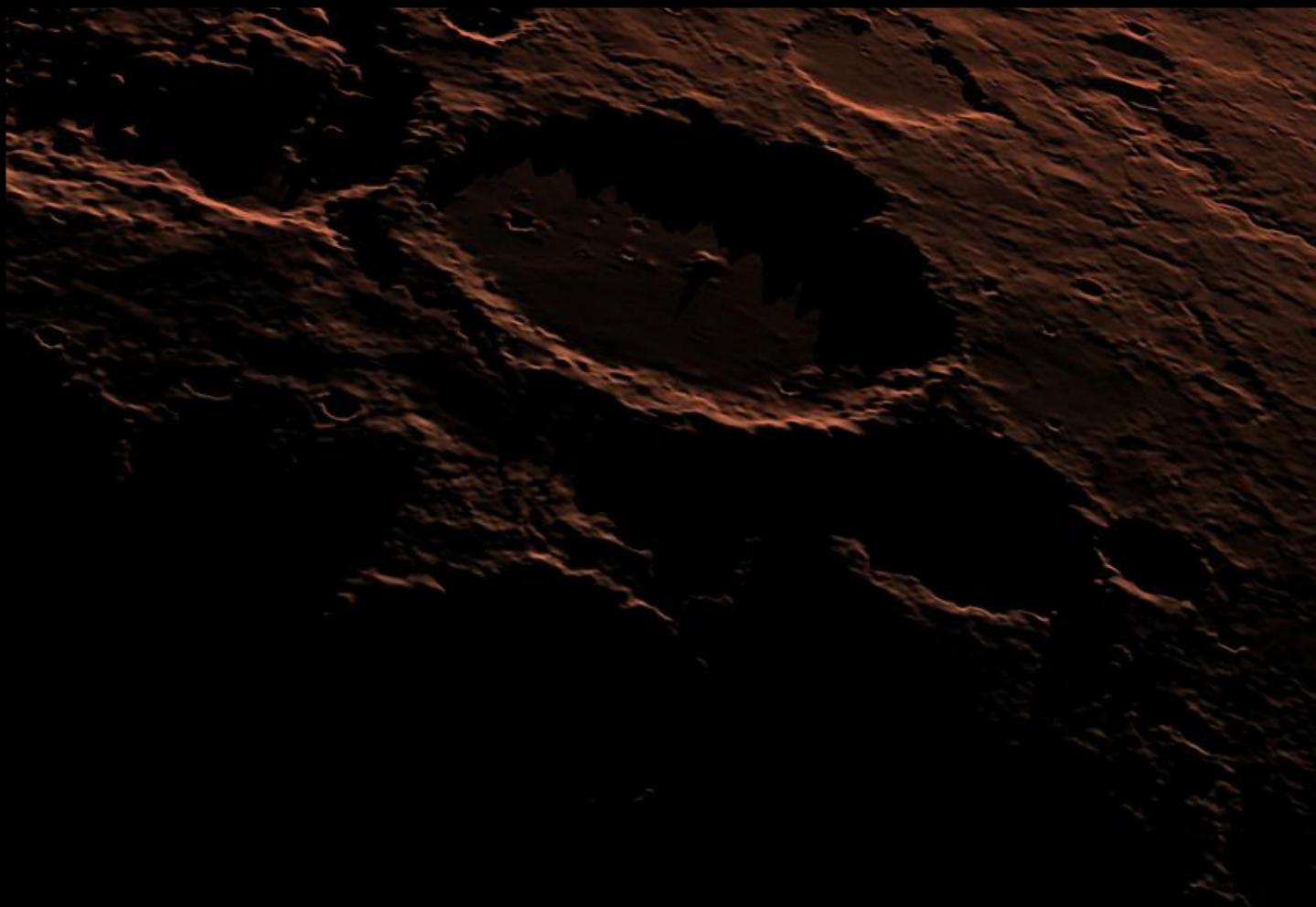


CO-DESIGNING A MARTIAN OUTPOST COMMUNITY: ANALOGIES AND SIMULATIONS



Federico Monaco, University of Parma
Irene Lia, Extreme-design
Amir Notea, Israel Mars Society
Antonio Del Mastro, Mars Planet



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EMC 17

**CO-DESIGN:
connecting
design
to
user
experience**



User experience

Design

INDUSTRY 4.0: The role of disruptive And scalable technologies in Mars colonization



