HOSTED BY

مـــــركز محمد بن راشد للـــــفضـــــاء

MOHAMMED BIN RASHID SPACE CENTRE

ORGANISED BY

SpaceOps

The 17th International Conference on Space Operations - SpaceOps 2023

INVEST IN SPACE TO SERVE EARTH AND BEYOND

6 - 10 March 2023
Dubai World Trade Center, UAE

SPACEOPS2023.ORG

TECHNICAL PROGRAM

Under the patronage of

His Highness Sheikh Mohammed Bin Rashid Al Maktoum

UAE Vice President, Prime Minister and Ruler of Dubai

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Welcome Message

Greetings,

On behalf of the Local Organizing Committee of SpaceOps and the Mohammed Bin Rashid Space Centre, I am pleased to welcome you to SpaceOps 2023 in Dubai, UAE.

SpaceOps 2023 provides the perfect platform and unique opportunity for people to come together from around the world to discuss cutting-edge research topics, state-of-the-art technologies, and innovations in the space sector. As the first Arab country to host this event, we guarantee a conference of unsurpassed quality.

We invite you to share ideas, collaborate, and work together to shape the future of space science and technology over these 5 days. Together, we can explore new frontiers, push boundaries, and advance human knowledge and understanding of the universe.

Thank you for joining us, and I hope you have a productive and enjoyable time at SpaceOps 2023.

Sincerely

H.E. SALEM HUMAID AL MARRI

Director General,
Mohammed Bin Rashid Space Centre

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Conference Information

Title	The 17th International Space Operations Conference (SpaceOps2023)
Date	Mon 6th March – Friday 10th March 2023
Venue	Dubai World Trade Centre, Dubai, UAE
Official Language	English
Website	**www.spaceops2023.org**
Theme	Invest in Space to Serve Earth and Beyond

مـــــركز محمـد بن راشـد
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MOHAMMED BIN RASHID SPACE CENTRE

Hosted by MOHAMMED BIN RASHID SPACE CENTRE

Established in 2006, the Mohammad Bin Rashid Space Centre (MBRSC) started out with five engineers, who took it upon themselves to develop their capabilities and expand their knowledge in the field of space, relying on strong will and solid determination. Since then, the centre has continued its journey to be the incubator of the "UAE National Space Programme".

The MBRSC has undertaken the tasks of building, developing, and operating a number of Earth observation satellites, providing imaging services, analysing and studying them, as well as producing relevant data to scientific communities and research centres around the world. Among the satellites that the centre operates are DubaiSat-1 & DubaiSat-2.

The MBRSC is also responsible for KhalifaSat, celebrated as the first satellite that was fully built by Emiratis in 2018. Recently, the centre revealed its plan to develop the new satellite MBZ-SAT, which is expected to be launched at the end of 2023 and to be the latest in the field of high-resolution imaging from outer space.

SpaceOps Organisation

Organised by

The International Committee on Technical Interchange for Space Mission Operations and Ground Data Systems (also referred to as the SpaceOps Organization) was formed in the realization that given the large number of people involved in space mission operations, an organized community or technical forum is needed.

Since mission operations have become an increasingly large segment of space agency budgets, there is great interest in improving the capabilities and cost efficiencies of mission operations. It was in the spirit of providing the broadest possible managerial and technical interchange between space agencies, academia, and industry that SpaceOps was established.

Registration

Brief Information on Registration Desk

Registration desks are located in concourse 02, ground floor, Dubai World Trade Centre. For on-site registration, credit cards and cash are accepted. The registration desks will be open during the conference as per the timetable below.

Location Concourse 02
Ground floor
Sheikh Maktoum Hall,
Dubai World Trade Centre

Registration Operating Hours

March 05, 2023	11:00 – 18:30	**(Pre-event)**
March 06, 2023	07:30 – 17:30	
March 07, 2023	08:00 – 17:30	
March 08, 2023	08:00 – 17:30	
March 09, 2023	08:00 – 18:00	
March 10, 2023	08:00 – 14:30	

Welcome Drink

Date	March 05th, 2023
Time	15:00 – 18:00
Location	Sheikh Maktoum Hall Foyer

Onsite Registration Fee

REGISTRATION CATEGORY	REGISTRATION FEES (AED)
Standard Delegate	AED 4,536.00
One Day Pass (per day charge)	AED 1,092.00
Young Professional	AED 3,360.00
Retired Person	AED 2,520.00
Student	AED 1,680.00
ADDITIONAL CATEGORIES	**FEES**
Extra Confercne Dinner Ticket	AED 680.40

General Information

Standard Delegates / Young Professionals and Retired Persons Registration Includes:

- Opening ceremony
- Admission to all sessions
- Poster presentation
- Exhibition Area
- Daily Coffee, tea and lunch breaks
- Welcome reception
- Conference bag
- Conference dinner

Students Registration Includes:

- Opening ceremony
- Admission to all sessions
- Poster presentation
- Exhibition Area
- Daily Coffee, tea and lunch breaks
- Welcome reception

One-day pass:

- Opening ceremony
- Admission to technical sessions of the badge date
- Poster presentation
- Exhibition Area
- Daily Coffee, tea and lunch breaks

Spaceops 2023 Badges

For security purposes, all delegates and exhibitors must wear their name badges during the conference at all times. If your badge needs any correction please visit the registration desk for a replacement. There will be staff to check your badge at every entrance

Conference WIFI

Register for a free Wi-Fi internet connection throughout the congress premises.

Network name: DWTC-Free WIFI

How to reach Dubai World Trade Centre (DWTC)

METRO

Click here for the map

DUBAI TAXI

Book a taxi in advance by calling +971 4 208 0808

UBER / CAREEM

Can be booked through their applications

Conference bag

SpaceOps2023 Conference bag will be given to only registered standard delegates, young professionals and retired person at the registration desk

General Information

Coffee Breaks

Coffee will be provided at the following times and location:

MORNING COFFEE TIMES

Monday 6th March – Friday 10th March 2023
10:00 – 10:30
Sheikh Maktoum Exhibition Hall +
Sheikh Maktoum Hall C

AFTERNOON COFFEE TIMES

Monday 6th March – Friday 10th March 2023
15:30 – 16:00
Sheikh Maktoum Exhibition Hall +
Sheikh Maktoum Hall C

Lunches

All Registrants at SpaceOps 2023 can have the lunch at the exhibition hall (Lunch Area + Sheikh Maktoum Hall C)

LUNCH TIMES

March 06, 2023	12:30 – 13:30
March 07, 2023	12:30 – 13:30
March 08, 2023	12:30 – 13:30
March 09, 2023	12:30 – 13:30
March 10, 2023	12:30 – 13:30

Lost & found

Please hand in all found items and ask for lost items at the registration desk

Emergency / First aid

The first aid room is available at the venue; in case of emergency, dial +971 4 306 4040

Technical Tours

The on-site technical tour reservation cannot be accepted due to fully-reserved.

PRE-REGISTERED ONLY

Mohammed Bin Rashid Space Centre
Wednesday 8th March (4:30 – 6:30)

TRANSPORTATION

Pick up point	Registration Area at 15:30
Departure timing	16:00

Program At A Glance

5 MARCH 2023 SUNDAY	TIME 24 HR CLOCK	6 MARCH 2023 MONDAY	7 MARCH 2023 TUESDAY	8 MARCH 2023 WEDNESDAY	9 MARCH 2023 THURSDAY	10 MARCH 2023 FRIDAY
REGISTRATION SHEIKH MAKTOUM HALL	08:00 - 08:30	REGISTRATION + PREVIEW	REGISTRATION	REGISTRATION	REGISTRATION	REGISTRATION
	08:30 - 09:00				KEYNOTE SPEAKER 2 LOC: SHEIKH MAKTOUM HALL B	
(SYP) STUDENT WORKSHOP - BY INVITATION ONLY LOC: SHARJAH D	09:00 - 09:30	OPENING CEREMONY LOC: SHEIKH MAKTOUM HALL B+C	PLENARY SESSION 2 LOC: SHEIKH MAKTOUM HALL B	PLENARY SEESSION 3 LOC:SHEIKH MAKTOUM HALL B	PLENARY SEESSION 4 LOC: SHEIKH MAKTOUM HALL B	PLENARY SEESSION 5 LOC: SHEIKH MAKTOUM HALL B
	09:30 - 10:00					
	10:00 - 10:30	EXHIBITION OPENING / COFFEE BREAK LOC: EXHIBITION AREA	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
	10:30 - 11:00		ORAL PRESENTATION / SPECIAL SEESSION LOC:SHEIKH MAKTOUM HALL C	ORAL PRESENTATION / SPECIAL SEESSION LOC:SHEIKH MAKTOUM HALL C	ORAL PRESENTATION	ORAL PRESENTATION / STO SPECIAL SEESSION LOC:SHEIKH MAKTOUM HALL B
	11:00 - 11:30	PLENARY SEESSION 1 LOC:SHEIKH MAKTOUM HALL B+C				
	11:30 - 12:00					
	12:00 - 12:30	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
	12:30 - 13:00					
	13:00 - 13:30					
	13:30 - 14:00	ORAL PRESENTATION	ORAL PRESENTATION / KEYNOTE SPEAKER 1 LOC: SHEIKH MAKTOUM HALL C	ORAL PRESENTATION	ORAL PRESENTATION	ORAL PRESENTATION
	14:00 - 14:30					
	14:30 - 15:00					
	15:00 - 15:30					
	15:30 - 16:00	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
	16:00 - 16:30	ORAL PRESENTATION / SPECIAL SEESSION LOC:SHEIKH MAKTOUM HALL C	ORAL PRESENTATION	ORAL PRESENTATION / TECHNICAL TOUR TO MBRSC	ORAL PRESENTATION	CLOSING CEREMONY LOC: SHEIKH MAKTOUM HALL B
	16:30 - 17:00					
(SYP) TOUR TO MBRSC BY INVITATION ONLY	17:00 - 17:30					
	17:30 - 18:00					
WELCOME DRINKS SHEIKH MAKTOUM HALL	18:00 - 18:30	WELCOME RECEPTION				
	18:30 - 19:00		(SYP) WOMEN IN SPACEOPS BY INVITATION ONLY LOC: SHEIKH MAKTOUM HALL C			
	19:00 - 19:30				CONFERENCE DINNER	
	19:30 - 20:00					
	20:00 - 20:30		(SYP) SPEED MENTORING BY INVITATION ONLY LOC: SHEIKH MAKTOUM HALL C			
	20:30 - 21:00					
	21:00 - 21:30					
	21:30 - 22:00					

ELECTRONIC PRESENTATION

EXHIBITION

NOTE: BUSES WILL MOVE FOR THE (SYP): TECHNICAL TOUR TO MBRSC AT 16:15 SHARP

SpaceOps 2023 Topics

As in previous years of the SpaceOps, SpaceOps 2023 Dubai will offer a wide-ranging, attractive scientific program consisting of plenary lectures, orals and poster presentations the following subjects will be presented during the conference.

