What are Mars Analogue Research Stations?

Dr Jonathan Clarke

President Mars Society Australia

MSA
Mars Society Australia

Mars surface mission parameters

Crews of 4-8

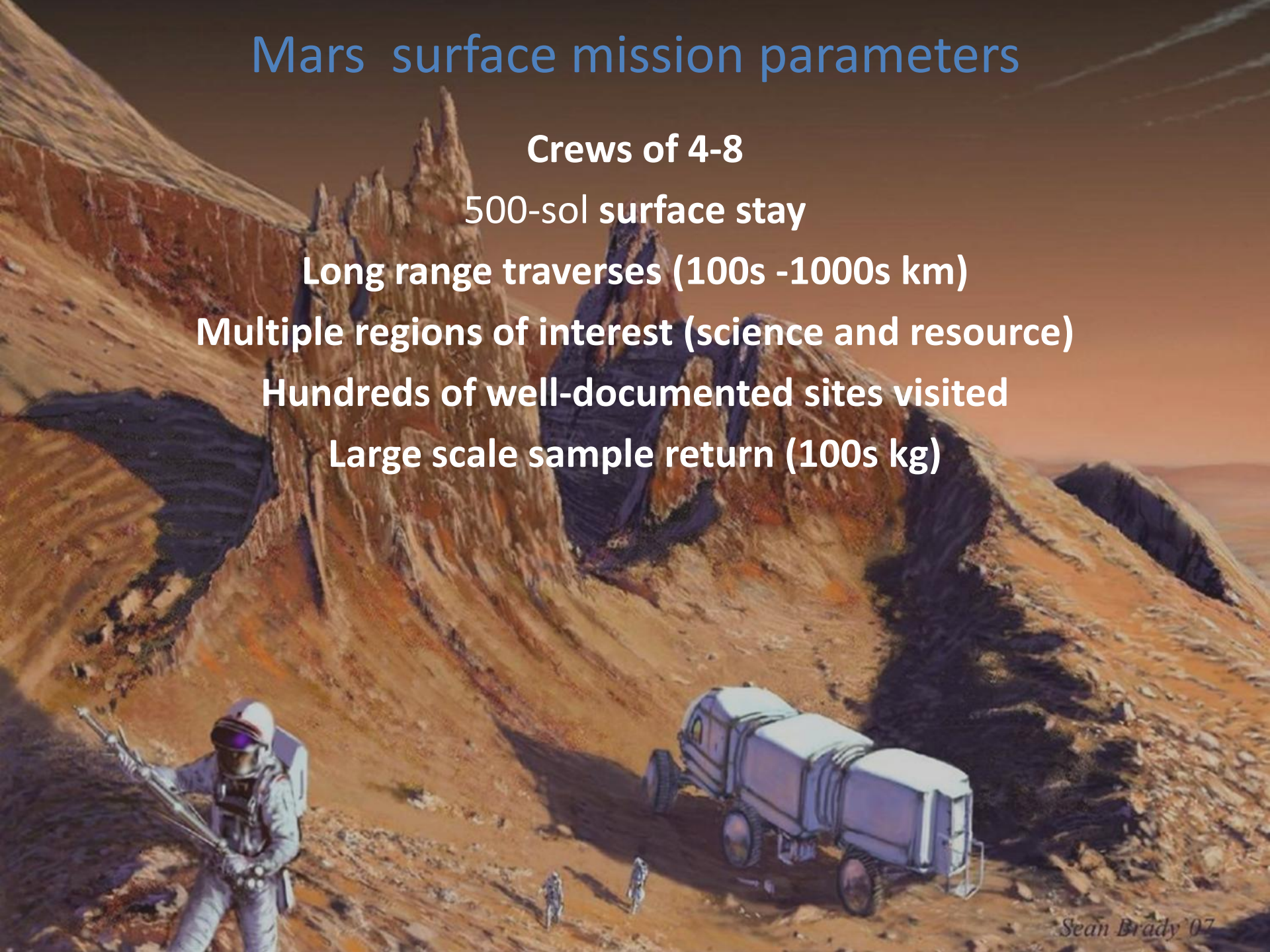
500-sol **surface stay**

Long range traverses (100s -1000s km)

