place of employment, as such contacts are disruptive to the performance of the current contract.



# Procurement Schedule

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- The Government does intend to issue a Draft Request For Proposal (RFP).
- Following the release of the Draft RFP, Industry will have an opportunity to submit anonymous questions in writing so that the Government may officially respond.
- The Acquisition Milestone Schedule can be found on the HHPC2 website.

<b>Milestone</b>	<b>Planned Date</b>	<b>Actual Date</b>
Request for Information/Sources Sought Synopsis	01/29/2024	1/29/2024
Industry Day	04/02/2024	
Release Draft Request for Proposal	08/16/2024	
Release Final Request for Proposal	10/23/2024	
Pre-Proposal Conference	11/04/2024	
Questions Due	11/07/2024	
Proposals Due	11/22/2024	
Contract Award	04/21/2025	
Phase-In Begins	09/02/2025	
Contract Start	11/01/2025	



# Industry Day One-on-One Meetings

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- Wednesday – April 3, 2024
- Thursday – April 4, 2024
- Gilruth Center – Mars Conference Room
- No more than 6 individuals may represent any party or team of parties.
- Only one meeting will be allowed per company.
- Meetings will not exceed 30 minutes in length.



# How to Get Connected

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- A copy of this presentation has been posted to the HHPC2 website
- HHPC2 External Website <https://www.nasa.gov/johnson/jsc-procurement/hhpc2/>
- NASA/JSC Contract Opportunities <https://sam.gov/>
- JSC Procurement Website <http://procurement.jsc.nasa.gov/>
- NASA Office of Small Business Program <https://www.nasa.gov/osbp/>



# HH&P and HRP

## Welcome and Introduction

### HH&P and HRP Perspective, Vision & Mission

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Rebecca Tures, Deputy Director, Human Health and Performance  
Directorate

David Baumann, Director, Human Research Program



# Human Health and Performance (HH&P) Directorate Vision and Mission

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- Our Vision:
  - Humans living, working and thriving in space, on the Moon, and on to Mars.
- Our Mission:
  - Lead the global spaceflight community in protecting astronaut health and ensuring human mission performance.



# HH&P Directorate

## Strategic Objectives

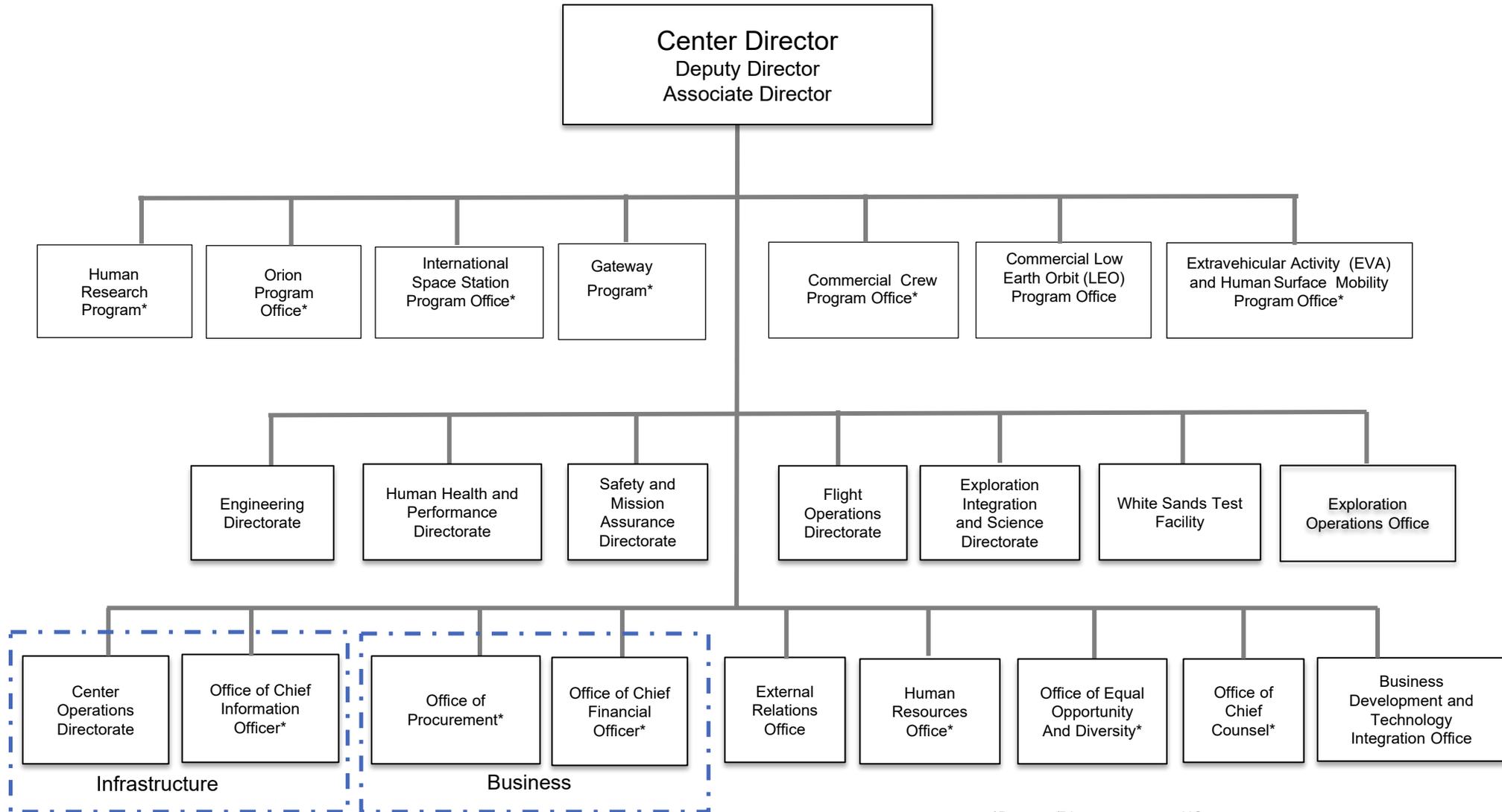
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Human System Risk Advancement	Efficiently transition human systems risk mitigations, research, data, technologies, protocols, etc., into operations and standard use.
Flight/Mission Support	Evolve operational program mission support to address changing needs/requirements and to seek efficiencies.
Program/Customer Support	Continuously improve HH&P technical support to all customer organizations.
Data Management	Be a data rich and knowledge rich organization.
Adaptive Business Practices	Innovate and adapt business practices to enable products and services capable of pivoting to changing Program needs.
Inclusion/Diversity	Ensure inclusion and diversity throughout HH&P to foster innovation and unique solutions.
Organizational Evolution	Mature and evolve the organization to better support the Programs of today and tomorrow.





