

UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA



SPACE GENERATION  
ADVISORY COUNCIL



SEP G

**International Symposium 'Moon 2020-2030'**

14-16 December – ESA/ESTEC, Noordwijk

# EXPANDABLE DOME DESIGN FOR FUTURE LUNAR HABITATS

**HADY GHASSABIAN**

Space Exploration Project Group– Space Generation Advisory Council  
University of Padova, Padua

**ABIGAIL CALZADA DIAZ**

Space Exploration Project Group– Space Generation Advisory Council  
Birkbeck College, University of London



- SGAC and Space Exploration Project Group
- Space Outposts
- Mechanism
- Deployment
- Applications
- Further Studies and Conclusion

# Space Generation Advisory Council

- Create a global volunteer base of university students and young professionals in the space sector who have a passion for making a difference in the space sector and a commitment to action
- Connect them to peers and top space professionals from various organisations
- Give the next generation of space sector leadership opportunities and a voice in global space policy
- 6 regions, 100+ countries, 4000+ members



SPACE GENERATION  
ADVISORY COUNCIL



# Space Generation Advisory Council



- Works with the **United Nations**
- **Permanent Observer** status at United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)
- Consultative status at United Nations Economic and Social Committee Representatives (ECOSOC)
- SGAC presents the outcomes of all of its conferences and projects at:
  - Scientific and Technical Subcommittee of COPUOS
  - Legal Subcommittee of COPUOS
  - COPUOS General Assembly

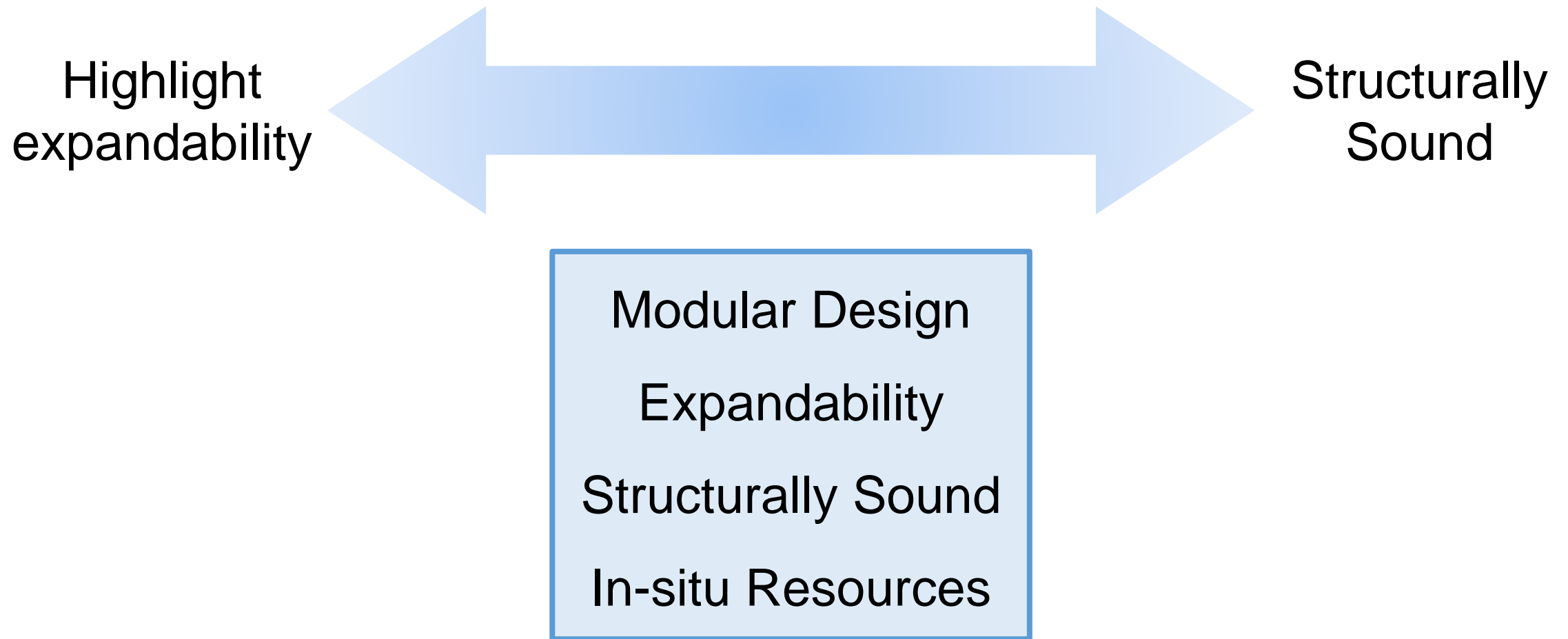
# Space Exploration Project Group

The creation of an international and interdisciplinary forum integrated by students and young professionals to approach Space Exploration from a multidisciplinary point of view and focused in 8 common goals:

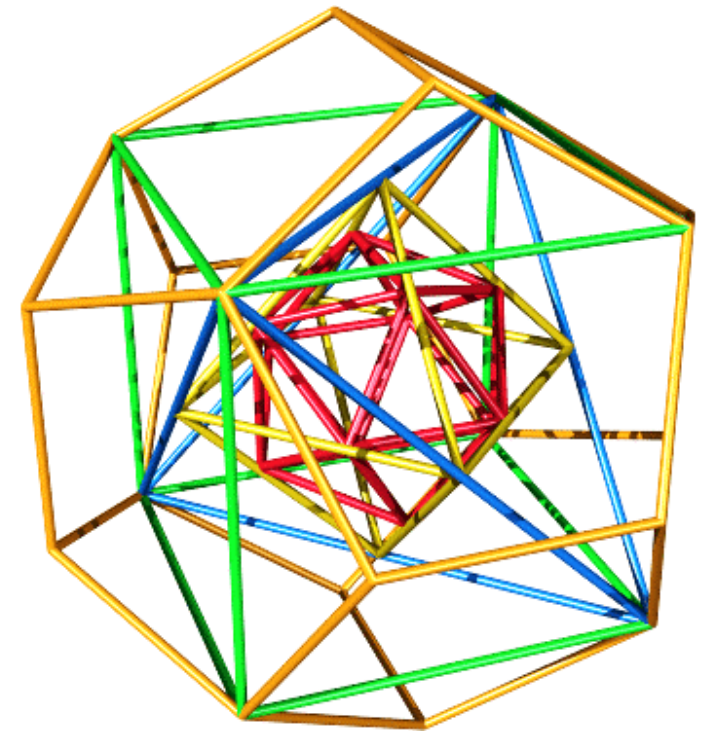
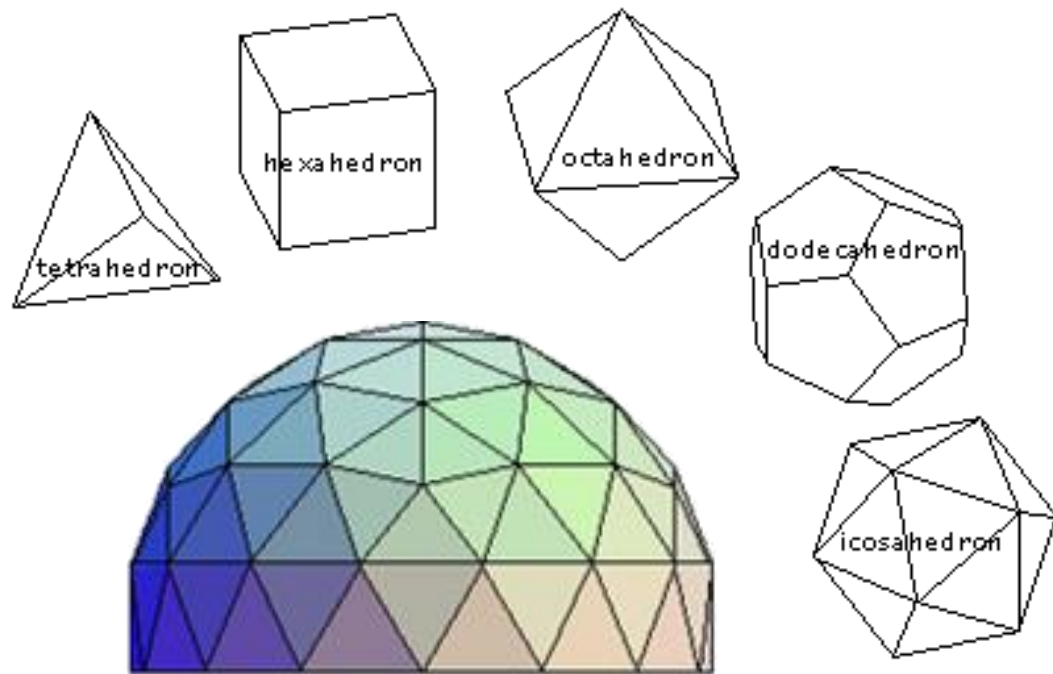
- Develop Exploration Technologies and Capabilities
- Engage the Public in Exploration
- Enhance Earth Safety
- Extend Human Presence
- Perform Science to Enable Human Exploration
- Perform Space, Earth, and Applied Science
- Search for Life
- Stimulate Economic Expansion