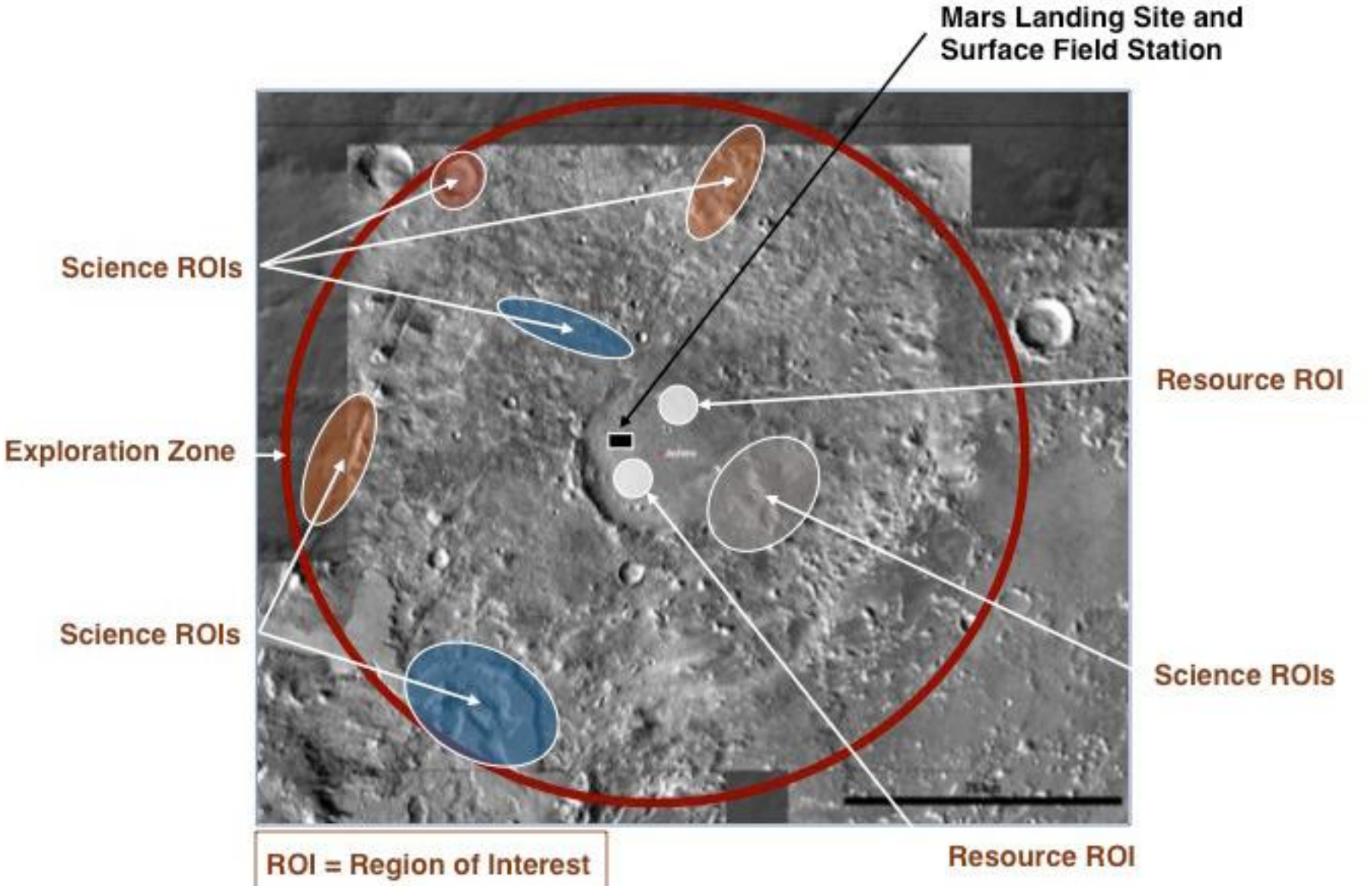
Multiple regions of interest (science and resource)

Hundreds of well-documented sites visited

Large scale sample return (100s kg)



Exploration Zone Layout Considerations



What is analogue research?