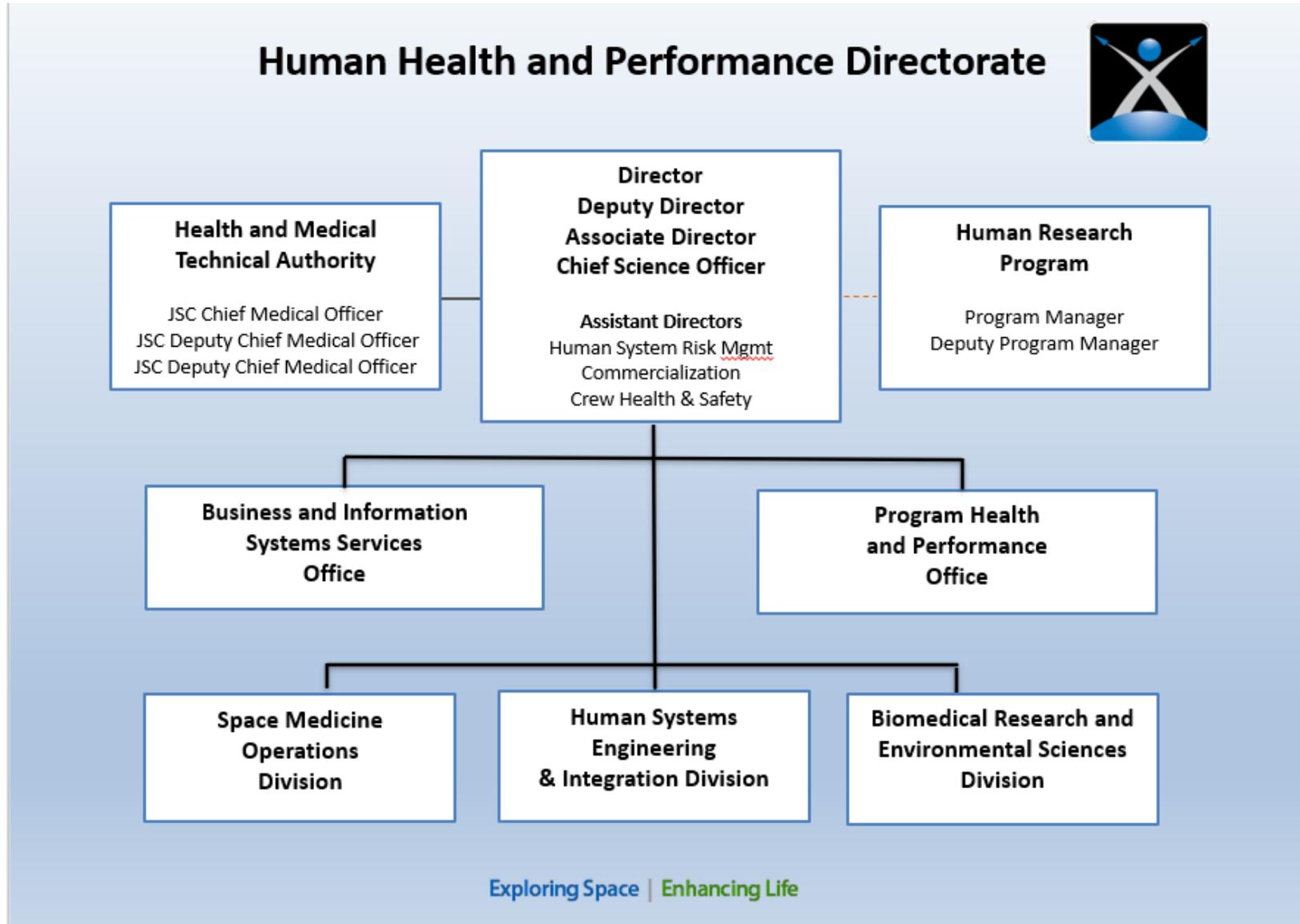
# Johnson Space Center Organizational Chart



\*Program/Director reports to HQ



# HH&P Functional Organizational Chart





THE MISSION of NASA's Human Research Program is to enable space exploration beyond low Earth orbit by reducing the risks to human health and performance through a focused program of basic, applied, and operational research that leads to the development and delivery of human health, performance, and habitability standards, countermeasures and risk mitigation solutions, and advanced habitability and medical support technologies.





# Human Research Program

## Strategic Objectives



### Alignment

Build internal and external alignment to solve the most pressing challenges for human space exploration



### Agility

Develop the ability to anticipate change, adapt appropriately, and add value without compromising quality.



### Communicate Impact

Effectively communicate impact at all stages to achieve broader spaceflight community interest and buy-in



### Collaborate

Establish meaningful working relationships to directly advance our mission and vision



### Invest in People

Honor HRP's people by providing training, development, mentorship and innovative opportunities