# Space Human Outposts

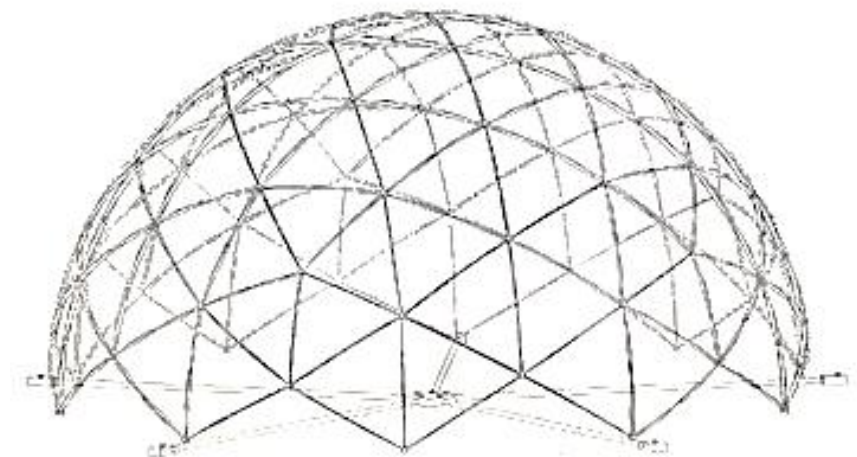
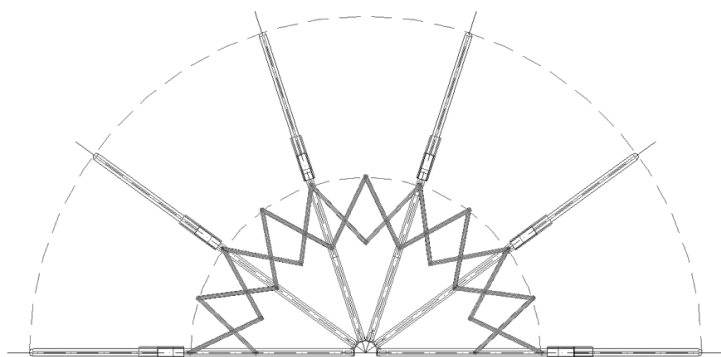
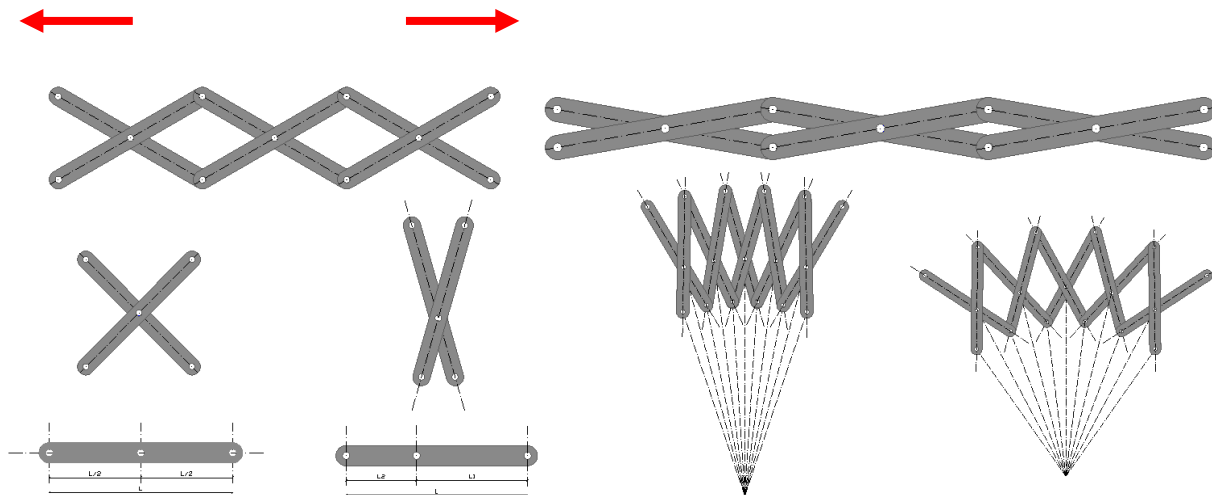