NASA Tests First 3-D Printed Rocket Engine Part Made with Two Different Alloys

CO-DESIGN:
involving
users
and
experts
from
The
globe

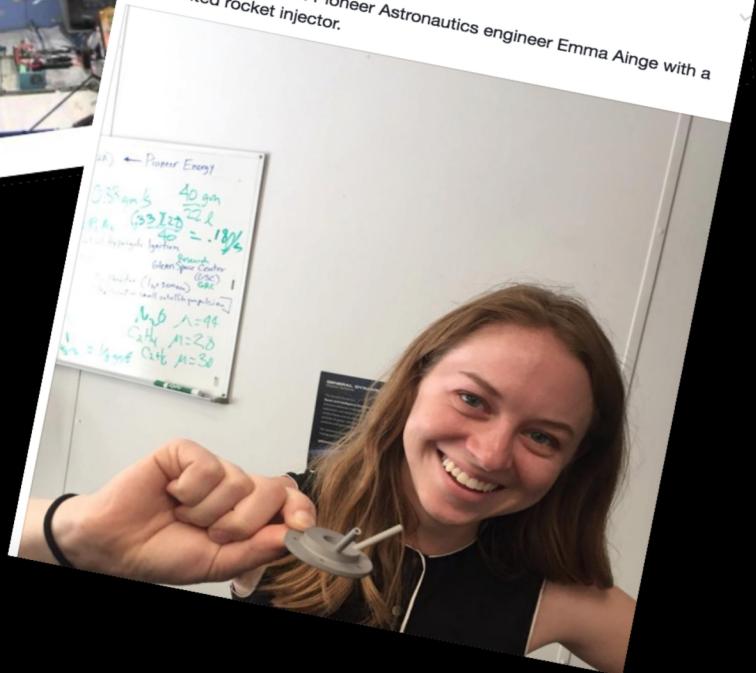
Design Challenges



NASA Challenges Students to Design 3-D Space Containers



Calling all students! NASA needs your help to design containers that could be used in space. The 3-D Space Container Challenge is the second in series of [Future Engineers Challenges](#) where students in grades K-12 will create and submit a digital 3-D model of a container that they think astronauts could use in space.



POSTER Explained: Analogies Simulations

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Introduction

The design of a martian outpost implies not only engineering, technical and scientific inputs, but also experiences and knowledge of heterogeneous complexity given by social and cultural issues in extreme conditions. Therefore, an approach open to different ideas and perspectives might be more effective to solve tensions and biases. Such a co-design approach can display better salient, factors and potentialities at the light of the possible emergency, complexity and heterogeneity of a community on Mars. Architectonical structures, infrastructures, public life as private life organization processes, might be openly designed by the wide interaction of participants to accommodate such large communities. A wide, open and seamless project would be useful to design spaces for working and living according to possible users' needs and practices.

Materials and methods

Case studies (analogies and simulations)

Co-design principles and theories

Scenarios of social life in extreme conditions

Results

SIMULATIONS

- MDRS
- Mars 500
- Cave
- Simulation in South Pole like in Concordia

ANALOGIES in terms of communities in extreme conditions

- Kibbutzim model
- Oil rig model
- Antarctic bases

Possible case studies like:

- Muruntau gold mine (Uzbekistan)
- Kupol gold mine (Chukotka region)

POSSIBLE INVOLVMENT of USERS, WORKERS and INHABITANTS in DESIGN PROCESS MAKE LIVING SPACES, ORGANIZATIONS, FACILITIES and INFRASTRUCTURES much FUNCTIONAL, TECH RETROFITTABLE and STABLE EXTREME ENVIRONMENTS COMMUNITIES

Acknowledgments

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Foresight

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Conclusions

in the space context it is already very clear the importance of astronaut involvements on the projects to support the user needs increasing performance and safety (Schlaht, 2016; Schlaht, 2012).

Co-design apply to a community means "to explores and research together a new vision on design & the city, more collaborative, sustainable and resilient". To "learn from the community.. putting citizens at the center of the city design as a commitment first and also a common interest, to open opportunities for all and foster new, inclusive ways of living" (Mazzeo, 2017).

