

→ RESEARCH OPPORTUNITIES ON THE DEEP SPACE GATEWAY

5-6 December 2017 - ESTEC Erasmus auditorium

Draft Programme

Day 1 - Tuesday, 5 December

09:30 Welcome and introduction

James Carpenter, Human and Robotic Exploration Strategy Officer, ESA

09:45 The Deep Space Gateway in ESA European Exploration Envelope Programme

David Parker, Director of Human spaceflight and Robotic Exploration, ESA

10:00 Introducing the Deep Space Gateway

Philippe Schoonejans, Head of Robotics and Future Projects, ESA

10:30 Lunar surface access and sample retrieval from the Deep Space Gateway

Markus Landgraf, Architecture Analyst, ESA

11:00 Deep Space Gateway enabled science in the ISECG Science White Paper

Ben Bussey, Chief Exploration Scientist, NASA

11:15 Educational opportunities on the Deep Space Gateway

Monica Talevi, Head of STEM, Education and Outreach Unit, ESA

11:30 Coffee break

12:00 Idea pitches - splinter sessions: 1. Physical Science and Astronomy 2. Technology

13:00 Lunch

14:00 Idea pitches - splinter sessions: 1. Physical Science and Astronomy 2. Technology

14:30 Discussions

16:00 Coffee Break

16:30 Plenary review of findings

17:15 End

Day 1 - Physical Science and Astronomy splinter

Chairs: Clive Speak and Andrea Santangelo

TIME	NR	NAME	PRESENTATION TITLE
12:00-13:00	1	Estela	Radhard by design memory cell for deep space missions
	2	Goelzhaeuser	Energy efficient nanomembranes for air and water recycling during extended space missions
	3	Wu	Real-time penetrating particle analyser on the DSG
	4	Humphries	Manned Mission Space Exploration Utilizing a Universal Module
	5	Shevtsova	Transport of volatiles in lunar soil simulants
	6	Soria-Salinas	Gauging system simulator for electric propulsion (gauss-pro)
	7	Brinkert	Solar-assisted hydrogen and oxygen production in reduced gravity environments
	8	Stiele	High-energy monitoring telescope and large area timing instrument
	9	Produit	GRB monitor
	10	Stam	Observing the earth as an explant with loupe
13:00-14:00			Lunch
14:00-14:30	11	Bentum	Low frequency science on the deep space gateway
	12	Falke	Lunar radioscience experiment (LUREX)
	13	Burderi	The hermes system: multimessenger astrophysics with a cluster of satellites around the moon
	14	Gomez de Castro	8U cubesat deployment for UV exploration
	15	Losekamm	Search for evidence of dark matter
	16	Hawker	A super-sharp space telescope at the deep space gateway

Day 1 – Technology splinter

Chairs: Jessica Grenouilleau

TIME	NR	NAME	PRESENTATION TITLE
12:00-13:00	1	Da-Poian	INFLATE : inflate Landing Apparatus Technology
	2	Konatham	Active phased array antenna on deep space gateway platform to monitor and catalogue high altitude space debris
	3	Delchambre	Additive manufacturing printing lunar experiment (AMLE)
	4	Viola	A sustainable bridge with the deep space gateway: the lunar space tug
	5	Lii	Understanding and developing the full range of space robotic assistance modalities
	6	Iorizzo	Automatic passive waste disposal vehicle from the deep space gateway
	7	Nichele	Autonomous space drones for crew support and DSG inspection
	8	Rosenqvist	Platform for conducting experiments to study the long-term exposure effects of spacecraft coating, materials and components in deep-space environment
	9	Johnson	Spacecraft-on-demand at the deep space gateway
	10	Sabath	Technology and operations research on a future deep space gateway
	11	Lim	Microwave sintering test on the moon surface
	12	Maediger	Human-Robot Interaction Methods for Lunar Surface Science Using Tele-Presence
13:00-14:00			Lunch
14:00-14:30	13	Gill	In situ repairs/calibrations of research/scientific equipment on the deep space gateway using analogues from the ESA2C
	14	Newman	Optical lunar navigation via implementation of deep learning neural networks
	15	Da-Poian	CRAFT : Collaborative Rover and Astronauts Future Technology
	16	Nazarious	Robotic manipulation of extra terrestrial samples for bio-examination and sterilization