# Base Idea



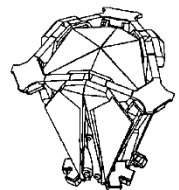
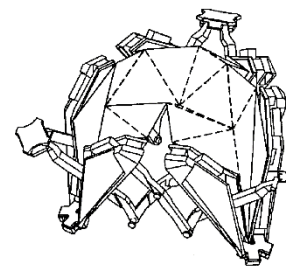
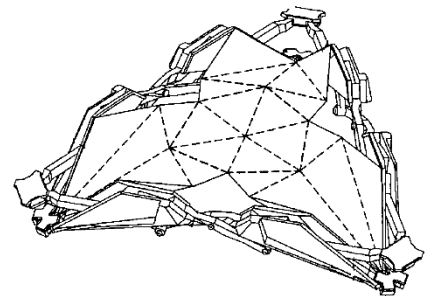
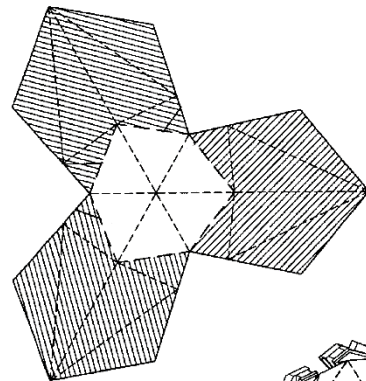
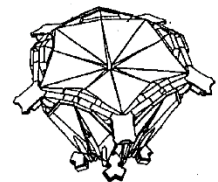
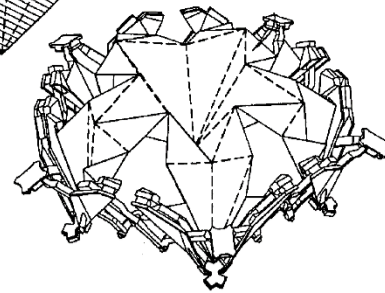
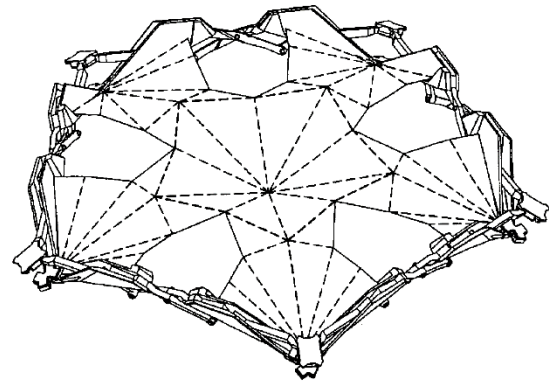
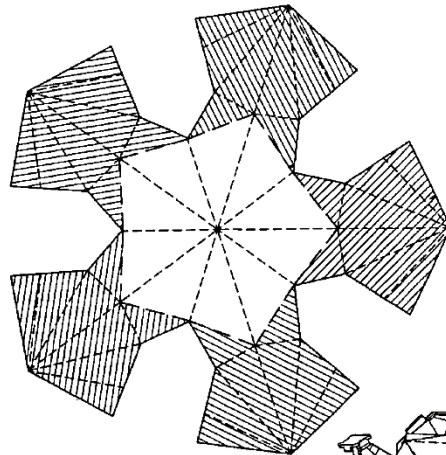
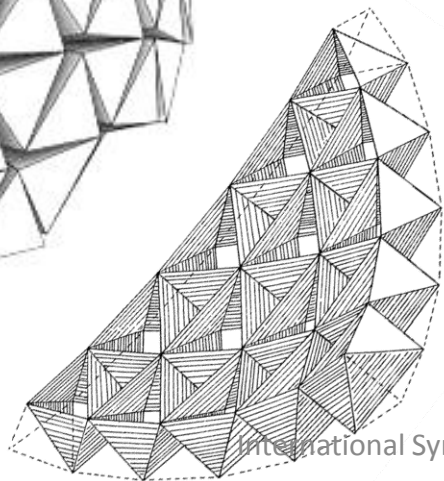
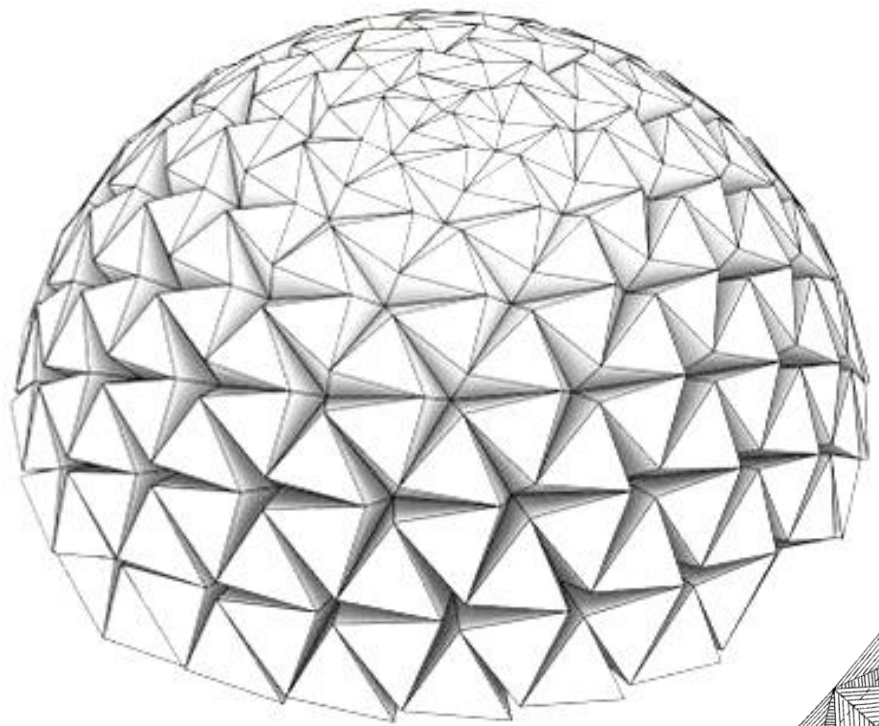
- 1DOF
- Empty Centre
- One platonic solid
- Keep the same shape

# Mechanism

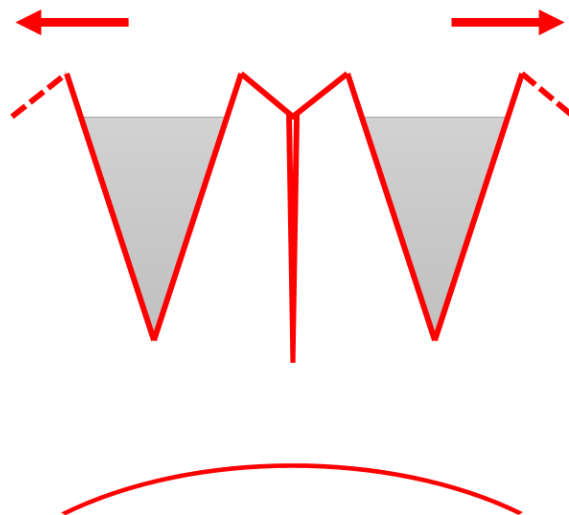




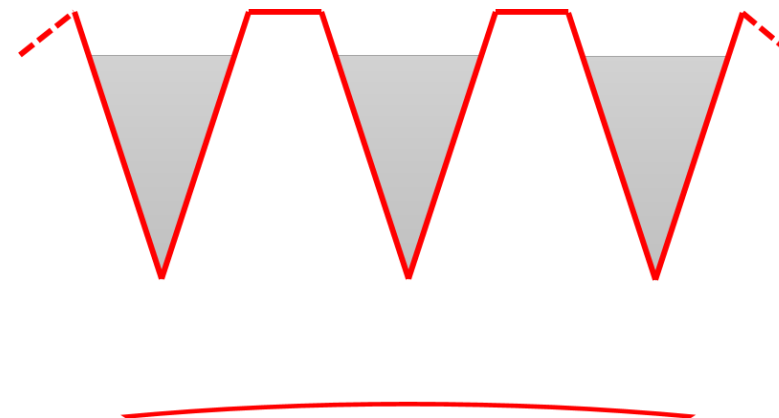
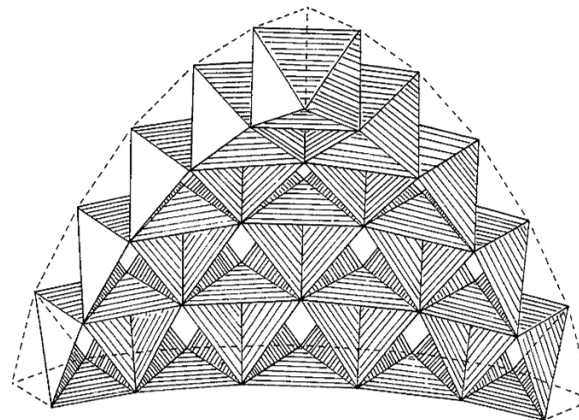
# Mechanism