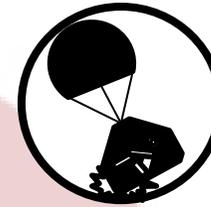
ARTEMIS II  
FOR ALL HUMANITY



# Top Crew Health and Performance System Capability Challenges for Mars



**Earth-Independent Human Operations**



**Computational Injury & Anthropometric Models**



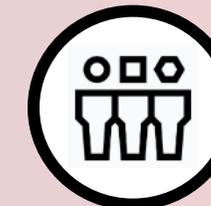
**Mars Duration Food System**



**Exploration Exercise Countermeasures**



**Mars Duration Effects on Human Physiology**



**Understanding Individual Variability in Spaceflight**



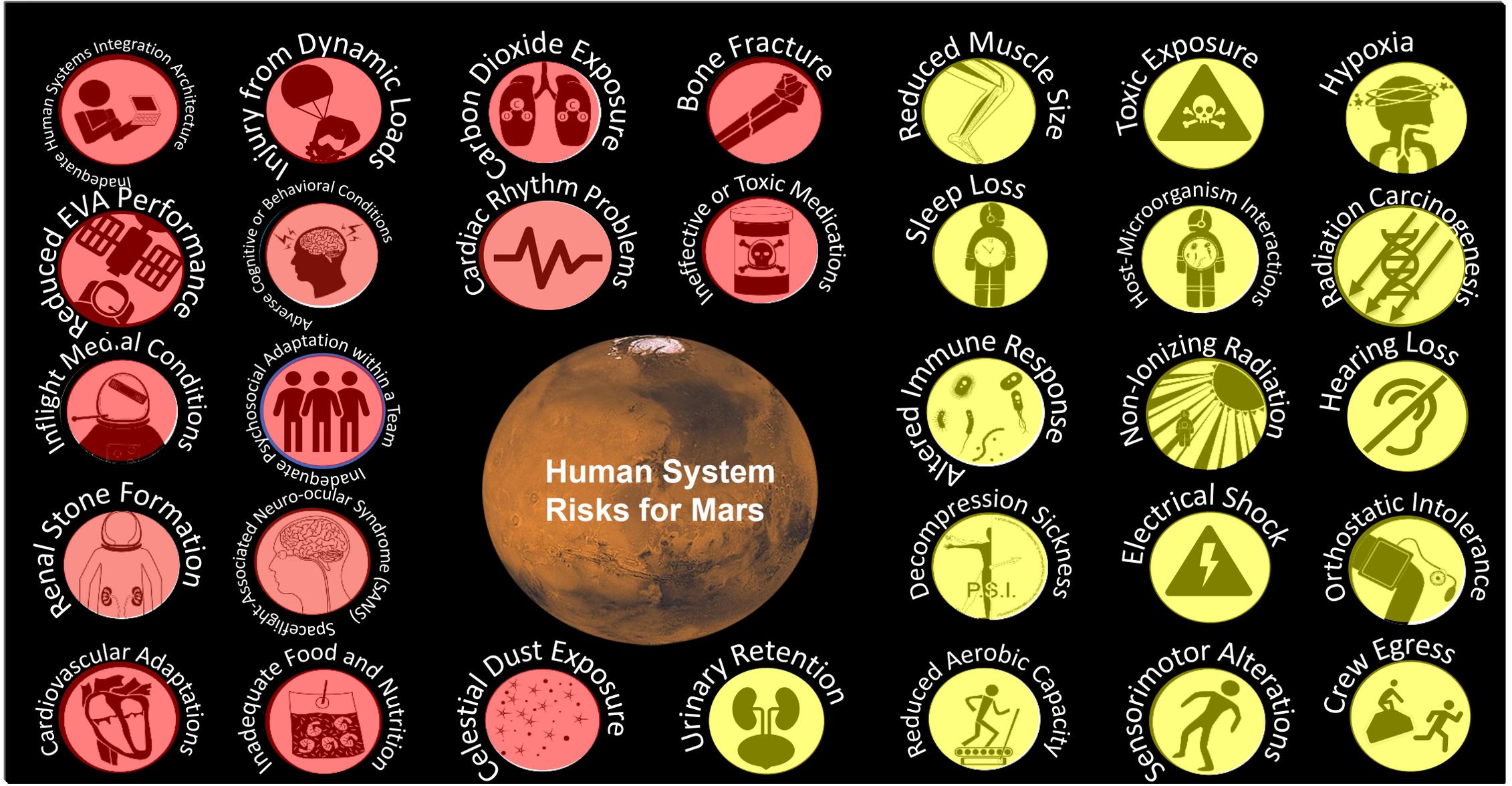
**Risk Mitigations for Vehicle Atmospheres**



