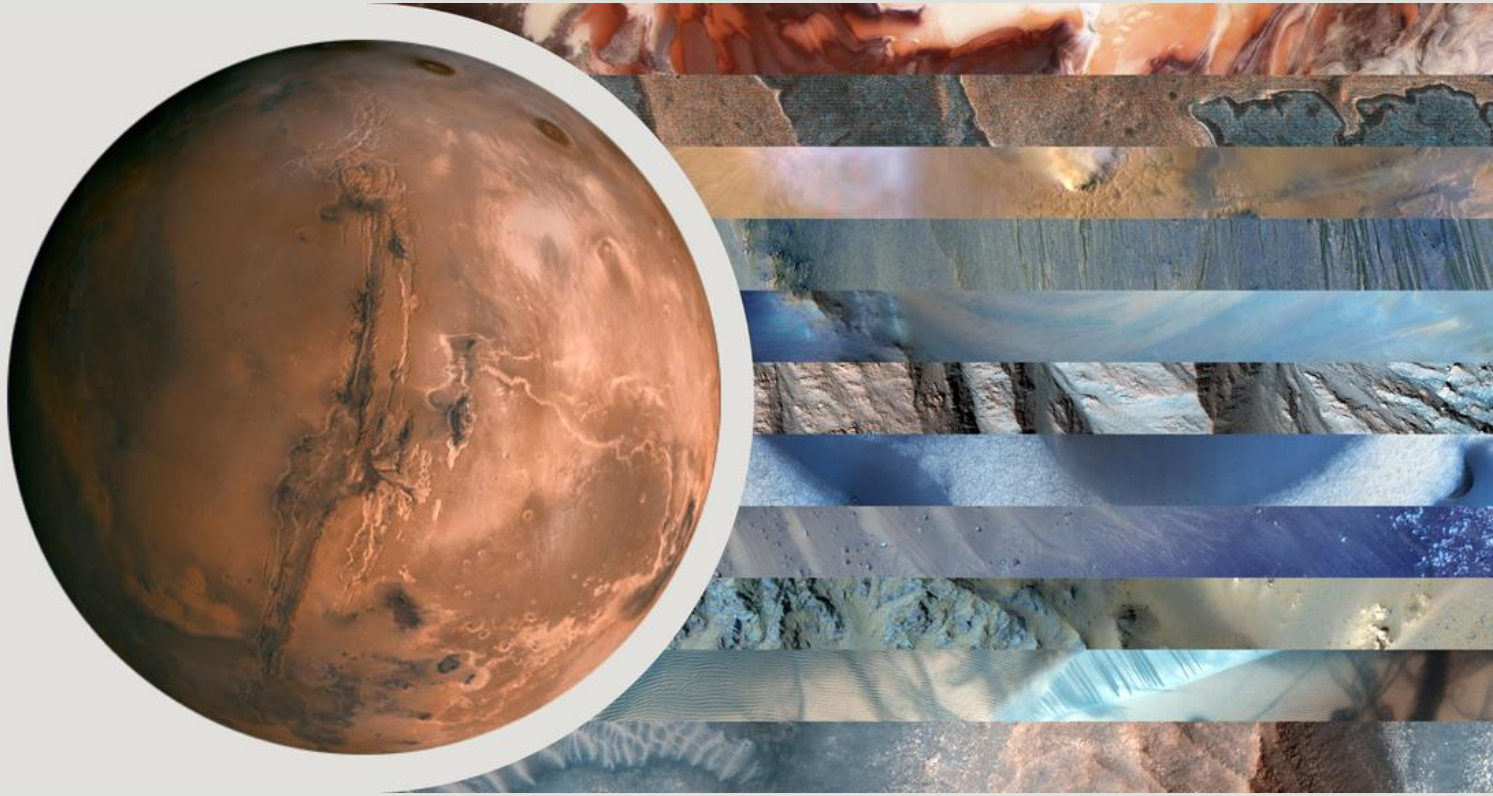
Low-Cost Science Mission Concepts for Mars Exploration

JANUARY 11-13, 2022

#LowCostMars2022



Chad Edwards[1] & Shannon Curry[2]

