


MEPAG Findings: Introduction

- On October 26-27 MEPAG held a virtual meeting to discuss the outcomes of the Decadal Survey, and to be presented with reports regarding the development of the Mars strategy, the I-MIM Measurement Definition Team, the Mars 2020 mission, MSR, and the Mars Concurrent Exploration-SAG. The findings here represent the consensus of the MEPAG community with respect to the presentations delivered at this meeting.
- With respect to overall themes in these findings, we note that the two key elements are ***infrastructure*** and ***low-cost missions***. MEPAG believes these two concepts should be part of the new strategic plan for Mars exploration.

Mars Exploration Program Analysis Group (MEPAG)



Findings, VM 15 (26-27 October 2022)

- In the spirit of encouraging a community-endorsed MEP architecture, MEPAG encourages PSD and the Mars Exploration Program (MEP) to continue to solicit community comment and input into the draft MEP strategic plan before it is finalized.

Findings, VM 15 (26-27 October 2022)

- MEPAG encourages a science-rich plan to refresh Mars' orbital assets, both in the short- and long-term, and suggests that an important part of this solution could be lower cost/size missions. The urgent need to refresh infrastructure at Mars goes hand in hand with the desire to conduct science at the Red Planet, and science in future years will be profoundly affected without replacing or augmenting the existing infrastructure (including communications relay for current and future landed assets, imaging and weather). MEPAG notes that many key infrastructure elements also support scientific investigations, thus increasing their overall impact and contribution to the program.
- MEPAG notes that international and other partnerships such as that envisioned for I-MIM can provide large scientific and infrastructure payoffs by sharing costs among space partners.


Findings, VM 15 (26-27 October 2022)

- MEPAG supports the architecture outlined in the MCE-SAG report as a useful strategy during MSR and encourages NASA to use its elements in the strategic planning currently in progress. The MCE-SAG concept contains all the elements of a low cost, executable strategically-planned program: science, technology, comprehensive vision (Dynamic Mars), cadence from near to far term, an understanding of the interconnectedness of goals (the “braided river” approach), and preliminary cost and risk assessments.

Findings, VM 15 (26-27 October 2022)

- MEPAG eagerly awaits the imminent drop of samples in the Three Forks region by the Perseverance rover as the next step in returning samples from Mars back to Earth. The depot contains an impressive array of samples, which a recent workshop determined to be a scientifically return-worthy cache for study on Earth.
- MEPAG understands that there are residual concerns, risks related to the progress of the various MSR subsystems heading into the PDR process. As the architecture of this complex mission continues to evolve, MEPAG looks forward to ongoing briefings by the project on progress towards retiring or minimizing these risks.

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- As recommended by the Decadal Survey, MEPAG encourages PSD to support opportunities for comprehensive research in R&A and future mission calls. Broad-based progress in Mars science requires ongoing support to maintain a healthy, forward-looking, and diverse Mars science community. This includes sample return and analysis, and high-priority Mars science (as referenced in the MEPAG Goals Document) that cannot be accomplished through sample analysis.

Findings, VM 15 (26-27 October 2022)

- MEPAG encourages greater collaboration between SMD and ESDMD in order to define scientific goals for human exploration at Mars. This should begin well before the first human missions, so that science can inform decisions before change becomes cost-prohibitive, and so that risk can be mitigated early. As also recommended by the Decadal Survey, the responsibility for defining and integrating science requirements for future Moon-to-Mars activities should be held with SMD, as an equal element of future human exploration planning.

Findings, VM 15 (26-27 October 2022)

- MEPAG applauds the I-MIM MDT for their hard work in laying out a powerful case for the International Mars Ice Mapper, showing that reconnaissance objectives can be met, and that important science goals can be accomplished with both the anchor payload and additional instruments.
- With the Decadal Survey endorsement of the science behind the iMIM and MLE mission concepts, there is a strong rationale for including ice science as part of the MEP strategic plan.