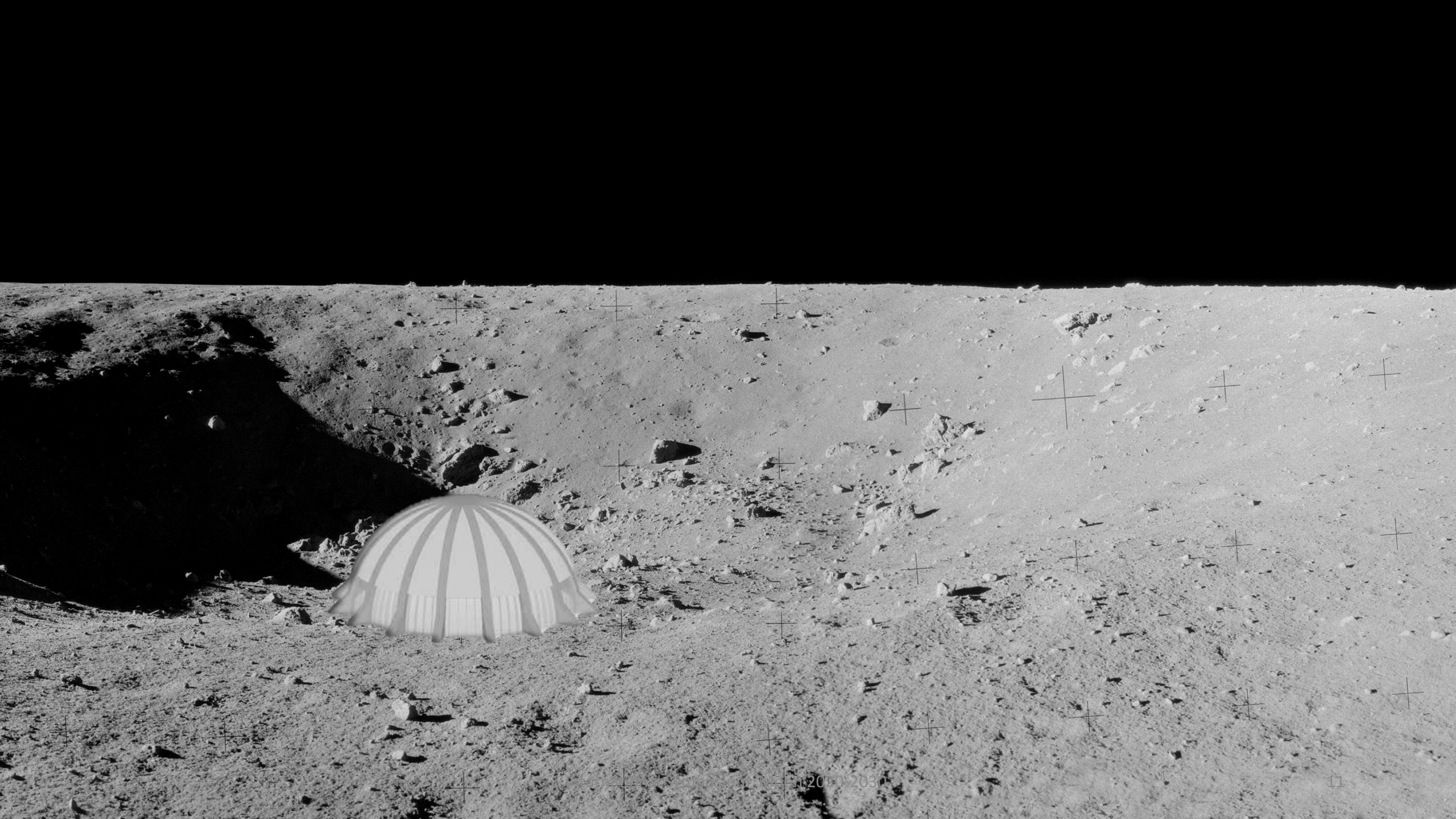
# Mechanism



Partial Expansion



Further Expansion