- Mission Design and Management (MDM)
- Operations Concepts (OC)
- Flight Execution (FE)
- Ground Systems Engineering (GSE)
- Data Management (DM)
- Planning and Scheduling (PS)
- Guidance, Navigation and Control (GNC)
- Communications Architecture and Networks (CAN)
- Human Spaceflights and Operations (HSO)
- Commercial Space Operations (CSO)
- Artificial Intelligence for Space Operations (AI)
- Space Transportation Operations (STO)
- Safety and Sustainability of Space Operations (SSU)
- Human Factors Training and Knowledge Transfer (HFT)
- Cross Support, Interoperability, and Standards (CSIS)

Daily Conference Opening Hours

DATE	TIME
March 07, 2023	09:00 – 18:00
March 08, 2023	09:00 – 18:00
March 09, 2023	09:00 – 18:00
March 10, 2023	09:00 – 17:00

PLENARY EVENTS

Monday 6th March
to Friday 10th March

+ International Collaboration on Space Missions
+ Space Traffic Management - Needs and Solutions
+ MBRSC Missions: From Earth to Mars passing by Moon
+ Lunar Comunications and International Interoperability
+ Planetary Defense

International Collaborations on Space Missions

Plenary 1 11:00 - 12:00 SHEIKH MAKTOUM HALL B+C

Moderator

Badri Younes

NASA Deputy Associate Administrator for SCaN

Panelists

Philippe Baptiste

CNES
President

Ricardo Conde

Portugal Space
President

Salem Al Marri

MBRSC
Director General

Space Traffic Management – Needs and Solutions

Plenary 2 09:00 - 10:00 SHEIKH MAKTOUM HALL B

Moderator

Alexi Glover

ESA Space Weather Service Coordinator,
Space Safety Programme Office

Panelists

Lisa Donahue

Director of High Resolution
Mission Operations,
Planet Labs PBC

Lee-Anne McKinnell

SANSA Managing Director
for SpaceScience

Luc Piguet

ClearSpace CEO

Peter Martinez

Executive Director, Secure
World Foundation

Pascal Faucher

Chairman of EU SST

Michel Doyon

Manager, Flight Operations
Canadian Space Agency

International Collaborations on Space Missions

Plenary 3 09:00 - 10:00 SHEIKH MAKTOUM HALL B

Moderator

Saud Karmustaji

Director Corporate Communications Department, MBRSC

Panelists

Amer AlSayegh

Senior Director Space Engineering Department, MBRSC

Adnan Al Rais

Senior Director Mars 2117 Program, MBRSC

Dr. Hamad Al Marzooqi

Manager- Space Robotics Lab, Mars Program 2117, MBRSC

Dr. Sara Al Maeeni

Senior Expert - Space Robotics Lab, Mars Program 2117, MBRSC

Lunar Communications and International Interoperability

Plenary 4 09:00 - 10:00 SHEIKH MAKTOUM HALL B

Moderator

A discussion with a question and answer session from representatives of space agencies involved in developing lunar communications concepts, architectures, space communications systems and ground systems.

Dr. Harry Shaw
NASA

Panelists

Mr. Marco Lanucara
Head of Systems and Project Support Section, European Space Agency (ESA)

Dr. Daniel Fischer
Deputy chair of the CCSDS Security working group, European Space Agency (ESA)

Mr. Wael El-Dali
Space System Engineer European Space Agency (ESA)

Ms. Suzanne Dodd
NASA Jet Propulsion Laboratory

Mr. Kota Tanabe
Deputy Director, Space Exploration System Technology Unit, JAXA Space Exploration Center

Dr. Durk-jong Park
KARI IOAG Lunar Communications Architecture WG

Planetary Defense

Plenary 5 09:00 - 10:00 SHEIKH MAKTOUM HALL B

Moderator

Stephan Ulamec
DLR

Panelists

Sylvain Lodiot
ESA

Tatsuaki Okada
ISAS/JAXA

Joseph Lazio
NASA / JPL

George Chiu
JHUAPL

Dr. Patrick Michel
CNRS/Côte d'Azur Observatory

SPECIAL SESSIONS

Monday 6th March
to Friday 10th March

+ Life Science Mission Ops to Space
+ Spaceflight induced regenerative deficit in the bone marrow and beyond
+ The space Onics and Medical Atlas: A growing resource of multi-omic astronaut health measures
+ MALETH Program: Life science missions from earth to low earth orbit and back
+ Public-Private collaboration opportunities in lunar missions
+ Space Operations sustainability
+ To-orbit transportation, in-orbit support and on-Earth recovery of space payloads

Life Science Mission Ops to Space

MONDAY 6TH MARCH 2023 | 16:00 - 17:00 | SHEIKH MAKTOUM HALL C

Panelists

Dr. Cassandra M. Juran
Embry-Riddle Aeronautical University
Department of Aerospace Physiology, USA

Dr. Eliah G. Overbey
Postdoctoral Associate, Mason Lab Institute for Computational Biomedicine, NASA Space Biology
Postdoctoral Fellow, Weill Cornell Medicine, USA

Prof. Joseph Borg
Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta, Msida, Malta

Life Science Mission Ops to Space

MONDAY 6TH MARCH 2023 | 16:00 - 16:20 | SHEIKH MAKTOUM HALL C

Panelist

Dr. Cassandra M. Juran

Embry-Riddle Aeronautical University
Department of Aerospace Physiology, USA

TOPIC

Spaceflight induced regenerative deficit in the bone marrow and beyond

Many mammalian tissues have been shown to experience regenerative deficits in space. Bone was one of the first tissues observed to weaken after prolonged spaceflight.

Examination of bone tissue using molecular biology techniques have revealed that a major contributor to bone tissue weakening may be dysregulation of the stem cell reservoir in the bone marrow.

This stem cell population is responsible for homeostatic regeneration of the bone surfaces and for production of circulating blood cells for oxygen transport and immune response. Novel single cell RNA sequencing is beginning to reveal how the bone marrow stem cell niche is disrupted by space's hostile environment and how this disruption affects regenerative maintenance of tissues outside the bone.

Life Science Mission Ops to Space

MONDAY 6TH MARCH 2023 | 16:20 - 16:40 | SHEIKH MAKTOUM HALL C

Panelist

Dr. Eliah G. Overbey
Postdoctoral Associate, Mason Lab Institute for Computational Biomedicine, NASA Space Biology Postdoctoral Fellow, Weill Cornell Medicine, USA

TOPIC

The space Omics and Medical Atlas: A Growing Resource for Multi-omic Astronaut Health Measures

Braden Tierney, JangKeun Kim, Jiwoon Park, Nadia Houerbi, Kirill Grigorev, Krista Ryon, Matt MacKay, Jon Foox, Remi Klotz, Veronica Ortiz, Namita Damle, Deena Najjar, J. Sebastian Garcia Medina, Evan E. Afshin, Laura Patras, Sean Mullane, Irina Matei, David Lyden, Min Yu, Ari Melnick, Bader Shirah, Jaime Mateus, Christopher E. Mason

Recent developments in the spaceflight sector have ushered in a renaissance for spaceflight activity, with renewed interest in establishing long-term presences in low-Earth orbit, the moon, Mars, and eventually beyond.

Complicating this, however, is that omics studies are underperformed on astronauts, leaving a knowledge gap in the molecular impact of spaceflight on human physiology and downstream health consequences. To address this gap, the Space Omics and Medical Atlas (SOMA) has been developed to establish a consistent set of multimodal sampling procedures and omics recommendations for profiling astronaut crews, leveraging published methods from the NASA Twins Study. The first set of participants in SOMA was SpaceX's Inspiration4 crew. The Inspiration4 crew participated in extensive multi-omic profiling before, during, and after their 3-day mission in space, generating the most extensive omics profiling of astronauts to date.

This talk will outline details of the SOMA resource, including:

1. the full spectrum of biospecimens collected,
2. the sequencing data generated from these samples, and
3. where data from the Inspiration4 crew will be accessible to the scientific community.

We collected venous blood, capillary blood, saliva, skin swabs, skin biopsies, urine, stool, and Dragon capsule swabs.From these sample sources, we performed whole genome sequencing, single-cell RNA-seq and ATAC-seq, T-cell and B-cell repertoire profiling, spatially resolved transcriptomics, direct-RNA nanopore sequencing, cell-free DNA sequencing, metagenome sequencing, metatranscriptome sequencing, telomere profiling, clonal hematopoiesis assays, and proteomic assays. We are able to profile known consequences of spaceflight, such as the impact of radiation on the genome integrity, changes in immune system cell populations, and viral reactivation monitoring. Additionally, we can observe more granular changes in gene expression, proteomics, and epigenomics, the effects of which are within expected ranges for short-duration flights, but may manifest more severe dysregulation and health consequences on long-duration missions.

Life Science Mission Ops to Space

MONDAY 6TH MARCH 2023 | 16:40 - 17:00 | SHEIKH MAKTOUM HALL C

Panelist

Prof. Joseph Borg
Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta, Msida, Malta

TOPIC

MALETH Program: Life science missions from earth to low Earth orbit and back

In the recent past we have seen an unprecedented advancement in the field of space science exploration, particularly in the area of life sciences.

The International Space Station (ISS) and Low Earth Orbit (LEO) have provided invaluable opportunities for scientists and engineers to study the effects of microgravity on human physiology and conduct research on a variety of biological systems.

In Malta, we have successfully embarked on a series of missions as part of the MALETH program to space that represented our country's first-ever missions to space. This marked a historic milestone in our nation's space exploration journey. This program is a testament to our commitment to advancing scientific knowledge and pushing the boundaries of human exploration.

Our missions to the ISS started in 2021 on SpaceX CRS-23, followed up a year later on SpaceX CRS-25. The research involves cutting-edge research into the effects of spaceflight and microgravity on the human skin tissue microbiomes of diabetic foot ulcers (DFUs). All isolated bacteria are investigated by metagenomic sequencing, and human skin tissue DNA is profiled by whole genome sequencing. Published work so far has shown a small but important number of microorganisms that appear to grow and thrive more in space when compared to earth controls. This research allows further development of new medical technologies and interventions that could revolutionize healthcare on Earth and improve the quality of life for patients inflicted with DFUs and related complications.
This program has also served as a stepping stone towards even more ambitious missions to deeper space, where we are currently exploring the potential for life adaptation and survival beyond Earth's lower orbit. We are excited to continue building upon this historic program with our next mission up this month on SpaceX CRS-27 and in what promises to be a true International Collaboration between countries including the United Arab Emirates and Malta.