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Day 2 - Wednesday, 6 December

09:30 Idea pitches – splinter sessions: 1. Life Sciences

2. Solar System and Earth Sciences

10:30 Coffee Break

11:00 Idea pitches – splinter sessions: 1. Life Sciences

2. Solar System and Earth Sciences

11:45 Discussion session on opportunities and needs for DSG

13:00 Lunch

14:00 Plenary review of findings

14:30 Review of major outcomes and follow up

15:30 End

Day 2 - Life Sciences Splinter

Chairs: David Cullen and Alexander Chouker

TIME	NR	NAME	PRESENTATION TITLE
09:00-10:30	1	Iorio	Sensing and monitoring of astronauts' bio-activities for big data generation and analysis
	2	Murrow	Radiation studies, communications relay, and sample return at the deep space gateway
	3	De Micco	Chronic radiation on plants (CROP)
	4	Petersen	Integrative countermeasure device for deep space human exploration
	5	Moeller	Microbial space biotechnology supporting future human and robotic space exploration
	6	Berger	Deeprad (deep space radiation measurements)
	7	Holt	The deep space petri-pod (DSPP): a general purpose biological platform for the deep space environment
	8	Clauwaert	Electroactive biofilms in space
	9	Cottin	Organic exposure facility for astrobiology and astrochemistry
	10	Rabbow	Biomer-biological response to moon environment and radiation
	11	Narici	Autonomous monitoring of radiation environment (amore)
	12	De Vera	Logos (lunar organisms, geomicrobiology and organic compound space experiment).
	13	G. De la Torre	Effects of cosmic radiation on human psychoemotional performance and neurological status
	14	Hellweg	Deep space gateway biology twin box (deepcytolab)
	15	Monici	Health effects and physico- chemical properties of lunar regolith
10:30-11:00			Coffee break
11:00-11:	16	Zorzano	Manipulation and irrigation of self-sustained greenhouses
	17	Visscher	Lunar regolith for plant-based life support
	18	Lobascio	Personal systems for crew enhanced spe protection (psyche)
	19	Monica	Inflammation markers in subjects exposed to deep space environment
	20	Monica	Development of a system for laser therapy in space

Day 2 – Solar System and Earth Sciences Splinter

Chairs: Rumi Nakamura and Ian Crawford

TIME	NR	NAME	PRESENTATION TITLE
09:00-10:30	1	Huang	Earth radiation budget experiment on the moon
	2	Jones	Multispectral visible-IR polarimetric mapping of the lunar surface
	3	Futaana	Lunar active experiment (lax) for lunar water investigations
	4	Gousselnikov et al	Space environment effects on release of volatiles from materials
	5	Joy	Using the deep space gateway science as a platform for XRF observations of the moon and sun
	6	Bowles	Connecting remote sensing and surface science for the moon and earth– closing the gap
	7	Soundararajan	Investigation of lunar swirls from the surface and the orbit
	8	Biswas	Luvmi – a low-cost, light-weight, mobile surface science unit
	9	Barber	L-dart: lunar direct analysis of resource traps; and I-dart-lite
	10	Crawford	Sampling lunar palaeoregolith deposits
	11	Anand	New solar system science and exploration enabled by deep space gateway around the moon
	12	Jones	Interdisciplinary lunar science using surface penetrators
	13	Martin	Traversing the Schrödinger Basin from a Pyroclastic Vent to The Basin Centre for a Human-assisted Robotic Sample Return Mission
	14	McClellan	The deep space gateway as a platform for deployment of a lunar seismic network
	15	Millinger	Deep space gateway – microparticle environment sampling suite (mess)
10:30-11:00			Coffee break
11:00-11:50	16	Oberst	Observations of transient luminescent phenomena on the lunar surface from a deep space platform
	17	Srama	Meteoroid environment monitor (mem)
	18	Wozniakiewicz	Dust characterisation with deep space gateway
	19	Marin-Torres	Far-infrared and microwave remote sensor suite for earth and moon observation
	20	Nieminen et al	Deep space gateway radiation research facility
	21	Lammer	Ion and neutral escape from moon and earth
	22	Constantinescu	Magnetic field structure
	23	Branduardi-Raymont	Exploring geospace through solar wind charge exchange x-rays
	24	Bamford	Active tracer experiments for the magnetospheric system, moon and solar wind