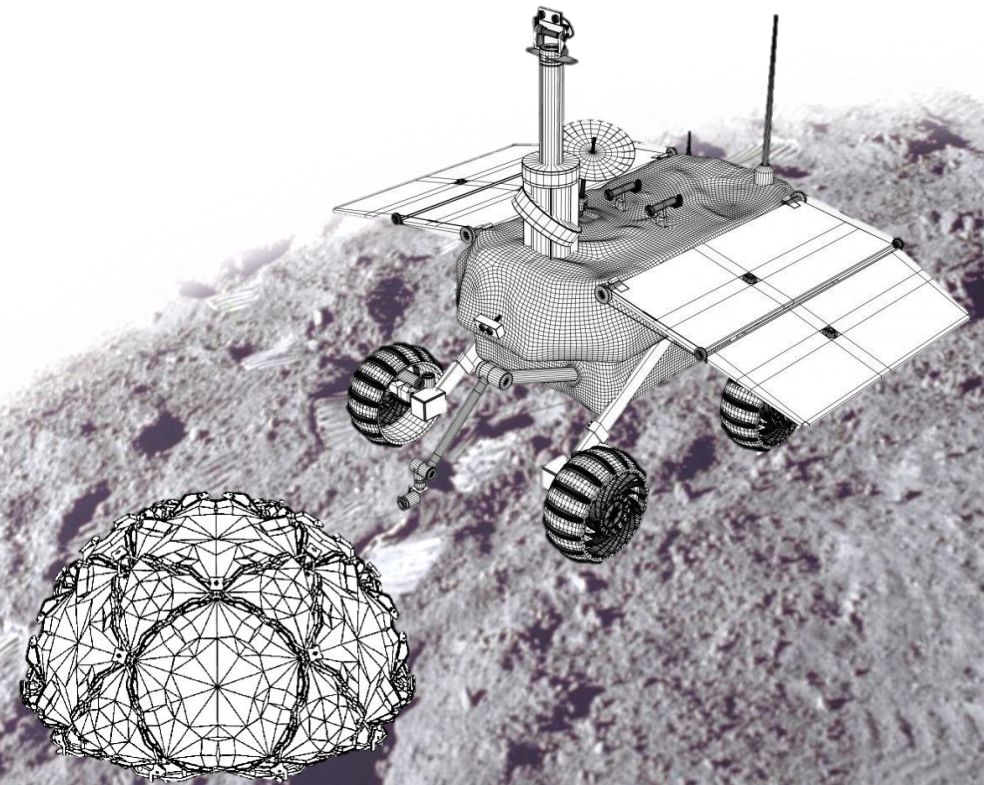
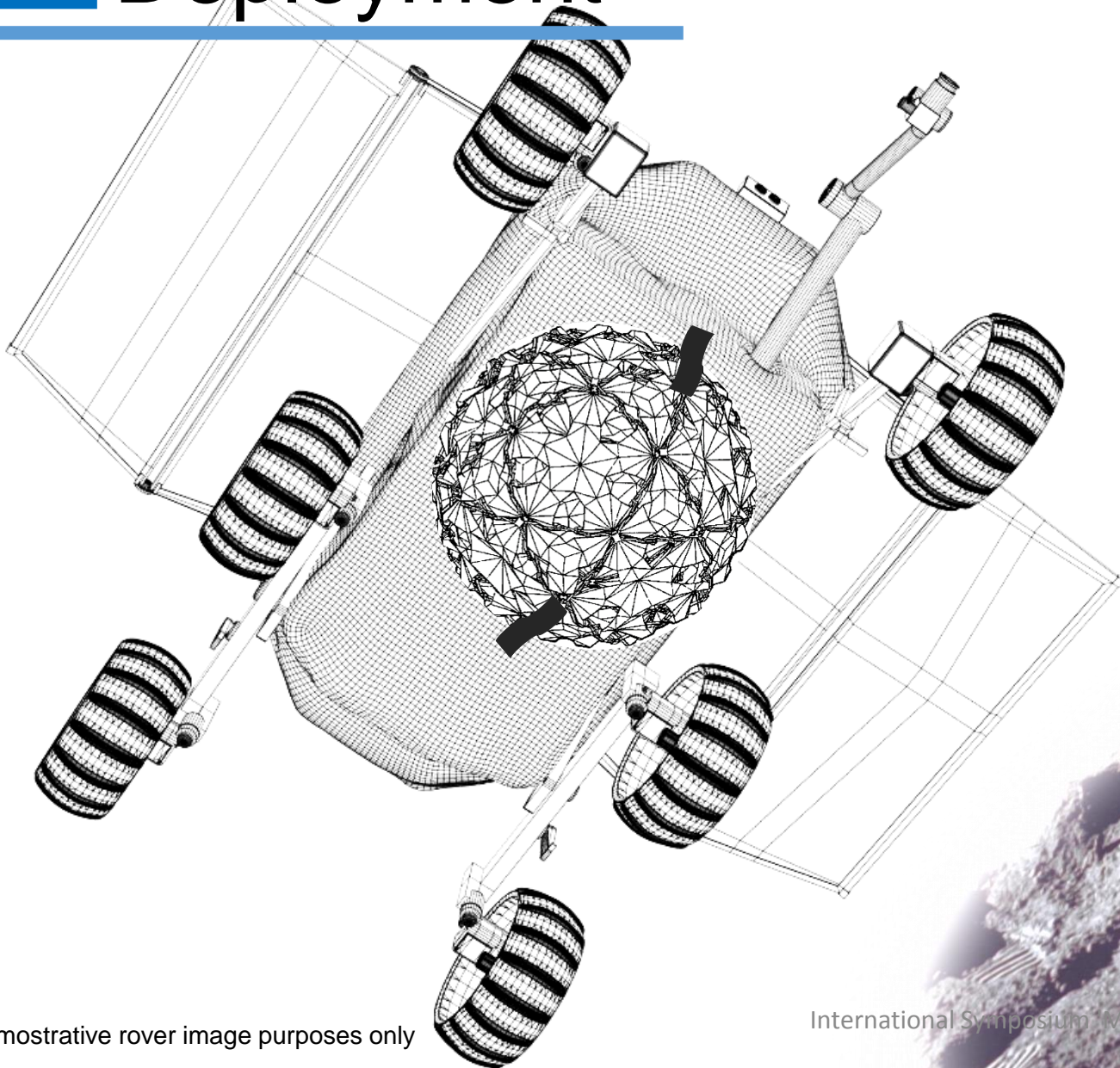
2000-2030