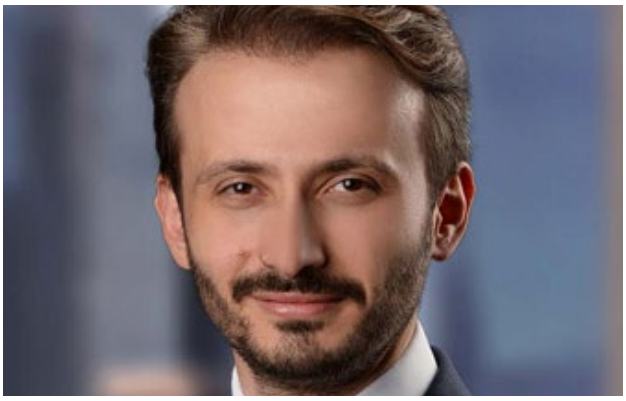
A new joint program with the Ottawa Hospital Research Institute, PLEIADES – has also commenced this year to study the effects of spaceflight and microgravity on erythropoiesis and space-induced anaemia by studying blood samples from SpaceX and Polaris Dawn crew on their first mission.

As we embark on this exciting new era of space exploration, we are proud to lead the way in life sciences research and to continue to push the boundaries of human knowledge and understanding. We look forward to sharing our findings and collaborating with all other nations and organizations to solve real world problems using space as a medium.

Public-private collaboration opportunities in lunar missions

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Co-Moderators



Serdar Turkmen
Partner, Space Lead @Turkmen, Serdar

Panelists

Bernhard Hufenbach
Lead of Commercialization and Innovation Team at European Space Agency (ESA)

Simone Pirrotta
Head of the Robotic Exploration Office at Italian Space Agency (ASI)

Franco Fenoglio
Head of Human Planetary Exploration Programs Unit at Thales Alenia

Christopher Allison
Senior Business Development Manager at Sierra Space

Ashvi Ilott
Principal Operation System Engineer at Surrey Space Technologies Limited (SSTL)

Nasser Alharbi
COO & Co-Founder of Space Copy 3D

Public-private collaboration opportunities in lunar missions

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Co-Moderators

Serdar Turkmen

Partner, Space Lead @Turkmen, Serdar

BIOGRAPHY

A member of Kearney Aerospace, Defense and Security Practice. Leading Kearney's space efforts within the MEA region.

Focusing on national space strategy, scientific missions, national capacity building and commercial opportunities across satellite value chain.

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Bernhard Hufenbach

Lead of Commercialisation and Innovation Team
at European Space Research and Technology Centre

BIOGRAPHY

2006 – Present ESA/ESTEC Lead of Commercialization and Innovation Team

SUMMARY

Bernhard Hufenbach currently acts as head of the ESA strategic planning and outreach office for space exploration. He works since 25 years at ESA in areas such as strategic planning, policy development, programme appraisal and evaluation, strategic partnership development, future studies and programme definition, outreach and technology development with a particular focus on space exploration. He holds two Master degrees from the Technical University of Berlin and Delft in Space Systems and Technologies and Space System Engineering.

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Simone Pirrotta

Head of the Robotic Exploration Office
at Italian Space Agency (ASI)

BIOGRAPHY

2022 – Present	Head of Robotis Exploration missions Office – Italian Space Agency
2012 – Present	Program Manager
2007 – 2012	Reasercher = Italian Space Agency
2006 – 2007	Research fellowship on naval structural dynamics – CNR-INSEAN
2002 – 2005	Contractor for Space Mechanisms Development – Alenia Spazio

SUMMARY

Simone Pirrotta has a Masters in Mechanical Engineering and a PhD in Materials Engineering. He is a member of the Italian Space Agency (ASI) since 2007 and is currently Head of the Robotic Exploration Missions Office.

He acts as Project Manager for the ASI missions: Italian-Kenyan University NanoSatellite (IKUNS), ArgoMoon" (Deputy PM), Light Italian Cubesat for Imaging of Asteroid (LICIACube) with NASA's Double Asteroid Redirection Test (DART), LAser RElativity Satellite (LARES2), Astrobio, and High Energy Rapid Modular Ensemble of Satellites - Scientific Pathfinder (HERMES-SP). He was also in charge of the technical management of the Italian instruments onboard the ExoMars European Space Agency (ESA) mission, and is the Deputy Italian Delegate at the ESA Rover Instrument Steering Committee.

And he is an Italian Delegate for the ESA Exploration and Utilization Board (EUB) and at the International Space Exploration Coordination Group (ISECG). He is also the Point of Contact for the NASA Solar System Exploration Research Virtual Institute (SSERVI) – ASI cooperation.

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Franco Fenoglio

Head of Human Planetary Exploration Programs Unit

BIOGRAPHY

Feb 1980 - Present	Head of Human Planetary Exploration Programs Unit

SUMMARY

Franco leads the main implementation programs for human missions to lunar orbit and lunar surface. More than 30 years of engineering and management experience in space systems, including design of components and thermo-mechanical and life support subsystems, system engineering and management of large and complex pressurized modules for International Space Station (former chief engineer of ISS Nodes 2 and 3) and Space Exploration programs.

Large knowledge of space international context, either European and American, including spent colocation periods in some major space international entities (in France, Germany and in USA at NASA JSC and KSC sites). Currently Head of the Human Planetary Exploration Programs Unit in Thales Alenia Space, Turin site, Italy including Thales Alenia Space programs for the Gateway elements (I-HAB, ESPRIT) and programs / new initiatives for lunar surface missions (Human Landing System, surface habitats).

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Christopher Allison

Senior Business Development Manager at Sierra Space

BIOGRAPHY

May 2012 – Jun 2021	Sierra Nevada Corporation
Jun 2021 – Present	Sierra Space

SUMMARY

Christopher Allison is a Systems Engineer with Sierra Nevada Corporation (SNC) Space Systems. In support of SNC's Dream Chaser® orbital vehicle program, he serves as the Landing Site Coordinator and Flight Termination System Lead. In recent years, Allison has represented SNC to the Federal Aviation Administration, Department of State, and Federal launch Ranges coordinating compliance with government requirements and regulations in support of planned Dream Chaser launches and landings.

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Ashvi Ilott

Principal Operation System Engineer,
Surrey Space Technologies Limited

BIOGRAPHY

May 2012 – Jun 2021	Sierra Nevada Corporation
Jun 2021 – Present	Sierra Space

SUMMARY

Ashvi is an experienced Spacecraft Operations Engineer, having worked in the field of spacecraft operations for more than 15 years.

She has been involved in operations on both Geostationary missions and Low Earth Orbit missions. Ashvi holds a M.Eng. in Aeronautics and Astronautics from the University of Southampton.

She has more than 25 years' experience in the spacecraft industry and has worked in a variety of disciplines including EVT, AOCS, propulsion procurement and systems engineering. She has been employed by Surrey Satellite Technology Ltd. since 2010 and currently is responsible for space situational and space domain awareness activities within the operations team. In addition to this she is also the operations team's interface to external companies for trialling new SST capabilities and SWE reporting.

Ashvi is a key member of the Lunar Pathfinder team, supporting both systems engineering and spacecraft operations activities for this exciting mission.

TUESDAY 7TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Nasser Alharbi

COO & Co-Founder of Space Copy 3D

BIOGRAPHY

Sep 2022 - Present	Co-Founder and Chief Operating Officer – Space Copy

SUMMARY

This project was created in partnership with the Techstars Pre-Accelerator Program with the Saudi Space Commission.

The "Space Copy 3D Printer" project details the development of a 3D printer that analyzes lunar soil samples and uses IR/Raman spectroscopy to analyze the chemical composition of regolith, and create a database with an accompanying catalog that lists what the printer can create with the lunar soil.

Developing technology for in-situ resource utilization (ISRU) of lunar regolith is one of the main priorities of current aerospace manufacturing. "Space Copy" introduces a rapidly deployable technology that allows astronauts on the lunar surface to conduct soil sample tests, and then utilize these resources to create tangible goods that will help extend their mission. "Space Copy" would be readily available for use on both the Moon and Mars.

Operations Sustainability and Impact of Space Technologies on Earth Sustainability

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Co-Moderators

Elena Siegel
Partner, Sustainability @Siegel, Elena

Panelists

Laith Hamad
CEO & Board Member of OneWeb-NEOM JV

Dr John Sheldon
Partner at AzurX

Charity Weeden
VP Global Space Policy and Government Relations of Astroscale

Bocar Ba
Commissioner, UN Broadband Commission for Sustainable Development (UNBBCom) Board Advisor, World Space Sustainability Association (WSSA)

Operations Sustainability and Impact of Space Technologies on Earth Sustainability

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Co-Moderators

Elena Siegel

Partner, Sustainability @Siegel, Elena

BIOGRAPHY

Elena is a Partner with Kearney in Dubai, a leading global strategy consultancy and a sitting member of the Global Council for Sustainable Development Goal 5. She works with companies and governments across a wide range of industries throughout the world to solve their most critical strategic issues.

After completing her MBA at Chicago Booth in 2010, Elena joined Monitor Group in Dubai as a strategy consultant, later Monitor Deloitte, where she worked across a range of industries in the Middle East, Africa and North America.

Prior to her MBA, Elena's experience was with the Leo Burnett Company as an Account Director in Chicago and Frankfurt, Germany.

She was responsible for leading the development of domestic and international consumer marketing programs that included brand strategy creation, above- and below-the-line advertising, promotions development and packaging design.

Topical Expertise: Sustainability, ESG, and Gender Equality; Advanced Technology; Development Finance; Consumer Goods

Functional Expertise: Corporate Strategy; Organizational Transformation; Consumer Segmentation; Market Entry; Growth StrategyElena.

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Laith Hamad

CEO & Board Member of OneWeb-NEOM JV

BIOGRAPHY

Sep 2011 – Aug 2017	Director, Middle East & North Africa - Access Partnership
Jul 2017 – Present	VP – Government and regulatory Engagement - OneWeb

SUMMARY

A telecom regulatory engineer / satellite geek and Director of Market Access at OneWeb. Working on Satellite Regulatory Compliance, International Affairs, Government Relations and Market Access, Infrastructure, State National Security and Lawful Interception, and fundraising campaigns with Sovereign Wealth Funds.