**Sensorimotor Countermeasures**



# Human System Risks for Mars





# HH&P and HRP Relationship

SUPPLIER



FUNDING & REQUIREMENTS

DELIVERABLES

CUSTOMER



SUPPLIER



GAPS & REQUIREMENTS

M2M\* DELIVERABLES

CUSTOMER

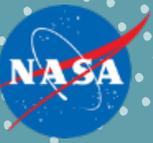


M2M\* = Moon to Mars

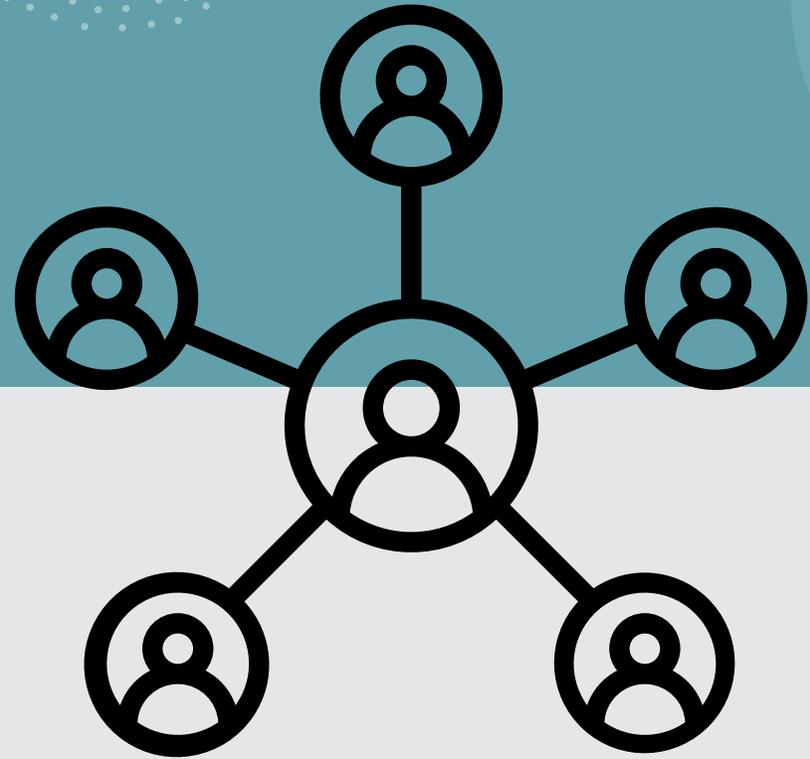


# Technical Overview

Kristine Ohnesorge, RDT Chair  
Mihriban Whitmore, RDT Technical Lead

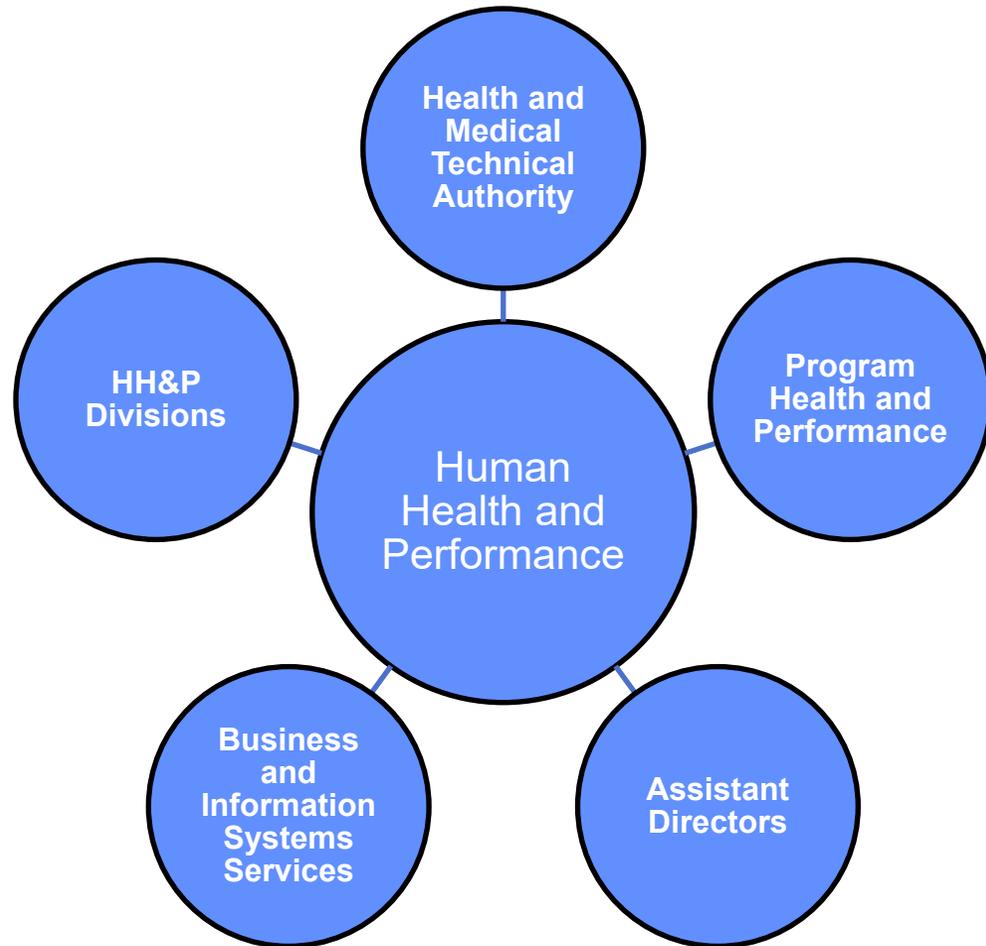


# HH&P Relationships & Support





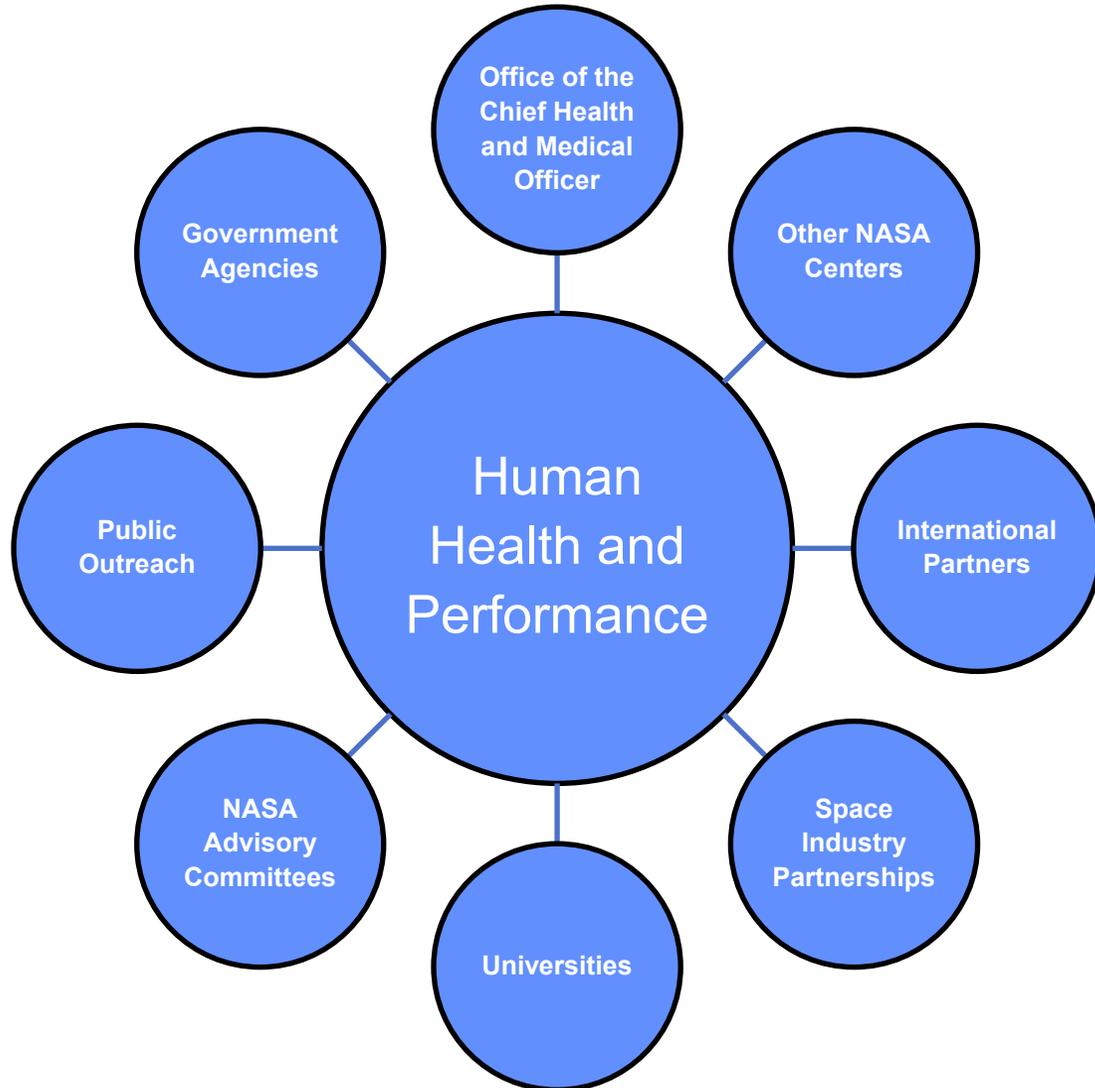
# HH&P Intraorganizational Relationships



- Health and Medical Technical Authority (HMTA)
  - JSC Chief Medical Officer
  - Independent Technical Authority
  - Center and Directorate support
- Program Health and Performance
  - Chief Health and Performance Officers
    - Delegated HMTA
    - HH&P liaison to programs
- Assistant Directors
  - Human System Risk Management
  - Crew Health and Safety
  - Commercialization
- Business and Information Systems Services
  - Information Systems
  - Data Management
- HH&P Divisions
  - Space Medicine Operations
  - Human Systems Engineering and Integration
  - Biomedical Research and Environmental Sciences