11



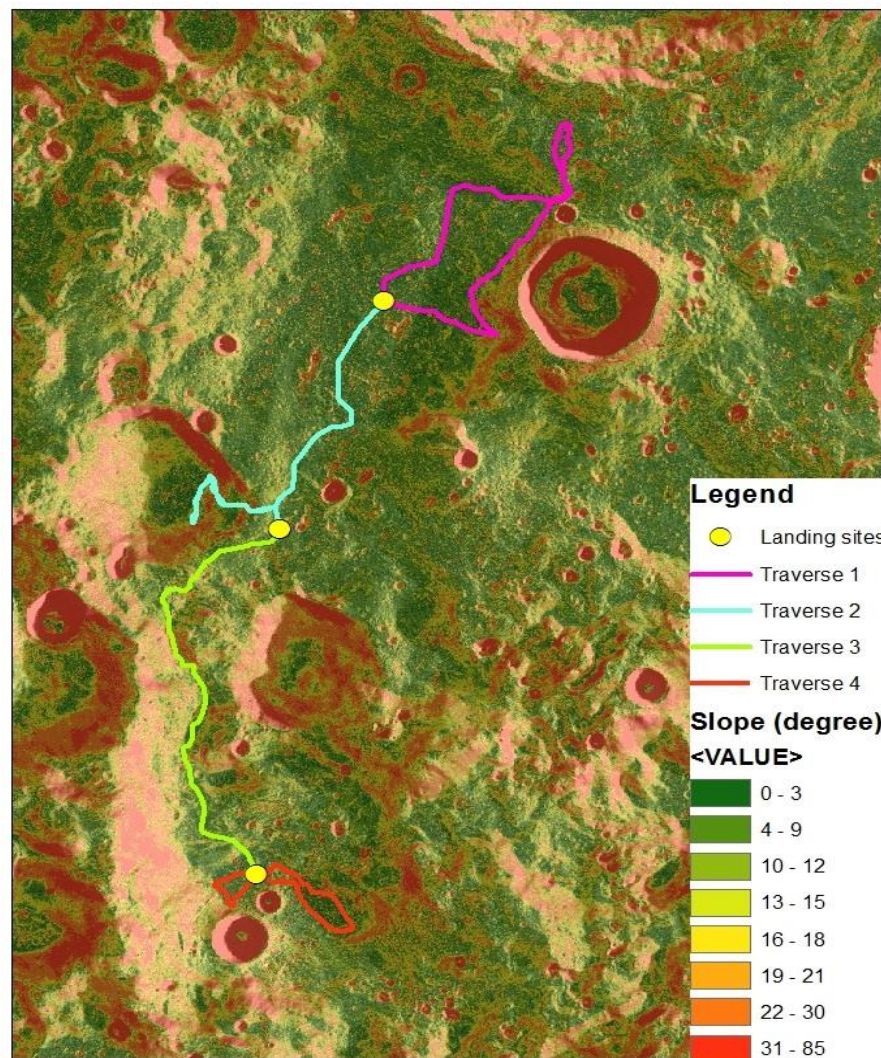
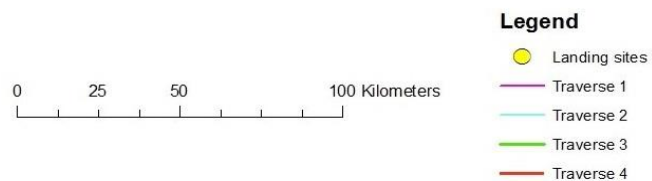
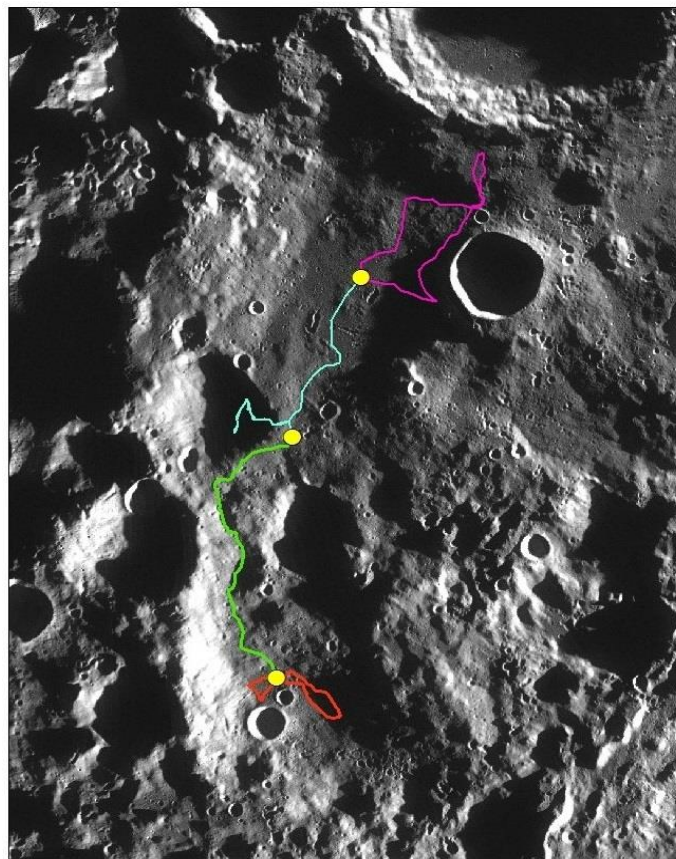
# Deployment

Carried by a rover and placed into the best spot





# Deployment



During the traverse there could be different interesting places



# Utilization

- GreenHab
- Space Habitat
- Radiotelescope
- etc.