Before devoting my work fulltime to OneWeb, I have worked as a consultant for major telecom players providing advice on global satellite and mobile regulatory issues, and facilitating coordination of agreements between clients and national telecommunications operators in the Middle East and Africa region.

Laithl contributed to the implementation of international agreements affecting satellite technology innovations and best practices in national regulatory processes. Assisted satellite operators to introduce and manage their services a complete market access by engaging with national governments and regulatros, and influencing space polices and regulations. I regularly participate in the ITU-R conferences and events, and I have engaged in its practices internationally and regionally on the issues of the public policies related to satellite communications.

I previously run a telecom and media industry group for four years - a private sector group charged with advising the UAE government on optimizing policy.

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Charity Weeden

VP Global Space Policy and Government Relations of Astroscale

BIOGRAPHY

Sep 2007 – Jul 2011	Flight Support Readiness Manager, Operations Engineering - Canadian Space Agency
Jul 2011 – Aug 2015	Assistant Attaché Air and Space Operations – Canadian Forces
Feb 2016 – Dec 2017	Senior Director of Policy - Satellite Industry Association
Oct 2015 – May 2022	Lquinox Consulting - President
Jan 2016 – Present	Canadian Global Affairs Institute -Fellow
Jul 2019 – Present	Vice President, Global Space Policy and Government Relations - Astroscale

SUMMARY

I live at the nexus of technology, policy, and sustainability.

At Astroscale U.S., I coordinate a global team of policy professionals in government relations, licensing and regulation, best practice and standards formulation, strategy and plans, and more. I harmonize these policy efforts across Astroscale's global locations, working in step with engineering, business development, and marketing and communication teams.

Together, we are defining the path forward for an in-orbit services market.

My 30-year aerospace career has given me perspective: why teamwork, leadership, and service matters and why we all win when we include diverse voices. I am a fellow at the Canadian Global Affairs Institute, board advisor to Via Satellite, mentor to young professionals, guest lecturer at George Washington University and other academic institutions, and podcast co-host on all things space sustainability (check out Space to Grow!).

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Dr. John Sheldon

Partner at AzurX

BIOGRAPHY

Apr 2014 - Aug 2016	Senior Fellow – The Atlantic Council
Sep 2015 - Jun 2020	Chairman – ThorGroup GmbH
Aug 2016 - Dec 2021	Advisor – Ministry of Defence UAE
Ju 2020 - Jul 2022	Founder and Principle Consultant – Lunapolitics
Jul 2021 - Present	Partner – AzurX
Jul 2022 - Present	Co-Founder and managing partner – AstroAnalytics Ltd
Nov 2022 - Present	Research Fellow – ESSCA Ecole de Management

BIOGRAPHY

Experienced business and policy professional with a demonstrated history of working in the defense and space industry. Strong policy making and business experience and thought leadership in space and cyberspace Policy, defense strategy, geopolitical and geo-economics analysis, diplomatic and policy reporting, expert subject matter research, writing, and publishing, and bridging the divide between the policy, business, and technical communities.

WEDNESDAY 8TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL C

Panelists

Bocar Ba

Commissioner, UN Broadband Commission for Sustainable Development (UNBBCom) Board Advisor, World Space Sustainability Association (WSSA)

BIOGRAPHY

CEO	SAMENA Telecommunications Council – UAE
Commissioner	Broadband Commission for Sustainable Development – UN
Chairman	21st Century Funding & Financing Models Working Group – Broadband Commission
Chairman	Industry Advisory Group for Development Issues & Chief Regulatory Officers Meeting (IAGDI/CRO) - ITU
Member	Review Board, 5th Generation Collaborative Regulation (G5) Benchmark - ITU
Champion	EDISON Alliance – World Economic Forum
Board Advisor	MBRSC-led New Initiative on Space Sustainability – UAE & Region

SUMMARY

For over 30 years, Bocar BA has been delivering impact in the Telecom/ICT industry of the MEA region, facilitating collaboration among private-sector and government-sector entities in the pursuit of digitalization and socio-economic conducive policies. BA's professional engagement is recognized in industry-wide advocacy activities, especially toward promoting investment sustainability in the private sector of the Middle East. His innate people-centric approach has mobilized multiple consensus-building platforms, cross-regional stakeholders, and issue-specific advocacy on important sector-development challenges. He is collaborating with leading platforms and global telecommunications development institutions, including the ITU, UN Broadband Commission, the World Bank (WB), and World Economic Forum (WEF), among others, as an objective-minded representative of the private sector and as an advocate of effective policy-making and future-friendly regulation, which are crucial for fulfilling the Sustainable Development Goals (SDGs) that all nations across the globe have agreed to in the larger interest of socio-economic development needs. BA is a principal advisor to various business, investment, and regulatory entities and assists governments in addressing matters relating to digital infrastructure investment, innovation catalysts, sustainable digital economy, job-creation, and citizen-centric public-sector delivery through the use of ICTs. Bocar BA has chaired consensus-building and contributed to the development of recommendations for leaders worldwide on 21st century funding and financing models, to help accelerate digital infrastructure development and digitalization. He is also advising the Mohammed Bin Rashid Space Center (MBRSC) on a space-sustainability industry segment and on matters relating to digital economy and space economy.

STO - Special Session

To-orbit transportation, in-orbit support and on-Earth recovery of space payloads

A discussion on the emerging LEO marketplace, with its new operational challenges, from the commercial and institutional prospective and the solutions offered by new space transportation vehicles.

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Co-Moderators

Cynthia Bouthot
President at Space Commerce Matters

Fabio Caramelli
Space Rider Payloads and Exploitation Manager at European Space Agency

Panelists

Dante Galli
Space Rider Programme Manager at European Space Agency

Hélène Huby
CEO and Co-founder at the Exploration Company

Dr. Molly Mulligan
Senior Director of Business Development at Redwire

Christopher Allison
Senior Business Development Manager at Sierra Space

Vincenzo Giorgio
CEO at ALTEC

Roberto Provera
Director, New Initiatives and Innovation, Exploration and Science at Thales Alenia Space

STO - Special Session

To-orbit transportation, in-orbit support and on-Earth recovery of space payloads

A discussion on the emerging LEO marketplace, with its new operational challenges, from the commercial and institutional prospective and the solutions offered by new space transportation vehicles.

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Co-Moderators

Cynthia Bouthot

President at Space Commerce Matters

BIOGRAPHY

Cynthia Bouthot is President of Space Commerce Matters (SCM) and pioneer in Low Earth Orbit Demand Creation. She was a founding member of CASIS and the manager of the International Space Station National Lab (ISSNL) before this. She founded the Collaborative Innovation Group and the Russia Innovation Collaborative and was the Consul and head of Trade and Investment for the British Consulate in Boston. She has extensive experience in both the public and private sectors, having directed management systems for the MA Port Authority and headed up the State's trade office in London. In the private sector, she has been Global Lead of Business Readiness for EMC's ERP implementation, and as Director of Industry Consulting at Benchmarking Partners.

STO - Special Session

To-orbit transportation, in-orbit support and on-Earth recovery of space payloads

A discussion on the emerging LEO marketplace, with its new operational challenges, from the commercial and institutional prospective and the solutions offered by new space transportation vehicles.

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Co-Moderators

Fabio Caramelli

Space Rider Payloads and Exploitation Manager
at European Space Agency

BIOGRAPHY

Fabio Caramelli is currently the Payload and Exploitation Management within the Space Rider Project, in charge of the Payload Aggregate mission preparation for Space Rider First Flight and subsequent missions and the definition of Space Rider Exploitation and Commercialization strategy. Fabio was Project Manager of the Vega Small Spacecraft Mission Service (SSMS), whose first flight model was flown on Vega flight 16 (VV16) on 2nd September 2020 and Mission manager of the Vega Verta missions. Previously in charge of the ESA ATV (Automated Transfer Vehicle) Propulsion system.

Fabio holds a Master degree in Mechanical Engineering at “La Sapienza” Rome University.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Dante Galli

Space Rider Programme Manager at European Space Agency

BIOGRAPHY

Dec 2022 - Present	Space Rider Space Segment Manager
Jan 2016 - Dec 2020	VEGA - C Launch System Lead Synthesis Engineer
May 2014 - Dec 2015	VEGA Launcher System Engineer

SUMMARY

Graduated in Aerospace Engineering at Rome University La Sapienza, has started his space activity as thermo-structural engineer for Thales Alenia Space, working on Radarsat-2 programme

He worked since 2003 on the VEGA project at AVIO, as Product Engineer responsible for the AVUM 4th stage AIT.

He joined European Space Agency in 2007, working first as Ground Segment Mechanical Infrastructures Manager for the VEGA launch site in Kourou. Then he moved to the launch vehicle, serving ESA first as System Engineer and then as Lead System Synthesis Engineer for the VEGA-C Programme.

In 2020 he has joined the Space Rider Programme as Space Segment Manager, responsible for all the development and qualification activities of the Space Rider vehicle.

He is now Space Rider Programme Manager, in the ESA Directorate of Space Transportation, responsible for the full development of the system: space segment, ground segment and landing site.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Dr. Molly Mulligan

Senior Director of Business Development at Redwire

BIOGRAPHY

2017 Center for the Advancement of Science in Space (CASIS)
2014 SpacePharma

SUMMARY

Dr. Molly Mulligan is director of business development at Redwire's In Space Manufacturing and Operations business unit.

In this role, she supports business development efforts for the company's biotechnology and materials science portfolio. Prior to joining Redwire, Dr. Mulligan worked at Space Commerce Matters as the Director of Commercialization Strategies, where she led efforts in commercial allocation and commercialization strategies.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Vincenzo Giorgio

CEO at ALTEC

BIOGRAPHY

JAN 2013 - Present	Vice President Institutional Marketing and Sales at Thales Alenia Space and ALTEC CEO
JAN 2008 - Present	Director Science & Robotic Exploration

SUMMARY

Graduated in Electronics at Naples University Federico II, has started his space activity designing communication systems and on board computers.

He has been responsible within former AERITALIA of science projects like Hipparcos and Integral, working as well for the International Space Station.

He has been VP for Science and Exploration of Thales Alenia Space Italia participating to important European in flight projects like GOCE, Herschel & Plank and of ongoing projects like: BepiColombo targeting Mercury, Solar Orbiter and Exomars mission for the Robotic Exploration of the red planet.

Since 2004 he is member (since 2016 co-chair) of ISEC "International Space Exploration Committee".