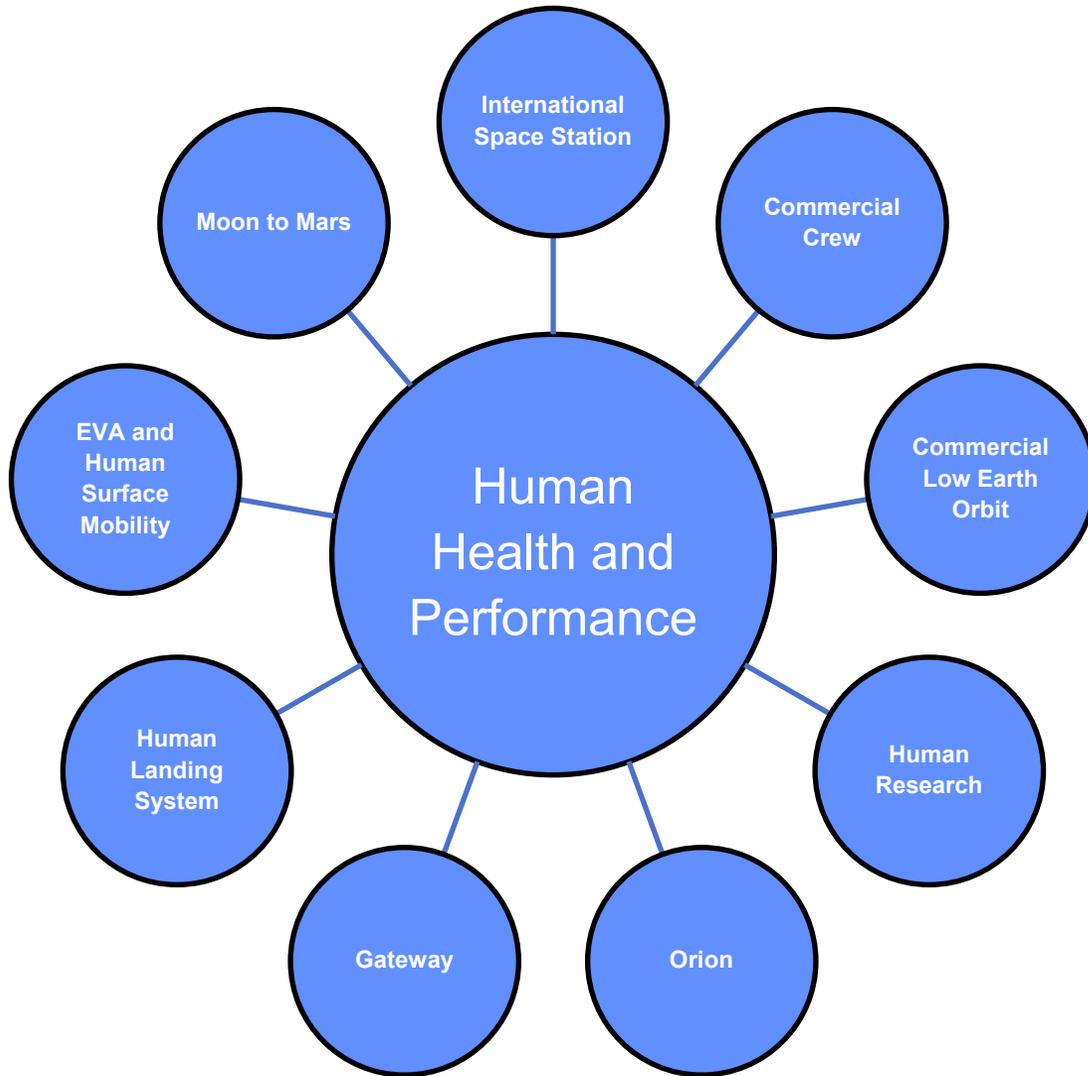
# HH&P Relationships with Organizations External to JSC



- Office of the Chief Health and Medical Officer (OCHMO)
  - Health and Medical Technical Authority
- Other NASA Centers
  - KSC, ARC, MSFC, AFRC, LaRC, GRC, etc.
- International Partners
  - CSA, ESA, JAXA, Roscosmos, etc.
- Space Industry Partnerships
  - Govt. Task Agreements (GTAs), Govt. Collaboration Agreements (GCAs)
  - Space Act Agreements (SAAs), Reimbursable SAAs
- Universities
  - Rice, TAMU, UH, UTMB, Baylor, etc.
- NASA Advisory Committees
  - National Academies of Science, Institute of Medicine, etc.
- Public Outreach
  - Education (STEM, Academia, Internships, etc.)
  - Tech Briefs
- Government Agencies
  - DOD, DOE, DHS, City of Houston, Harris County, etc.



# HH&P Support to Programs



- Ensuring health, fitness and well-being of astronauts, civil servants and contractors
  - Medical operations support
  - Environmental monitoring
  - Flight and analog research support
- Performing design, integration, research and technology development
  - Human Systems Integration (HSI)
  - Human factors and habitability
  - System and project management
  - Flight hardware development
  - Food systems
- Understanding human adaptation to altered gravity
  - Countermeasures development
  - Collection of data to assess crew health
  - Development and dissemination of scientific knowledge
- Hosting Human Research Program
  - Risk based research strategy
  - Physiological and behavioral effects
  - Reduce human systems resource requirements



# HH&P Support to Other Directorates



- Engineering
  - Hardware Design, Development, Test, and Evaluation
  - Human Test Support
- Exploration Architecture, Integration, & Science (EAIS)
  - Systems Engineering and Integration
- Flight Operations
  - BME, Flight Surgeon, and Human Test Support
- Center Operations
  - Facilities and Emergency Management Support
- Safety and Mission Assurance
  - Safety and Quality Products and Services
  - OSHA regulations and support of Voluntary Protection Program
- White Sands Test Facility
  - Occupational Medicine and Industrial Hygiene Support
- All Directorates
  - Occupational Health, Medicine and Employee Assistance Program



## Key Challenges & Potential Opportunities



## Current State of NASA/JSC

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- NASA is in a time of transition with a changing environment of human spaceflight programs, commercial providers, partnerships, missions, and requirements.
  - NASA is supporting ISS operations through 2030 and enabling the development of commercial LEO destinations while developing technologies and capabilities for deep space exploration.
  - Growing number of customers, including programs, commercial providers, and partners, means an increasing demand for a greater volume and diversity of HH&P products and services.