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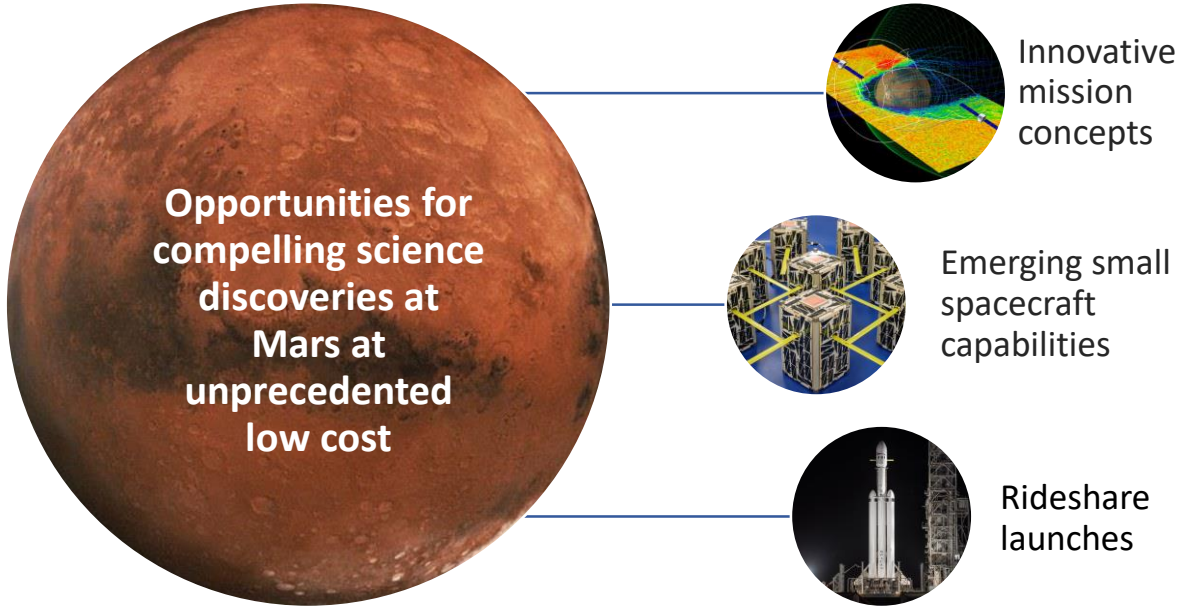
Sep 27, 2021

Purpose and Scope

- Take advantage of emerging small spacecraft capabilities and rideshares to produce compelling science discoveries at Mars at unprecedented low cost
- The recent Mars Architecture Strategy Working Group suggested that small spacecraft missions in the $100M - $300M cost range (including delivery) may offer a sweet spot in terms of achievable science per unit cost



- NASA's Mars Exploration Program invites the Mars community - including scientists, engineers, technologists, and industry representative - to this three-day workshop to share ideas and approaches for low-cost exploration of the Red Planet
  - Invited talks
  - Panel discussions
  - Contributed oral papers
  - Interactive poster sessions

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Topics

1. Assessment of strategic **Mars science questions** well-suited for low-cost, small spacecraft missions
2. Candidate **low-cost mission concepts**, relating science objectives to investigations, instruments, and spacecraft architecture
3. **Small spacecraft capabilities** for both orbital and landed Mars missions
4. **Innovative mission design approaches**, including piggyback, rideshare, and new small launch vehicle capabilities for low-cost delivery of payloads to Mars
5. New **miniatured instruments, avionics, and subsystems** enabling highly capable small spacecraft
6. Opportunities for **international and commercial partnerships**
7. Emerging **commercial NewSpace capabilities** that can be leveraged for low-cost Mars exploration

Organizing Committee

- Shannon Curry - (Co-Chair) University of California, Berkeley
- Chad Edwards - (Co-chair) Jet Propulsion Laboratory
- Don Banfield - Cornell University
- Nathan Barba - Jet Propulsion Laboratory
- Bethany Ehlmann - California Institute of Technology
- Scott Hubbard - Stanford University
- Luis Santos - Goddard Space Flight Center
- Florence Tan - NASA Headquarters
- Rich Zurek - Jet Propulsion Laboratory

Additional Thoughts

- Please visit the web site for additional information:
  - https://www.hou.usra.edu/meetings/lowcostmars2022/
  - Please fill out the “Indication of Interest” survey to help our planning: https://www.hou.usra.edu/meetings/lowcostmars2022/iofi/
- We are in the process of finalizing the meeting venue and will post an update as soon as that is confirmed *(likely to be in greater Los Angeles area)*
- We are planning this as an in-person meeting, to maximize interactions among different sectors of the Mars community
  - Will monitor CDC, NASA, and local government guidance and modify plans as necessary
- Please let other interested colleagues know about the meeting (especially those not on the MEPAG distribution list)
- Reach out to the organization committee with your thoughts and inputs

We hope to see you at #LowCostMars2022!

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