He is now Vice President for Institutional Marketing & Sales at Thales Alenia Space at JV level and CEO of ALTEC S.p.A. service company controlled by TAS.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Hélène Huby

CEO and Co-founder at the Exploration Company

BIOGRAPHY

Aug 2021 - Present	The exploration Company - Co-Founder & CEO
Sep 2018 - Present	Founder + Chairman - Urania Ventures
Dec 2018 - Aug 2021	VP Orion-ESM
Dec 2015 - Jan 2018	Program Director
Sep 2013 - Jun 2016	Head of Innovation
Dec 2008 - Nov 2012	VP Germany & Program Director
Jan 2008 - Dec 2008	CEO Office
Oct 2006 - Jan 2008	Senior Product Manager
Apr 2006 - Oct 2006	Head of European Affairs

SUMMARY

Helene is Co-Founder & CEO of The Exploration Company.

She has served as an executive at Airbus Defence & Space and ArianeGroup both in operational and strategic roles: from starting as Head of Innovation to leading major European space programs.

She is the Founder and Chair of Urania Ventures, a deep tech investment company. She is the Founder and Chairman of The Karman Project, a non-profit foundation which fosters trust, independent dialogue and cooperation between the ones who shape the future of space.

She graduated from ENS-Ulm, Sciences-Po Paris and ENA.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Christopher Allison

Senior Business Development Manager at Sierra Space

BIOGRAPHY

May 2012 – Jun 2021	Sierra Nevada Corporation
Jun 2021 – Present	Sierra Space

SUMMARY

Christopher Allison is a Systems Engineer with Sierra Nevada Corporation (SNC) Space Systems. In support of SNC's Dream Chaser® orbital vehicle program, he serves as the Landing Site Coordinator and Flight Termination System Lead. In recent years, Allison has represented SNC to the Federal Aviation Administration, Department of State, and Federal launch Ranges coordinating compliance with government requirements and regulations in support of planned Dream Chaser launches and landings.

STO - Special Session

FRIDAY 10TH MARCH 2023 | 10:30 – 11:30 | SHEIKH MAKTOUM HALL B

Panelists

Roberto Provera

Director, New Initiatives and Innovation,
Exploration and Science at Thales Alenia Space

BIOGRAPHY

Oct 2016 - Present	Director, New Initiatives & Innovation, Exploration & Science - Thales Alenia Space
2009 - Present	Director, Human Spaceflight and transportation Programs - Thales Alenia Space
2004 - 2009	Director Human Space Transportation and Exploration Programs
2004	Senior Vice President of Infrastructures and Scientific Satellites with the responsibility for Business Development
2003	Head of System Engineering Unit and Deputy Head of Avionics & Operations Director
1992 - 2002	Lead - Operations & Logistics Department

SUMMARY

Roberto has had significant roles in projects like Columbus Laboratory, Multipurpose Logistics Module, Delta II Second Stage Tanks, EXPERT, Intermediate Experimental Vehicle (IXV), Cygnus Pressurized Cargo Module, Orion European Service Module.

He is member of the board of ALTEC (Aerospace Logistics Technology Engineering Company), a public-private company owned by Thales Alenia Space and the Italian Space Agency and active in engineering and logistics services for the International Space Station as well as in the implementation of planetary exploration missions.

Roberto Provera graduated at Politecnico di Torino in 1985 in Nuclear Engineering.

Space for all

GMV has a long-standing reputation as the most competent and reliable European supplier and integrator of ground segment infrastructure and related services and operations including remarkable experience in Space Surveillance and Tracking (SST) where 100+ engineers work in 8 countries (ES, US, UK, FR, DE, PT, PL & RO), being the largest SST-dedicated team in Europe. GMV counts on a whole set of COTS operational SW for SST data processing (***Closeap***).

GMV has worked in SST for ESA since late 90's and participating in tens projects in the ESA's SSA/SpaceSafety program, including the lead of the ESA's SST Core Software and of the CREAM cornerstone.

In Spain, GMV leads the development and operation of the Spanish SST Operations Centre (S3TOC) as among many other activities for CDTI. In France, GMV provides SST-related support to CNES since year 2012 and leads the development and operation of the CNES's BAS3E simulator for SST, among other activities for CNES. In Germany, GMV leads the Evolution of the GSSAC Mission System (GMS) and the Development of the GSSAC Basic Algorithms for SSA Data Processing (BaSSTDa) for DLR and provides the Core Software based on its COTS SST Software (***Closeap***) for the German Armed Forces' SSA Centre. In the UK, Romania, Poland and Portugal, GMV participates in a large number of ESA activities in the SST domain as well as contributing to the development of their national SST systems. Additionally, in commercial SST, GMV operates since 2017 its proprietary ***Focusoc*** Operations Centre for the provision of commercial collision avoidance services.

Finally, in military SST, active in the EDIDP&EDF programs among several other initiatives including the support to the development of the German and Spanish military SST systems and leading the SST data curation for SPACECOM in the US.

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KEYNOTE SPEAKERS

Tuesday 7th March + DIFC Courts: Courts of Space

Thursday 9th March + Standards and Interoperability of Space Mission Success

Keyote Speaker 01

DIFC Courts: Courts of Space

TUESDAY 7TH MARCH 2023 | 2:00 PM – 2:30 PM | SHEIKH MAKTOUM HALL C

Amna Al Owais

Chief Registrar, DIFC Courts

BIOGRAPHY

2006 – Present	DIFC Court – Chief Executive and Registrar
2018 – Present	Dispute Resolution Authority
2004 – 2005	Lawyer – Hadef & Partners

BIOGRAPHY

The Emirati lawyer became the chief executive and registrar of DIFC Courts in 2017, after being the deputy chief executive of the Dispute Resolution Authority in 2014. Al Owais has played a major role in the development of DIFC Courts, particularly in creating the Dispute Resolution Authority and the Pro-Bono Programme, the first of its kind

ABOUT COURTS OF SPACE

The DIFC Courts and the Dubai Future Foundation (DFF) embarked on a Courts of the Future initiative, Courts of Space.

The launch of the project signals to the international space community the intent of the UAE to play a leading role in advancing its judicial systems to specifically direct capacity and capability to commercial space-related disputes.

The Courts of Space initiative has three (3) main objectives. As a first step, an international working group of public and private sector bodies and experts were tasked with exploring space-related legal innovations and providing an outlook on potential outcomes of scenarios revolving around space-related disputes.

Since the launch of the initiative, two (2) editions of the Space Disputes Guide (SDG) were launched, encompassing a set of guidelines to support such space-related disputes, with the parallel training of judges to become space-related dispute experts after having received courses on space regulations by international bodies and regional agencies.

Keyote Speaker 02

Standards and Interoperability for Space Missions Success

THURSDAY 9TH MARCH 2023 | 8:30 AM – 9:00 AM | SHEIKH MAKTOUM HALL B

Sami W. Asmar

General Secretary of the Consultative Committee for Space Data Systems (CCSDS)

ABOUT THE SPEAKER

Sami is the General Secretary of the Consultative Committee for Space Data Systems (CCSDS) and its NASA delegate as well as Liaison to the Interagency Operations Advisory Group.

Sami is the manager of the commitments office for the Interplanetary Network Directorate at NASA's Jet Propulsion Laboratory, California Institute of Technology, a radio science co-investigator on several solar system missions, and a technologist leading institutional initiatives to advance radio and laser link utilization for planetary exploration. He authored the book "Radio Science Techniques for Deep Space Exploration (Wiley & Sons, 2022). He received three NASA Exceptional Achievement Medals and a Space Ops Exceptional Achievement Medal for creating a system that has transformed space operations during critical events.

ABOUT THE TALK

There is a bevy of lunar missions on the horizon from various space agencies, consortiums, and the private sector. Many of them employ exciting new exploration methods, mission concepts, and communications scenarios. To provide opportunities for coordination of these anticipated missions, leading agencies and the associated community have formed a Lunar Communications Architecture Working Group as well as a Lunar Communications & Navigation Working Group. For planetary exploration, a Mars and Beyond Communications Architecture Working Group addresses the concepts, operational scenarios, and technologies for future missions, starting with Mars. With the diverse interests and backgrounds, ambitious and complex technologies, and the fact that many contributors are new to the field, expectation of success in the area of interoperability between them requires the utilization of standards in space data systems.

The Interagency Operations Advisory Group (IOAG) and the Consultative Committee for Space Data Systems (CCSDS) have been leading this effort. Furthermore, the Space Frequency Coordination Group (SFCG) plays a critical in coordinating the spectrum allocation and channel assignment to prevent interference among missions. The IOAG provides recommendations for common needs across multiple agencies related to mission operations, space communications, and navigation interoperability. Celebrating its fortieth anniversary, the CCSDS is a multi-national forum with 28 nations collaborating to develop the most well-engineered space communications and data handling standards in the world. It has the goal of enhancing governmental and commercial interoperability and cross-support, while also reducing risk, development time & project costs.

To date, more than 1000 space missions have chosen to fly with CCSDS-developed standards.

The next significant phase of space operation, namely human spaceflight to the Moon and beyond, places the utmost importance on human safety. This requires tremendous coordination among all agencies and brings increased attention to the need to build interoperability into the design of flight and ground operational systems. The utilization of standards can lead to increasing data throughput and enhancing the science and exploration objectives, to the benefit of all.

STUDENTS AND YOUNG PROFESSIONALS

+ Space Operation for constellation of CubeSat/ Nanosatelite Workshop

Students and Young Professionals

Space Operations for Constellation of CubeSat / Nanosatellite Workshop

SUNDAY 5TH MARCH | 09:00 - 16:00 | SHARJAH D

Do you want to learn how to carry out space operations for Constellation of CubeSats/Nanosatellites?

Space Generation Advisory Council (SGAC) is collaborating with the Mohammed Bin Rashid Space Centre (MBRSC) to host the workshop in Dubai, United Arab Emirates.

It will be held in conjunction to the SpaceOps 2023 conference. During this one day event, students and young professionals will have the opportunity to learn about different approaches to space operations as well as to hear about international peers working on cubesat/ nanosatellite constellations projects.

During this workshop, participants from around the world will learn about the different philosophies behind cubesat/nanosatellite operations. Two Participants or group of participants will also have the opportunity to showcase their project.

After the lectures by each representative, all participants will have a chance to engage in discussions via a panel discussion.

The workshop is open to students and young professionals. If you aspire to work for a company, an international space agency, or if you are interested in starting your own satellite operations company, then this one day workshop is a great opportunity to learn about the challenges and excitement of space operations.