# CHALLENGE:

## Workforce Hiring & Retention

- The HH&P workforce employs personnel with highly specialized skillsets to provide its customers with a wide range of health, medical, science, and engineering capabilities.
- Several considerations that can impact the timely hiring and retention of qualified personnel include:
  - Availability of candidates with knowledge and experience to meet skillset requirements
  - NASA Civil Servant hiring constraints across the Agency
  - Growing competitive commercial spaceflight economy
- Potential opportunities:
  - Redefining HH&P Civil Servant and Contractor roles to accommodate evolving customer support needs from programs and commercial providers
  - Utilizing non-traditional collaborations and partnerships with industry and academia to expand pool of resources for providing HH&P products and services



# CHALLENGE: Workforce Management

- As programs retire and evolve, and schedules are revised, the workforce must adapt and respond to multiple programmatic demands.
- Potential opportunities:
  - Providing and maintaining a responsive workforce
  - Providing an adaptable workforce that can effectively support multiple programs and positions across HH&P divisions (i.e., operations and research)
  - Transitioning current workforce
  - Offsetting Civil Servant hiring cap





# CHALLENGE:

## Expanding Commercial Engagement

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- NASA is engaging with a wide range of industry and academia partners in commercial Low Earth Orbit (LEO) destinations and beyond.
- Potential opportunities:
  - Expanding access to LEO and alternative access to space
  - Engaging a broader set of researchers for addressing challenges here on Earth
  - Leveraging commercial LEO gains for future Moon to Mars human exploration





# CHALLENGE: Earth Independent Operations

- Human exploration brings new challenges associated with distance from Earth in the ways crews are trained and operations during the mission.
  - Enable human exploration independent of communications with Earth as a part of an overall agency autonomous concept of operations and address all aspects of this shift in paradigm.
- Potential opportunities:
  - Expanding applications of LEO platforms as Mars Analogs
  - Pursuing viable new approaches and techniques for preserving space food
  - Designing and developing hardware for exploration class missions



# CHALLENGE: Data Analytics

- Ensure the data we need is Findable, Accessible, Interoperable, Reusable, Understandable, Secure, and Trustworthy (FAIRUST) to power data-driven decision making.
- Potential opportunities:
  - Transitioning from reactive data analytics to proactive and predictive analytics
  - Advancing a data-driven culture
  - Improving data products' adherence to FAIRUST data principles





# CHALLENGE:

## Infrastructure for Future Programs

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- Address facility productiveness/output to meet growing demand from new programs. Anticipate the need for more throughput as programs mature Concept of Operations.
- Potential opportunities:
  - Providing HH&P expertise as renovation of older facilities or planning for new facilities begins
  - Leveraging innovative alternative solutions to increase capabilities to accommodate higher demand





# Draft Statement of Work (SOW) Structure

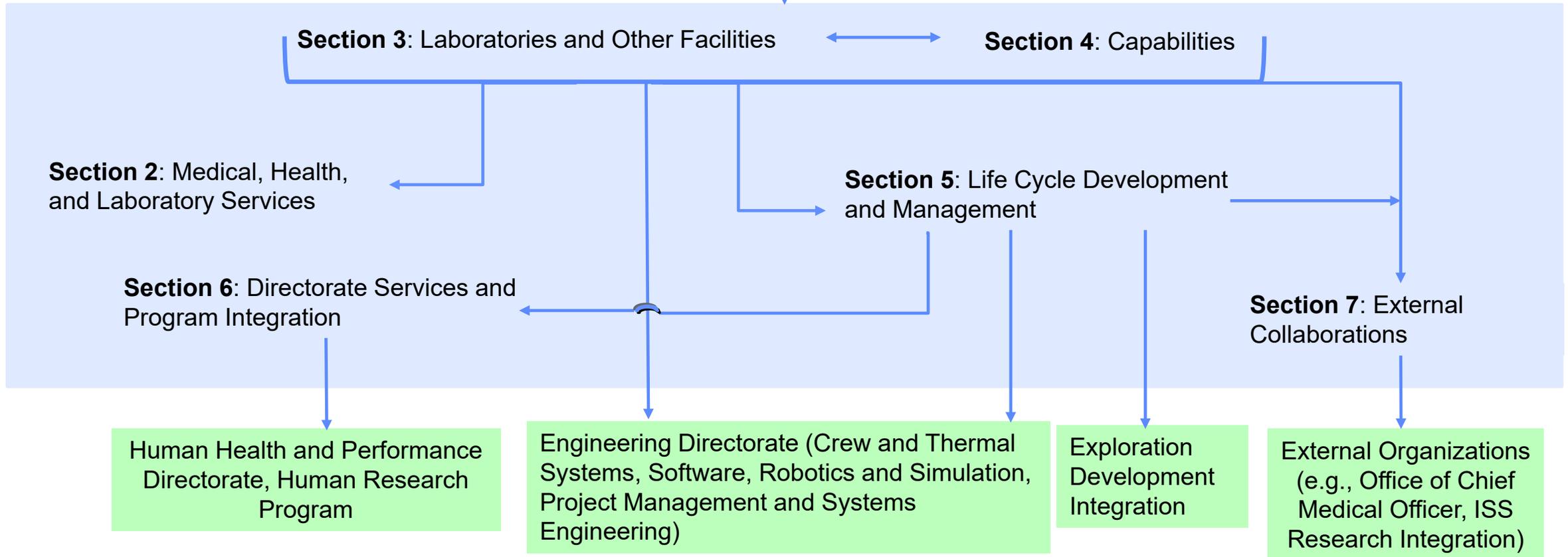


Overview of the Draft SOW section relationships and how the sections relate to the challenges



# Draft Statement of Work (SOW) Structure: Section Relationships

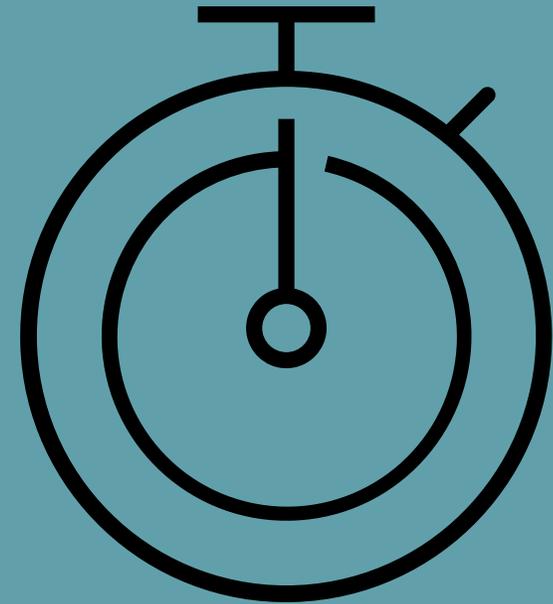
**Section 1: Contract Management and Administration**