# Further Studies and Conclusion

---

- Concept still under development
- LSS → BLSS
- Interior Design
- Regolith Processing
- Etc.

# SUGGESTIONS?



## CONTACT

**HADY GHASSABIAN**

[hady.ghassabian@spacegeneration.org](mailto:hady.ghassabian@spacegeneration.org)

+39 345 9389770

**ABIGAIL CALZADA DIAZ**

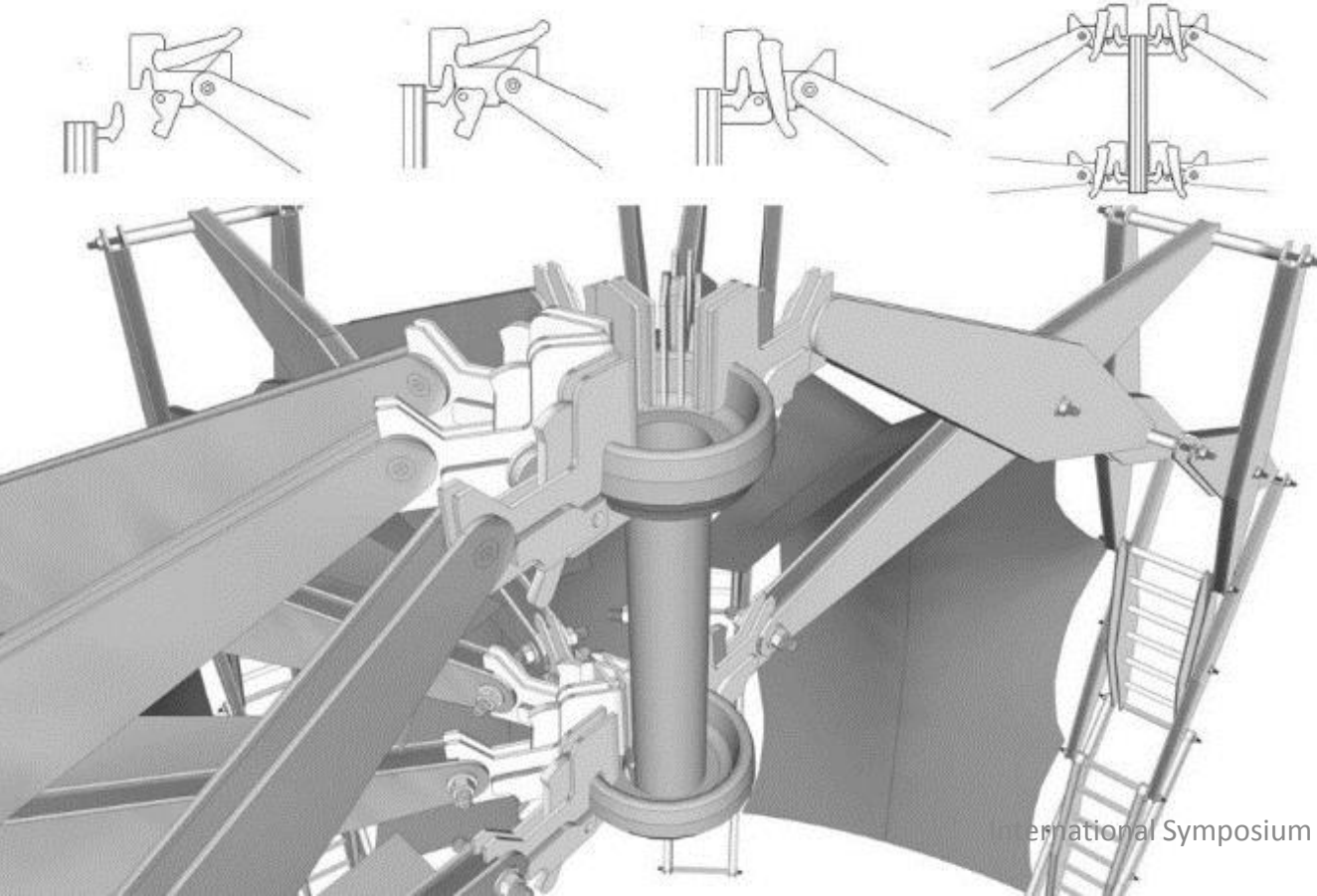
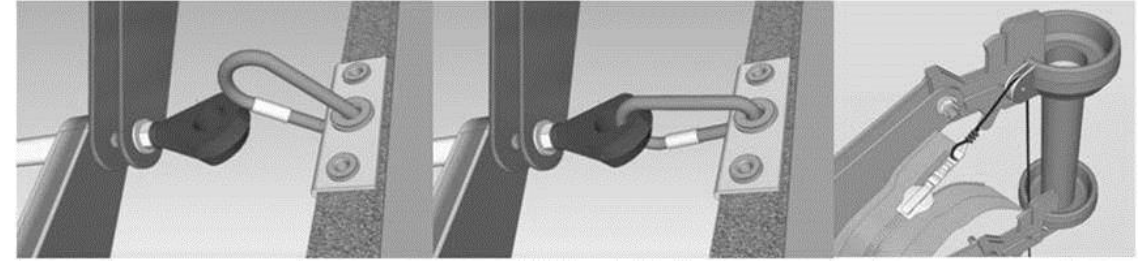
[abigail.calzada@spacegeneration.org](mailto:abigail.calzada@spacegeneration.org)





# Backup

# Block Mechanism



# Airlock