Students and Young Professionals

Space Operations for Constellation of CubeSat / Nanosatellite Workshop

SUNDAY 5TH MARCH | 09:00 - 16:00 | SHARJAH D

AGENDA

TIME	AGENDA	DETAILS
09:00	**Registration check-in**	**Registration Required (no fee)**
09:15	Welcome	SGAC Workshop- Chair : Chiara Cocchiara Welcome message : Fatima Ahmed Al Marzouqi (MBRSC) Welcome message : Viqar Abbasi (CSA)
09:45	Participation introduction	**Ice Breaker**
10:15	SYP Presentations	"SolSat: A Low-Cost -3U CubeSat System for Space Weather applications" Yousuf Mohammed Faroukh "Sharjah-Sat1- mission objectives and overview" Mohammed Bin Ashour "Overview of AlainSat1-: an international student collaboration space mission" Hassan Al-Ali and Abdullah AlSalmani
11:30		**LUNCH**
13:00	Technical Presentations	"Design and Development of a CubeSat-scale Robotic Arm Test Bed to be Deployed to the International Space Station" – Jin S. Kang Ph.D, Associate professor in Aerospace Engineering Department (USNA) "Ressources/Services/Demands relationship on. a federated cubesat constellation system operation perspective." – Carlos Gomes Batista, Space Systems Engineer "Italian first deep space missions to the Moon and beyond: ArgoMoon and LICIACube" Simone Pirrotta Ph.D, Head of the Robotic Exploration Office at Italian Space Agency (ASI)
14:30		**COFFEE BREAK & GROUP PHOTO**
14:45	Panel Discussion	**PANELISTS** Mohammed Bin Ashour, – Sharjah University Simone Pirrotta Ph.D, Head of the Robotic Exploration Office at Italian Space Agency (ASI) Maryam Obaid Al Nabooda, Communication Unit, Space Engineering Department, Mohammed Bin Rashid Space Centre (MBRSC) **MODERATOR** Ahmed Abdulla Alshehhi, Senior Engineer – Space Payload & Instruments Section, Space Engineering Department, Mohammed Bin Rashid Space Centre (MBRSC)
15:45	Closing Remarks	SGAC Workshop Co-Chair : Charlotte Flory
17:00		**TECHNICAL TOUR TO MBRSC**

Seats are limited. Applications will be evaluated by the event Organising Committee and candidates will be notified via email on the outcome. Apply ASAP!

ORGANISERS AND CONTACTS

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FULL TECHNICAL PROGRAMME

PROGRAM AGENDA

TIME	INFORMATION	LOCATION
07:30 - 17:30	Registration & Preview	DWTC
09:00 - 10:00	Opening Ceremony	Sheikh Maktoum Halls B+C
10:00 - 11:00	Exhibition Opening & Coffee Break	Exhibition Area and Sheikh Maktoum Hall C
11:00 - 12:00	Plenary Session 1 - International Collaborations on Space Missions	Sheikh Maktoum Halls B+C
12:00 - 13:30	Lunch Break	Exhibition Area and Sheikh Maktoum Hall C
13:30 - 18:00	Oral Presentations	Several locations. See following pages for details

MONDAY 6TH MARCH 2023	LOCATION DUBAI A+B	MDM-1 MISSION DESIGN & MANAGEMENT (MDM)			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	183	Docking Video Transfer by On-Orbit Wireless LAN Communication and Application to the Docking Demonstration Mission on HTV-X	Hachiya Yuri	Mission Design & Architecture	Alice Bowman (JHUAPL) Youeyun Jung
14:00 - 14:30	555	The International Planetary Sunshade System - An Umbrella Project Combining Sustainable Energy Supply with Mitigation of Global Warming	Tharshan Maheswaran		
14:30 - 15:00	218	From the first to the next Sentinels generation: FOS evolutions within a fully operational ground segment	Eduardo Zornoza		
15:00 - 15:30	152	HORA, a Moon habitat mission	Alexandra-Maria Titel		

MONDAY 6TH MARCH 2023	LOCATION DUBAI C	OC-1 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	291	SatDevOps: A Novel Automated Satellite Operations Methodology	Brunston Poon	Spacecraft Autonomy	Mohammed Al Blooshi (MBRSC) Michelle Baker
14:00 - 14:30	233	Lessons Learned from Automating Heterogeneous Spacecraft Systems	Lucas Bremond		
14:30 - 15:00	354	Autonomous Space Operations Planner and Scheduler (ASOPS): Optimal and Autonomous Operations in Space	Francesco Porcelli		
15:00 - 15:30	386	Flying a satellite by a robot - Automated Station Keeping Maneuvers can replace the traditional commanding by human	Viktor Schwarz		

MONDAY 6TH MARCH 2023	LOCATION DUBAI D	GSE-1 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	330	InSight: the exploitation operations of the Martian Seismometer from the SISMOC Operations Center	Philippe Combes	Payload Monitor and Control	Navid Dehghani (JPL) Francois Jocteur-Monrozier
14:00 - 14:30	433	Advancing Operations for Lunar Surface Exploration and Prospecting with Mission Control Software	Matt Cross		
14:30 - 15:00	569	Securing and improving SEIS and APSS instruments operations with internal dedicated tools	Emilien Gaudin		
15:00 - 15:30	374	OPSWEB – A comprehensive management tool for mission operations	Jan Pitann		

MONDAY 6TH MARCH 2023	LOCATION DUBAI E +F	AI-1 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	307	ESTIM: the ESTrack Investigation and Monitoring tool for analysis of ground station passes	Gabriele De Canio	AI Methods and Algorithms	Evridiki Ntagiou Tristan Edwards
14:00 - 14:30	331	Utilizing Machine Learning methods for classifying Telemetry of Human Spaceflight Systems	Carsten Hartmann		
14:30 - 15:00	431	Improving AI Monitoring of Early Life Satellites Using Transfer Learning	Audric Baron		
15:00 - 15:30	475	On-board Guidance and Control for low-thrust orbit transfers using Deep Reinforcement Learning	Luca Romanelli		

MONDAY 6TH MARCH 2023	LOCATION AJMAN A	CAN-1 COMMUNICATIONS ARCHITECTURES + NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	484	Weather forecast based satellite operations at ESA	Maria Montagna	Network Operations and Technology	Harry Shaw Pierre-Alexis Lagadrilliere
14:00 - 14:30	671	Development of a Ground Multi-Mission Low-Cost Optical Terminal (LCOT) for Free-Space Optical Communications	Haleh Safavi		
14:30 - 15:00	344	Dynamic Onboard Routing Algorithm for LEO Satellite Constellations	Abdelrahman Metwally		

MONDAY 6TH MARCH 2023	LOCATION SHARJAH D	FE-1 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	404	Chandrayaan2- Orbiter Operations: Challenges & Learnings	Debashish Paul	Operations Management 1	Patel Keyur C (NASA JPL) Hubert Fraysse (CNES)
14:00 - 14:30	563	What is it like to operate the James Webb Space Telescope?	David Hunter		
14:30 - 15:00	423	Operations approach for keeping the Mars Science Laboratory ChemCam instrument safe from sun exposure	Laurent Peret		
15:00 - 15:30	401	Looking Back at 8 Years of Operating ISRO Mars Orbiter Mission: Challenges and Lessons Learned	Bijoy Kumar Dai		

MONDAY 6TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	HFT-1 HUMAN FACTORS TRAINING AND KNOWLEDGE TRANSFER			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	289	Future approach for GEO Ground Stations Monitoring and Control (M&C) in the Mission Control Room (MCR) – the EUMETSAT Perspective	Philippe Combes	Control Rooms and Operations Rooms, Tools & Techniques	Kevin Marston (Eumetsat) Victor Grycenkov (NOAA)
14:00 - 14:30	441	Towards Leveraging Augmented and Virtual Reality for Spacecraft Mission Operations at ESOC	Ruediger Gad		
14:30 - 15:00	648	Development of mission control centres for the 21st Century	Joerg Schmittroth		
15:00 - 15:30	290	MOA - The Knowledge Management System of Real-Time Flight Operations	Isaac Passmore		

15:30 - 16:00

COFFEE BREAK

MONDAY 6TH MARCH 2023	LOCATION DUBAI A+B	MDM-2 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	230	Venera-D multipurpose mission design	Vladislav Zubko	Mission Design & Architecture	Chiara Maria Cocchiara Gregor Rossmanith
16:30 - 17:00	100	Evaluation of GFRP Composite Material in CubeSats Structures	Yaqoob Alqassab		
17:00 - 17:30	356	Investigation of the mission to the L1 libration point with the use Moon flyby and solar sails	Enesh Mukhamedova		
17:30 - 18:00	634	VIPER Lunar Rover Agile Mission Systems	Jay Trimble		

MONDAY 6TH MARCH 2023	LOCATION DUBAI C	OC-2 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	175	Automated Ground segment for EO constellation: re-imagining spacecraft operations to meet strategic and commercial challenges	Baptiste Schandeler	Ground System Autonomy	Dave Welch (LASP) David Milligan
16:30 - 17:00	198	Mission and operations planning for small-satelite constellations using autonomous systems	Mohammed Irfan Rashed		
17:00 - 17:30	292	Multi-Mission Spacecraft Operations by a single operator with minimal impact on Science return	Mithrajith Edirimanne		
17:30 - 18:00	192	Enhancing Lunar Operation Architecture Through Increasing Efficiency of Wireless Power Delivery	Jin Kang		

MONDAY 6TH MARCH 2023	LOCATION DUBAI D	GSE-2 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	130	Enabling Voyager 2 Science Data Return During Heliopause Transition with a Low-cost Portable SDR System	Timothy Pham	Ground Stations Architecture & Challenges	Claude Audouy (CNES) Per Gustav Porsanger (KSAT)
16:30 - 17:00	165	How does the CNES Multi-mission network adapt to the needs of New Space?	Jerome Lavernhe		
17:00 - 17:30	691	A Bistatic Multi Spacecraft per Aperture UHF Ground Station	Robin McNeill		
17:30 - 18:00	164	GSMC-CC, a Ground Station Monitoring & Control System based on the European Ground System Common Core	Alessio Di Fazio		

MONDAY 6TH MARCH 2023	LOCATION DUBAI E +F	AI-2 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	305	OCAI: the Operations CompAnIon to support decision making of flight control teams	Gabriele De Canio	Integration and IF in Operational Ground Segments - 1	Michael Schmidhuber (DLR) Haleh Safavi
16:30 - 17:00	464	A Modern Approach to Visualize Structured and Unstructured Space Missions Data	Agnese Del Moro		
17:00 - 17:30	151	Towards INtelligent automated Functional and Security Testing (INFAST)	Julio Vivero		
17:30 - 18:00	224	Towards a worldwide monitoring system against GNSS Spoofing and Jamming based on LEO constellations and ML/AI	Francisco Gallardo López		