# BREAK

Please hand in any initial questions for the Q&A session





Chuck Lloyd,  
HHPC2 Industry Day Lead

Industry Day - Tour Activities





# The HHPC2 Facilities Tour

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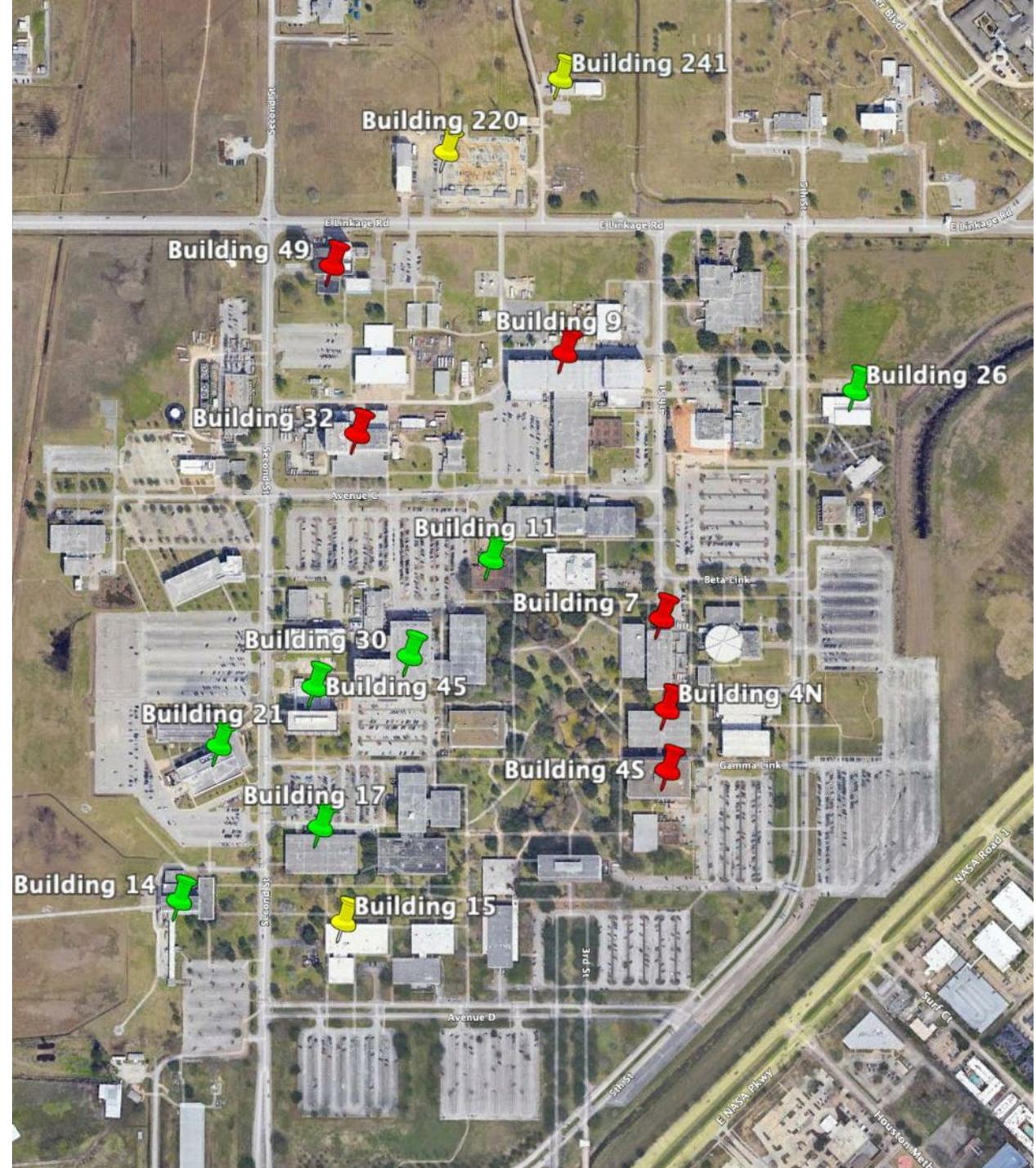
- Two-part tour will be provided:
  - Virtual tour segment will be presented to the entire Industry Day audience as “pre-recorded live” videos.
  - On-site walking tour segment will be a limited Industry Day group.
    - Limited to 20 people (Note will start at B11 for a short lunch break)
    - First come, first served approach for tour registration
    - Limited by transportation, capability of the sites to accommodate visitors, and time available
    - Every effort made to include one member of each of the companies represented at the HHPC2 Industry Day
- The tour highlights only a small number of the facilities and laboratories represented by the HHPC2 requirement and is not intended to provide more insight or information than what is available on the HHPC2 website and SAM.gov.
- Walking tour segment:
  - During the site visit, the participants will be walking from building to building and must stay together for your safety and security.
    - **ONLY** those who are provided a Site Tour Name Tag are allowed on the tour and all participants will travel to and from the Gilruth Center together on the NASA bus.
    - A small bag is allowed to be carried for your personal belongings. Be advised that bags are subject to search as required by JSC Security.
    - It is advised that larger items be left locked in your car. Do not leave your belongings in the ballroom.
    - No pictures, videos, or recordings of any kind allowed during the tour.



# HH&P Facilities and Laboratories

## Key

- **Green:** Physical tour
- **Yellow:** Virtual tour
- **Red:** Not visited





# Virtual JSC Tour Stops

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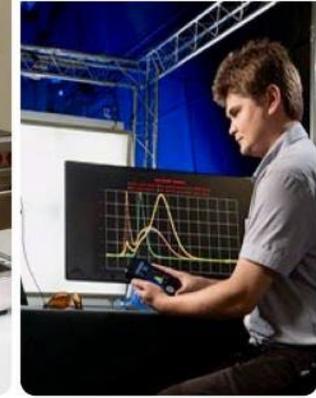
- **Neutral Buoyancy Lab (NBL)**
- **Research Operations Integration (ROI) Lab**
- **Acoustics & Noise Control Lab (ANCL)**
- **HERA Analog**
- **Radiation Lab**





# Physical Tour Stops

- B11 Cafeteria for Lunch
- MCC, B30
- Clinics, B45
- Food Lab, B17
- Lighting Lab, B14
- BioMed Labs, B21
- Astronaut Gym and Training, B26





# HHPC2 Initial Question & Answer Session

- Selected questions will be addressed.
- All submitted questions will be released with written responses on the HHPC2 website and SAM.gov.