- Terrestrial analogues enable us to use counterparts of features seen on other planets (e.g. Mars) to better understand them
  - Geology
  - Biology
  - Etc.
- Planetary analogue facilities help us better prepare for missions to them
  - Engineering
  - Architecture
  - Human aspects
- Planetary analogue habitats are field stations that provide a safe platform for integrated research into design and operational concepts of human exploration
- Should be distinguished from extrapolations from hostile environment expeditions, laboratory testing, analogue expeditions, and centre based research (also important)

Analogue field station - MDRS

Laboratory - Yuegong-1

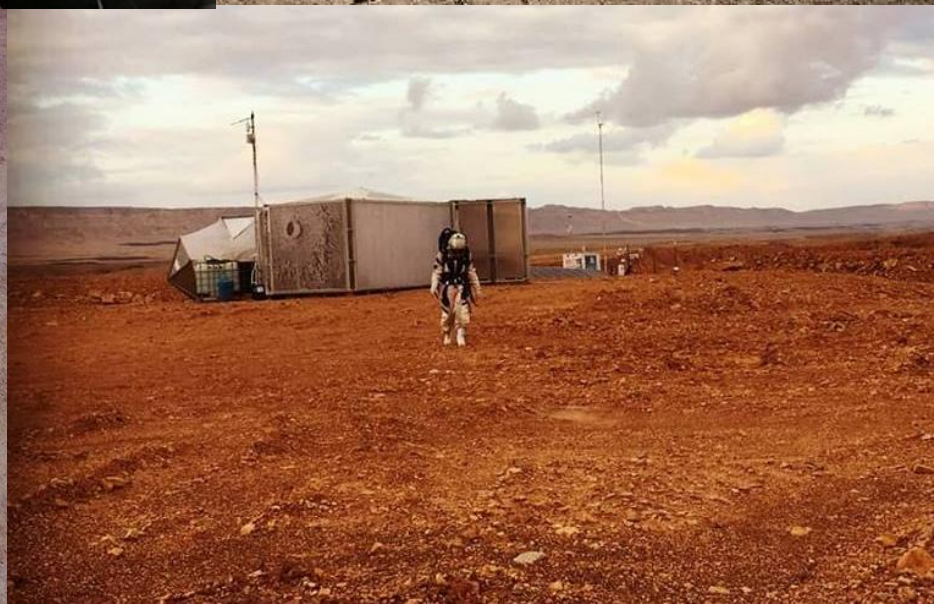
Expeditions – Concordia station

Outstation – University of N Dakota

MDRS (Utah)

FMARS (Canada)

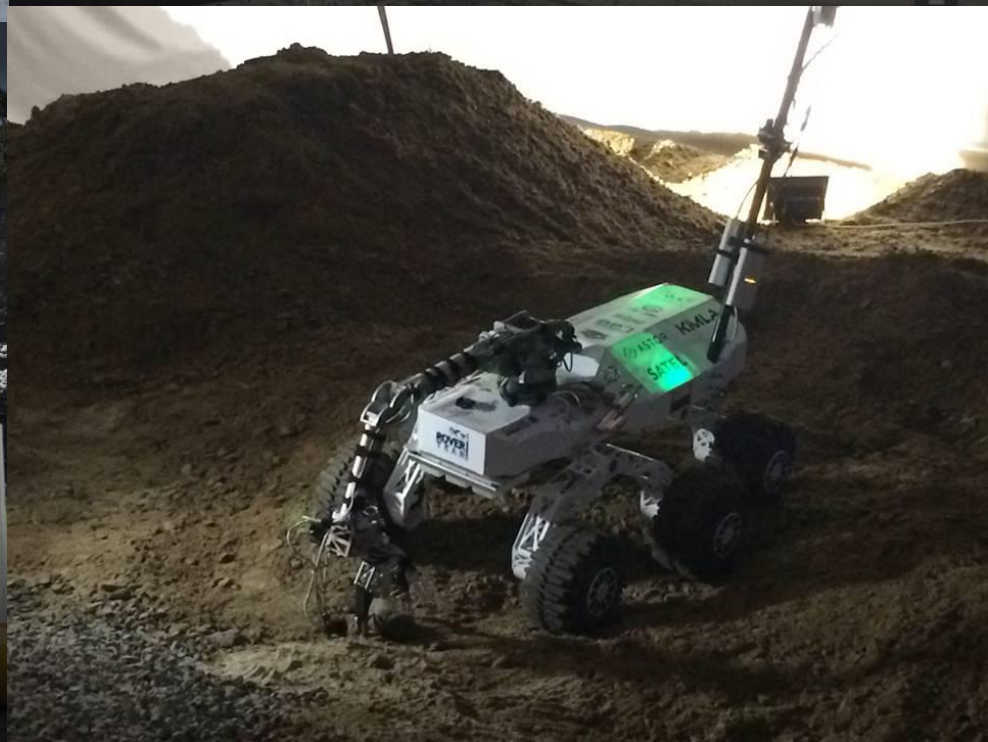
Desert Mars Analogue Ramon Station - Israel