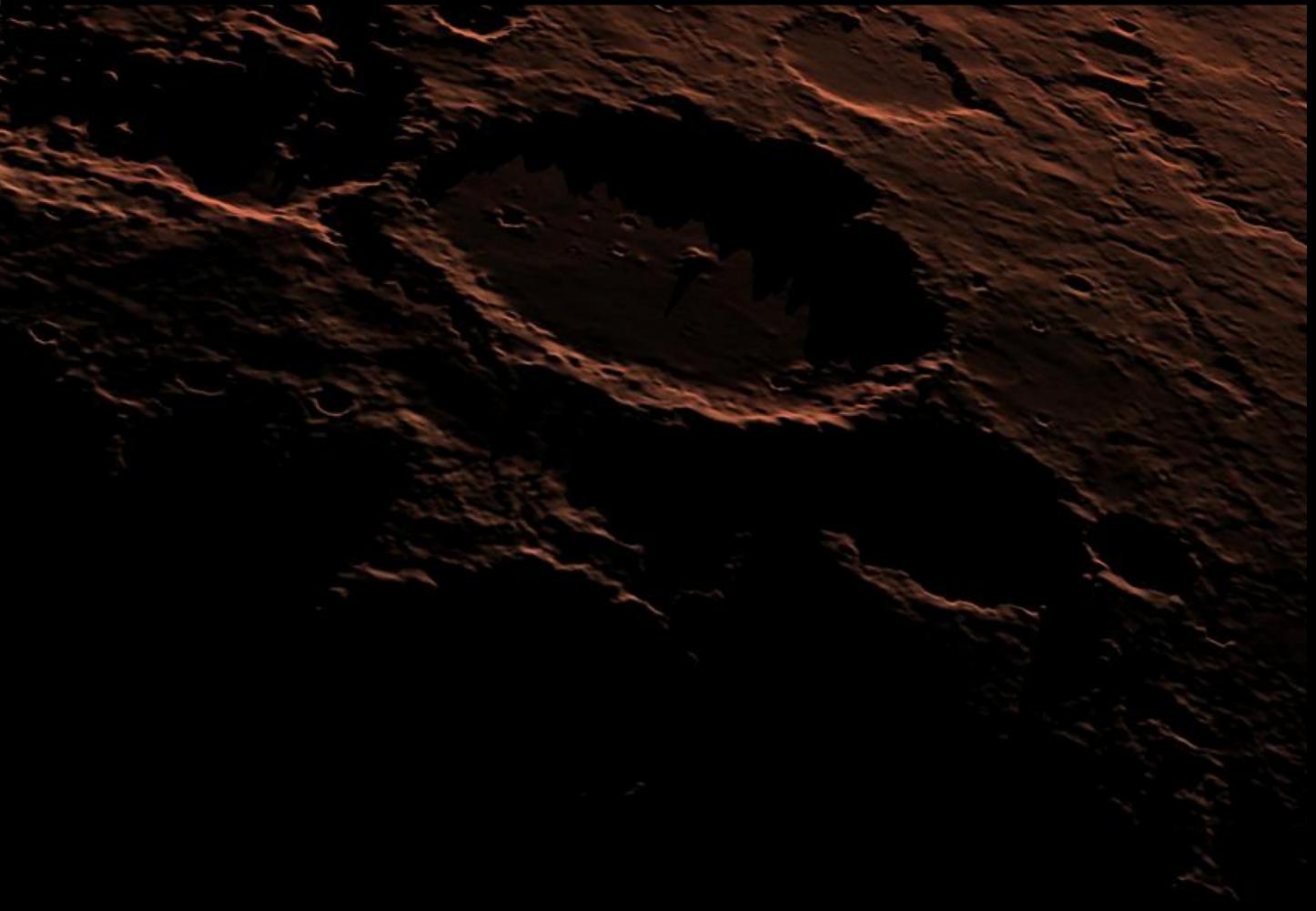


Further information

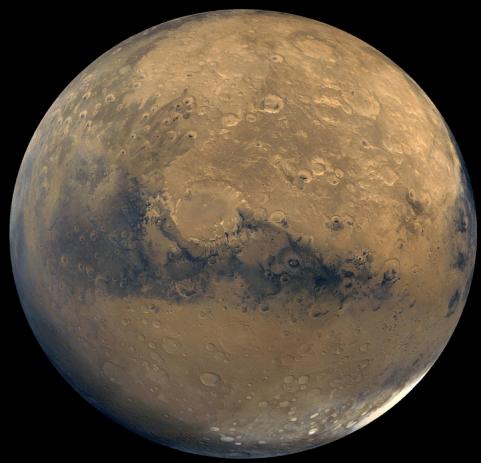
<http://www.marsplanet.org/>

<http://www.extreme-design.eu/>

<https://mars.nasa.gov/multimedia/images/2017/atacama-landscape-e>



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