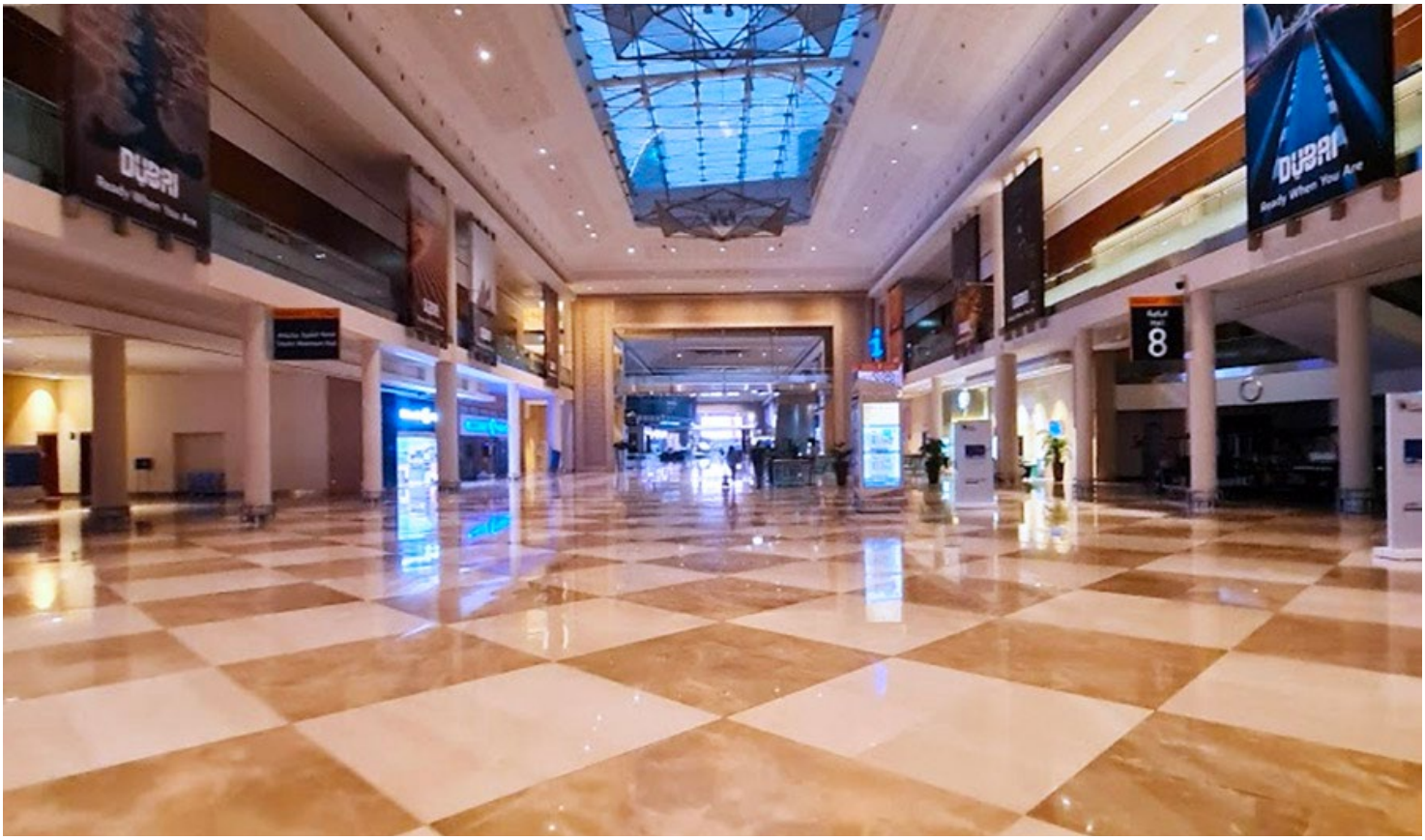
MONDAY 6TH MARCH 2023	LOCATION AJMAN A	CAN-2 COMMUNICATIONS ARCHITECTURES & NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	390	An acceleration study of a DTN implementation using a System-on-a-chip	Yu Morinaga	Network Advances	Daniel Fischer Haleh Safavi
16:30 - 17:00	168	SAR/ Galileo ground segment: An example of networking ot meoluts to improve localization performance	Chiara Russano		

MONDAY 6TH MARCH 2023	LOCATION SHARJAH D	FE-2 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	465	Operation Plan and Result of CubeSat Lunar Lander OMOTENASHI	Ryo Hirasawa	Real-time flight control, lessons and plans 1	Michel Doyon Katrin Wirth
16:30 - 17:00	262	Pushing the limits of Gaia ground segment automation: lessons learnt from a lights-out scenario	Marco Casanova Álvarez		
17:00 - 17:30	578	Challenges and creativity in the operations of the three senior ESA PROBA satelites	Stijn Ilsen		
17:30 - 18:00	619	HP3 - Experiment on InSIght Mission - Wrap-up Operations on Mars	Christian Krause		

MONDAY 6TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	HFT-2 HUMAN FACTORS TRAINING AND KNOWLEDGE TRANSFER			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	600	Augmented and Virtual Reality for Ground Station and Telescope Maintenance at ESOC	Nebras Nassar	Human Factor & Behavior in Operations	Kevin Marston (Eumetsat) Rebecca Castano
16:30 - 17:00	103	Practical Access Control and Traceability in Control Centre Workstations	Julio Vivero		
17:00 - 17:30	534	Astropoint - Raising the Astronomical Spirits of Innovation	Farah Youssef		

18:00 - 20:00

WELCOME RECEPTION



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PROGRAM AGENDA

TIME	INFORMATION	LOCATION
08:00 - 17:30	Registration & Preview	DWTC
09:00 - 10:00	Plenary Session 2 - Space Traffic Management – Needs & Solutions	Sheikh Maktoum Halls B
10:00 - 10:30	Coffee Break	Exhibition Area and Sheikh Maktoum Hall C
10:30 - 18:00	Oral Presentations	Several locations. See following pages for details

TUESDAY 7TH MARCH 2023	LOCATION DUBAI A+B	MDM-3 MISSION DESIGN & MANAGEMENT (MDM)			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	419	SolSat: A Low-Cost 3-U CubeSat System for Space Weather applications	Yousuf Faroukh	Mission Design & Architecture	Gregory Navarro Rebecca Castano
11:00 - 11:30	171	Terrenesat-1	Aysha Alkaabi		
11:30 - 12:00	395	Mission Concept, Analysis, and In-orbit testing of DEWASAT-1	Sidi Ahmed Bendoukha		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI C	OC-3 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	443	InnoCube CONOPS - Concept of operations to demonstrate payloads within a wireless small satellite bus	Benjamin Grzesik	Technology Demonstration	David Evans Nour Aburaed
11:00 - 11:30	213	SAR/ Galileo operational concept to provide SAR forward and return link services	Sylvain Delattre		
11:30 - 12:00	490	Reducing Data Latency with Inter-Satellite Links in LEO Constellations: Trade-off Analysis and Impact on Concept of Operations	Ulrich Kling		
12:00 - 12:30	448	Aircraft Detection for Safe Optical Ground Station Operation	Andrea Di Mira		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI D	GSE-3 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	180	MTG ground segment and technical challenges to integrate it	Nana Bach	Multi-missions Ground Systems Design	Marcin Gnat (DLR) Rodney Grubbs (NASA/MSFC)
11:00 - 11:30	437	The smart and open Earth Observation ground segment : towards an architecture with public standard interfaces	Daniel Novak		
11:30 - 12:00	527	Designing a Commercial Mission Operations Center for RPOD Missions	Ethan Spessert		
12:00 - 12:30	667	Deployment and activation of the new Voice Communication System (VCS) in ESTRACK stations as part of ESA Harmonization project for Ground Stations	Donato Lospalluto		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI E + F	AI-3 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	350	Spacecraft Failure Detection, Isolation and Recovery Using Artificial Intelligence: A Study for Implementation on the Edge	Filippo Ales	On-Board Space Systems Autonomy - 1	Ed Trollope Claude Audouy (CNES)
11:00 - 11:30	306	SESAM: An Experiment for AI-Based On-Board Satellite Monitoring	Mathias Zaroubian		
11:30 - 12:00	274	Spacecraft On-board Anomaly Detection: computational constrained Machine Learning approaches	Salvatore Cognetta		
12:00 - 12:30	237	A mission-agnostic on-board autonomy software solution to streamline spacecraft operations.	Paolo Madonia		

TUESDAY 7TH MARCH 2023	LOCATION AJMAN A	CAN-3 COMMUNICATIONS ARCHITECTURES & NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	583	A Demand Access System for Deep Space Operations	Marc Sanchez Net	Next steps: Communications and Mission Testing	Brian Giovannoni Marco Lanucara
11:00 - 11:30	537	NASA's Communications and Navigation Architecture Plans to Support the Return to the Moon and a Sustainable Lunar Presence	Gregory Heckler		
11:30 - 12:00	416	Using commercial off-the-shelf software defined radio equipment to simulate space link propagation effects for radio frequency compatibility testing	Klara Anneliese Spieker		
12:00 - 12:30	582	Psyche Mission's End-to-End Information System Verification & Validation: Planning, Execution, and Lessons Learned	Richa Sirohi		

TUESDAY 7TH MARCH 2023	LOCATION SHARJAH D	FE-3 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	222	SMOS "Long ECM": a successful CNES–ESA joint operations prepping	Benoit LEGER	Contingency operations	Dr. Andreas Ohndorf Giuseppe Albini
11:00 - 11:30	481	New Safe Mode for the INTEGRAL Mission	Greta De Marco		
11:30 - 12:00	683	The Emirates Mars Mission (EMM) Journey to Mars – COVID-19 Impacts Challenges and Opportunities	Sean Ryan		
12:00 - 12:30	238	Report on the recovery of the chemcam instrument onboard the curiosity rover after an high voltage anomaly	Valerie Mousset		

TUESDAY 7TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	HFT-3 HUMAN FACTORS TRAINING AND KNOWLEDGE TRANSFER			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	215	The user-driven innovation from ideation to inception	Artur Palowski	Human Factors and Training	Tristan Edwards Satya Kalluri
11:00 - 11:30	605	NISAR Mission System's Joint NASA/ISRO Thread Test Campaign for Verification and Validation of Shared Operational Processes	Nimisha Mittal		
11:30 - 12:00	241	Simulation Theory Dr. Marwa Salah	Dr.Marwa Salman Salah		