HiSEAS – University of Hawaii


SPACE.GARDEN


SPACE.GARDEN
freedomes

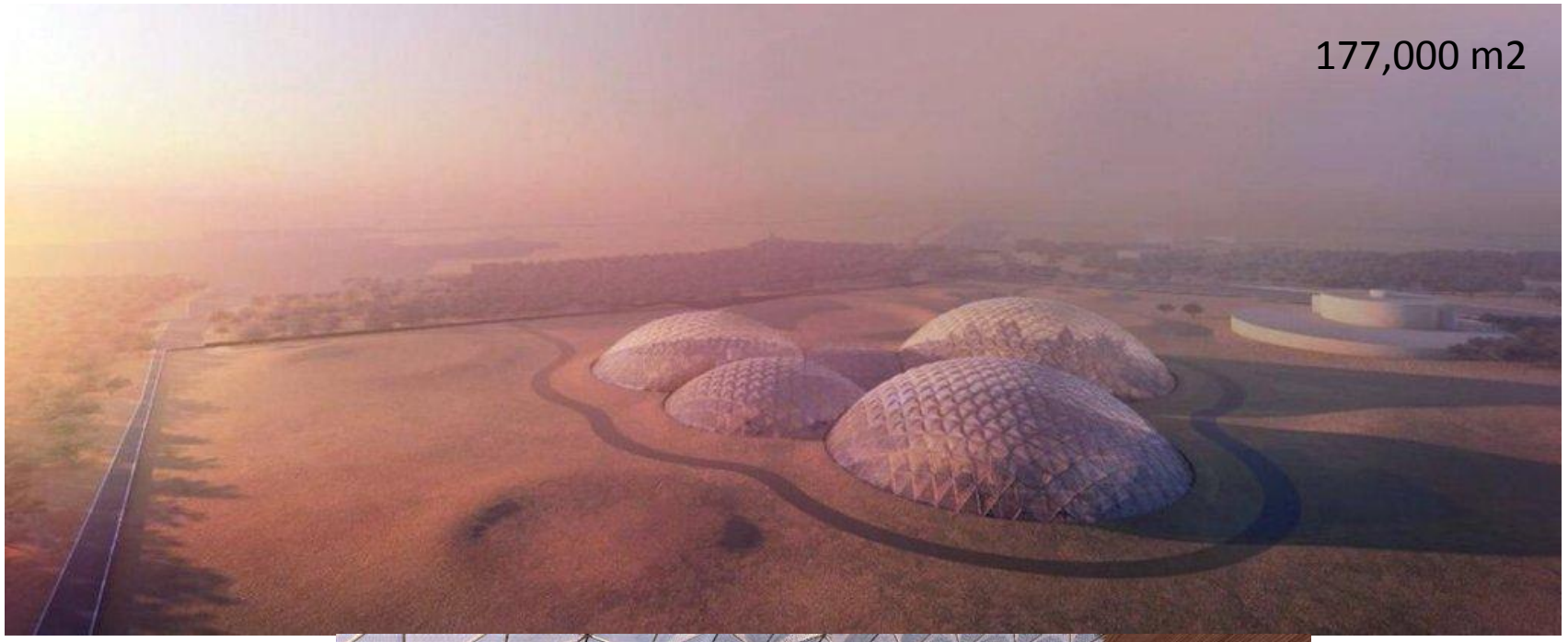


Mars base
China - CNSA

53,330 m2

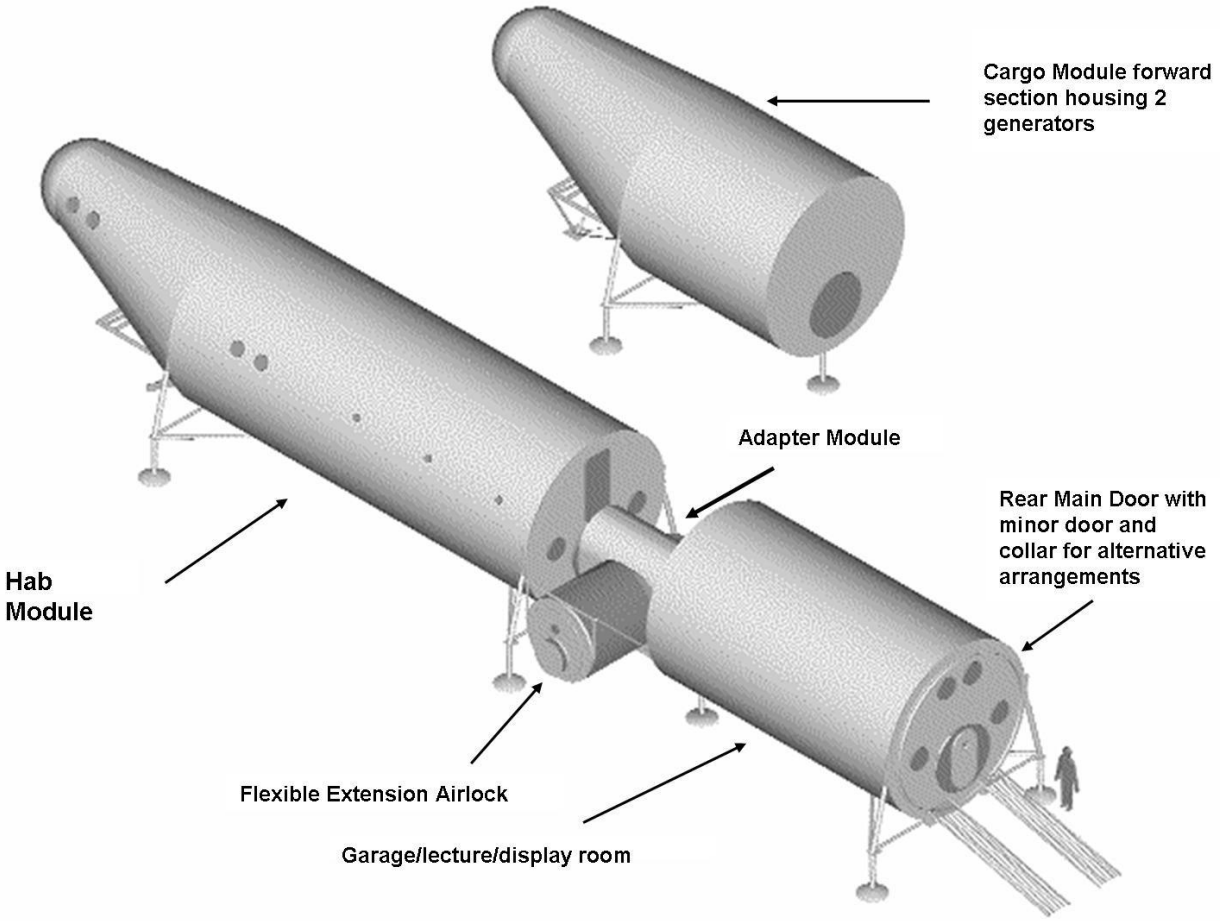
Qaidam Basin

Mars Science City Dubai - UAE government



An Australian Planetary Research Station should….

- Be accessible for Australian researchers
- Be of international significance
- Be in an area that is a useful Mars analogue
- Offer unique capabilities compared to others
- Cheap to build, operate, and use
- Safe for students as well as professionals
- Accessible all year round and to all interested parties
- Have reliable support
- Sustain diverse research
- Be self sustaining



Australian Mars analogue research station (MarsOz) – design concepts

DISCUSSION