EXPLORE MARS
PROGRAM FUNCTIONS & INTERACTIONS

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MEP Specific Functions

- Science
- Advanced Studies
- Technology
- Formulation of Future Missions and Strategies
- Operational Missions
- Relay Network
- Public Outreach (for MEP activities)

- All elements and projects continue to regularly report operational status and plans to the NASA HQ MEP Director
- The Mars Program Office at JPL reports regularly to the NASA HQ MEP Director
- MEP retains responsibility for all Mars science requirements
MSR Specific Functions

- Development and implementation of the flight mission elements required to return sealed samples from Mars
- Sample Retrieval Lander Project and its payloads
- Earth Return Orbiter Project and its payload (NASA CCRS)
- MSR is being implemented through a partnership between ESA and NASA and is governed by a signed ESA-NASA MOU
- The MSR Program Office at JPL reports regularly to the NASA HQ MSR Director
- MSR program is responsible for Planetary Protection compliance for the MSR campaign
Mars Operations at JPL

• The NASA Mars Exploration Program Office has been a vibrant aspect of JPL operations for multiple decades
  • This NASA responsibility has always been distinct from internal Directorate operations

• In 2020:
  • JPL merged the Mars and Solar System Exploration Directorates
  • JPL stood up the NASA Mars Sample Return Program Office per direction from NASA HQ
  • MEP programmatic accountability was not changed

• Today, the MEP & MSR Program offices are part of the JPL Planetary Science Directorate
  • Structure parallels that of NASA HQ, providing one-to-one communications for MEP management, MSR management and at the PSD level
  • Internally, integration of the former Mars and Solar System Exploration Directorates enables better workforce planning and management
MSR Campaign Overview
Primary MEP/MSR JPL Program
Offices Interactions

Mars Exploration Program

- Operational missions (Perseverance, Curiosity, ODY, MRO, MAVEN, MSL)
- Mars Relay Network
- Mars Advanced Studies
- Mars Technology
- Missions in Formulation/Pre-Formulation
  - Mars Ice Mapper
  - Future missions TBD
- Public Engagement
- Science Community Interaction
- HEO Interface
- Strategic Science Planning & Execution
- Returned Sample Project
  - Sample Receiving Facility
  - Sample Curation Facility
  - Returned Sample Science

Mars Sample Return Program

- NASA
  - Program Management
  - Campaign Systems Engineering and Integration
  - Sample Retrieval Lander Project
  - Capture, Containment and Return System
- ESA
  - Earth Return Orbiter Project
  - Sample Fetch Rover
  - Sample Transfer Arm

Science community coordination
Public outreach
M2020/MSR surface operations coordination
Mars Relay Network support of MSR
MSR feedforward/coordination to MEP MRSP
Summary

• MEP is a long-term, ongoing program; it will continue after Mars sample return
• MSR is a single-project program with a defined beginning and end
• Both programs will collaborate to successfully implement the campaign to return samples from Mars and facilitate scientific investigations of those samples

• Over the coming decade, MEP will focus on science from its existing operational missions including Perseverance, develop a strategy for future scientific exploration of Mars, and implement a plan for the curation of the first samples to be returned from another planet
  - The Perseverance science team was specifically selected to identify and acquire the most compelling suite of samples for eventual return to Earth
  - NASA HQ has emphasized that this is the top priority of Perseverance surface operations
  - The MEP is responsible for Returned Sample Science, including sample curation

• Over the coming decade, MSR will focus on the development and operation of the flight elements required to retrieve the cached samples and return them safely to Earth
  - MSR does not have a science team or science instruments
  - The landing site for the retrieval mission will be determined by the SMD AA, based on recommendations from the MEP and MSR programs and will incorporate science community input
  - Following return of Mars samples to Earth, the MSR Program will be complete
BACKUP