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**Thank you for attending!**

**Visit:**

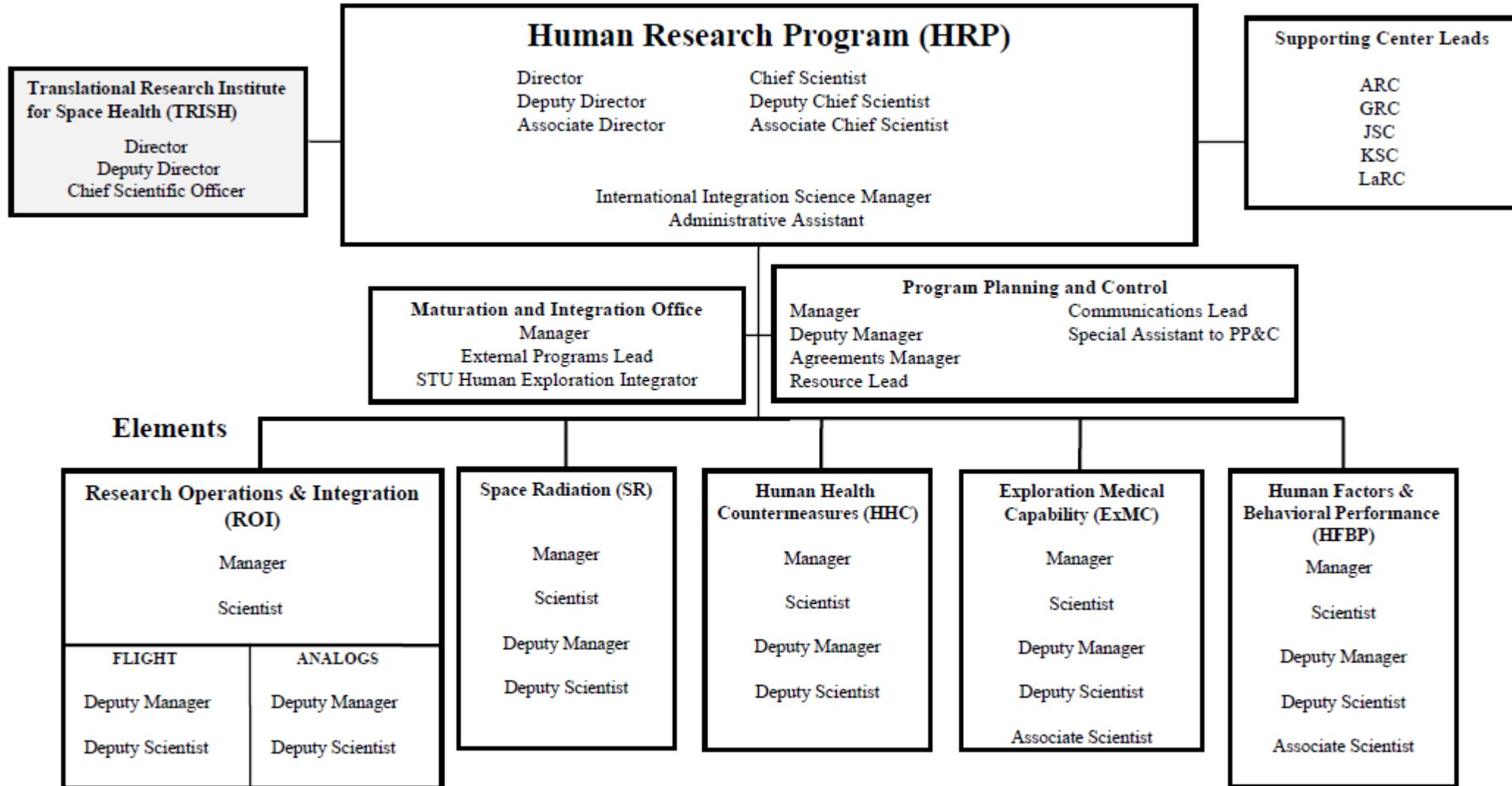
**[Human Health and Performance Contract 2 \(HHPC2\) - NASA](#)**

# BACK-UP





# HRP Organization





# Top Crew Health and Performance System Capability Challenges for Mars



Capability Need	Details
Earth-Independent Human Operations	Enable human operations independent of comm. with Earth as part of an overall agency autonomous conops. Address all aspects of this shift in paradigm: enhanced diagnostic and treatment capabilities, pharma, performance, behavioral, monitoring and decision support, “Train like you fly” etc.
Mars Duration Food System	Develop food systems with significantly increased shelf-life (~5 year vs. 1-2 yrs) and significantly reduced water content (~25-35% vs 50%) to meet mission duration and mass constraints.
Mars Duration Effects Human Physiology	Affordably characterize space adaptation of the human physiology including integrated/multi system changes in space at timepoints > 12 months. Priority on effects that do not reach steady-state during ISS-duration missions (e.g. brain, SANS, bone).
Risks Mitigations for Vehicle Atmospheres	Develop validated decompression sickness (DCS) risk estimation tools and efficient mitigation plans including atmospheres, conops, prebreathe protocols, and treatment plans (e.g. “EVA Dive Computer” technology). Also address associated changes in holistic risks (e.g. changes in chemical uptake as a result, etc.)
Computational Injury & Anthropometric Models	Develop and anchor biomechanical models to enable task performance and mitigate injury risk through informed design for 1st-99th percentile male and female crewmembers. This enables population assessment support to system design for risk abatement (*beyond what can be tested with human subjects).
Exploration Exercise Countermeasures	Develop effective and reliable exercise countermeasures and vibration isolation systems (VIS) that meet Mars mass, power, volume, and structural constraints. Significant mass/power/volume reductions required versus current SOA (ISS countermeasures: ~2,000 kg, 19 m <sup>3</sup> , 2.1 kW).
Individual Variability in Responses to Spaceflight	Plan and execute feasible work towards “low hanging fruit” in quantifying and predicting individual variability in crewmember adaptation to spaceflight to minimize the mass, power, volume, and crew time required to maintain crew health & performance during Mars missions.
Sensorimotor Countermeasures	Develop and validate countermeasures, task aids and/or protocols for mitigating effects of sensorimotor adaptation to enable EVA availability, improve contingency egress risk posture, and preserve possibilities for piloting, landing, and egress options.