12:30 - 13:30

LUNCH BREAK

TUESDAY 7TH MARCH 2023	LOCATION DUBAI A + B	MDM-4 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	507	AI4CE - Closing the design-operation-loop: design, operate, learn, repeat	Jan-Peter Ceglarek	Mission Simulation and Modeling	Matthew Cosby Chiara Maria Cocchiara
14:00 - 14:30	203	The importance of high-fidelity simulator for Galileo Constellation - IRES Model improvement	Ylenia Di crescenzio		
14:30 - 15:00	641	Operations Development on ESA›s Plato and Ariel Exoplanet Missions	David Milligan		
15:00 - 15:30	293	Planning Multi-Year Solar Powered Missions on Mars : The Challenge of Dust	Ralph Lorenz		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI C	OC-4 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	459	Hardware-Based Isolation for Advanced Safety and Security in Spacecraft	David Koisser	Mission Security	Maria Theresia Woerle (DLR) Sylvain Lodiot
14:00 - 14:30	509	Spacecraft Operations: Working in an Unsecure World	Mark Loveday		
14:30 - 15:00	621	Space mission security monitoring at the ESA Cyber Safety and Security Operational Centre (C-SOC)	Marc Niezette		
15:00 - 15:30	539	Building a modern NOC for ground segment	Thomas Wegener		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI D	GSE-4 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	432	Integration of Multi-Mission Services into Operations – The Appeal and Reality	Victor Sierra Urueña	Ground Systems Testing and Validation	Obadiah Kegege (NASA) Marcin Gnat (DLR)
14:00 - 14:30	318	ESA's Kiruna Station Monitoring & Control System evolution – An innovative approach for the replacement of the ground station's "brain"	José Manuel Puerta Peña		
14:30 - 15:00	436	Integrated Framework for Software Testing and Verification based on Open Source Software	Ruediger Gad		
15:00 - 15:30	615	Applying DevOps strategies to Monitoring and Control IV&V activities – practical results from Meteosat Third Generation	Jose Feiteirinha		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI E + F	AI-4 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	320	Space debris streak classification: a transparent deep learning approach to reduce false positive detections	Evridiki Ntagiou	On-Board Space Systems Autonomy - 2	Gabriele De Canio Grucker Gérald
14:00 - 14:30	633	Innovative Multicarrier Broadband Waveforms Classification Using Machine Learning for Future GNSS Applications	Charles Lee		
14:30 - 15:00	169	Compact Distributions With Self-ensembled Scoring for Satellite Anomaly Detection	Guohang Guo		
15:00 - 15:30	270	EOMPA A service-based prototype using Artificial Intelligence in support of Multi-Mission Planning and Analysis for Earth Observation Constellations	Rachel Jenkins		

TUESDAY 7TH MARCH 2023	LOCATION AJMAN A	CAN-4 COMMUNICATIONS ARCHITECTURES & NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	272	Radio science at low SNR - Radio occultation observations at Mars with the MAVEN low-gain antenna	Paul Withers	Communication Network Advances	Brian Giovannoni Marco Lanucara
14:00 - 14:30	454	Validation and Demonstration of Disruption Tolerant Networking Technologies in ESA Ground Segment	Camillo Malnati		
14:30 - 15:00	558	NASA's Deep Space Network (DSN) Lunar Exploration Upgrades (DLEU)	Philip Baldwin		
15:00 - 15:30	339	Lunar Pathfinder – Commercial data relay satellite enabling the next generation of lunar missions	Matthew Christie		

TUESDAY 7TH MARCH 2023	LOCATION SHARJAH D	FE-4 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	420	Operational highlights from Canada's flagship RADARSAT Constellation Mission (RCM)	Michel Doyon	Operations Management 2	Dominique Montero Gregor Rossmanith
14:00 - 14:30	309	Remote LEOP and in-orbit support with automated health monitoring applied to the cosmo-skymed mission	Francesco Corallo		
14:30 - 15:00	457	BepiColombo on its journey across the inner solar system	Ignacio Clerigo		
15:00 - 15:30	394	Satellite Operation in Special Space Weather	Cheng-Yung Huang		

TUESDAY 7TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	HFT-4 HUMAN FACTORS TRAINING AND KNOWLEDGE TRANSFER			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	532	Human factors and Behavior in Operations	Nteboheng Molefe	Knowledge Management, Transfer & Education	Gareth Williams Sami Asmar
14:00 - 14:30	421	Training for Everyone – The GSOC "Spacecraft Operations Course"	Michael Schmidhuber		
14:30 - 15:00	358	Analysis of the knowledge transfer efficiency within the Galileo project training system from the trainee's perspective	Mattia Reganaz		
15:00 - 15:30	399	Knowledge Transfer In Space Operations	Yvonne Kedibone Mbuyisa		

15:30 - 16:00

COFFEE

TUESDAY 7TH MARCH 2023	LOCATION DUBAI A + B	MDM-5 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	491	Mission design of SolSat CubeSat	Fatima Alketbi	Mission Simulation and Modeling	Harry Shaw Satya Kalluri
16:30 - 17:00	357	Extension of the mission of a spacecraft operating at a vicinity of the Sun-Earth libration point for asteroids exploration	Maxim Pupkov		
17:00 - 17:30	462	A Standard Atmospheric Model with constant lapse rates for Titan	Abishek Girish		
17:30 - 18:00	393	Analysis of Transfer Orbit and Lunar Landing for LEAD Mission	Junji Kikuchi		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI C	OC-5 OPERATION CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	195	Development of Space Mission Integrated Operations Scenarios	Jackelynne Silva-Martinez	Solar System Science - 1	Dave Welch Katrin Wirth
16:30 - 17:00	550	FSS and the challenges of operating a seismometer on the far side of the Moon	Charles Yana		
17:00 - 17:30	494	Experience on operations of Radio Science experiments for interplanetary missions	Jose Villalvilla		
17:30 - 18:00	565	Science off the Earth: An integrated approach to science operations in the Artemis Era and beyond	Ian Howley		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI D	GSE-5 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	381	Efficient Ground Segments Protection against Advanced Persistent Threats	Julio Vivero	Ground Segment Architectures and Design	Rossella Falcone (DLR) Obadiah Kegege (NASA)
16:30 - 17:00	228	Galileo GCS: Monitoring Services with Middleware Applications	Víctor Pozo		
17:00 - 17:30	263	Adapting ground station networks for automatic M2M operations	Arne Nylund		

TUESDAY 7TH MARCH 2023	LOCATION DUBAI E + F	AI-5 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	349	Natural Language Processing for Explainable Satellite Scheduling	Cheyenne Powell	AI Methods and Algorithms - 2	Michel Doyon Clemens Schefels
16:30 - 17:00	160	An Artificial Intelligence Framework for Space Operations Data and Model Management	Rohaan Ahmed		
17:00 - 17:30	362	Evaluation of approaches for the recognition of semantically similar voice-commands based on public data	Tobias Kolb		

TUESDAY 7TH MARCH 2023	LOCATION AJMAN A	CAN-5 COMMUNICATIONS ARCHITECTURES & NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	139	Antenna Beam-Sharing: Progress Toward Simultaneous Multiple Uplinks Per Antenna	Douglas Abraham	More Data	Klaus Noetzel Haleh Safavi
16:30 - 17:00	389	Development of an Optical Ground Network for Direct-to-Earth Data Repatriation Service	Hanna Sundberg		
17:00 - 17:30	613	Deep Space Station 17: A University-Operated Affiliated Node on the NASA Deep Space Network and the Lunar Tracking Network	Benjamin Malphrus		
17:30 - 18:00	200	Return of Deep Space in Weilheim Ground Station	Marcin Gnat		

TUESDAY 7TH MARCH 2023	LOCATION SHARJAH D	FE-5 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	541	Improving operational efficiency for the SuperCam instrument on board the Perseverance rover to support a shortened operation timeline	Magali Bouyssou	Real-time flight control, lessons and plans 2	Chuck Scott Byoung-Sun Lee
16:30 - 17:00	596	The Swarm Constellation: two critical milestones. The exploitation of the counter-rotating orbits and the orbit raise campaign to fight Solar Cycle 25	Giuseppe Albini		
17:00 - 17:30	217	Launch and Early Operation of Korea Pathfinder Lunar Orbiter	Moon-Jin Jeon		
17:30 - 18:00	446	A control centre's journey to its first successful Galileo LEOP	Sebastian Villamil		

TUESDAY 7TH MARCH 2023	LOCATION SHEIKH MAKTOUM HALL C	
TIME	**SESSION INFORMATION**	
18:30 - 20:00	SYP Women in Space	Limited to registered SYP pass holders
20:00 - 21:30	SYP Speed Mentoring	

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PROGRAM AGENDA

TIME	INFORMATION	LOCATION
08:00 - 17:30	Registration & Preview	DWTC
09:00 - 10:00	Plenary Session 3 - MBRSC Missions: From Earth to Mars passing by Moon	Sheikh Maktoum Halls B
10:00 - 10:30	Coffee Break	Exhibition Area and Sheikh Maktoum Hall C
10:30 - 18:00	Oral Presentations	Several locations. See following pages for details

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI A + B	MDM-6 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	647	The Greek National Earth Observation Program	Ioannis Daglis	Mission Design for Constellations	Matthew Cosby Jillian Redfern
11:00 - 11:30	396	Reconfigurable satellite constellations: optimal design and maneuvering	Federica Paganelli Azza		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI C	OC-6 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	194	Development of an AI assistant for supervising the future Moon and Mars surface operations	Gregory Navarro	Solar System Science - 2	David Milligan Sean Ryan
11:00 - 11:30	417	Hera cubesats operations design around a binary asteroid for small bodies characterization and planetary defense	Pamini Annat		
11:30 - 12:00	522	To Know the Present, Understand the Past: Automated Historical Context for Monitoring Spacecraft Communications	Rishi Verma		
12:00 - 12:30	538	Main system elecrolysis and purification for a lunar rover test for effect on water content	Farah Youssef		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI D	GSE-6 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	353	Analysis and Impact of the End-to-End Communication Chain on a DLR Real Time On-Orbit Servicing Mission Project	Rossella Falcone	Innovative approach for Ground Segment	Francois Jocteur-Monrozier (CNES) Nathalie Corcoral (CNES)
11:00 - 11:30	442	Introducing Operational Diagnosis Models for Ground Station Architectures using Behaviour Trees	Nikolena Christofi		
11:30 - 12:00	321	Distributed CFDP Ground Infrastructure Implementation for High Data Rate Downlink	Felix Flentge		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI E + F	AI-6 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	277	Enabling Ai Applications for Space Operations through a Multi-Missions Devops Platform	Pablo Beltrami	Integration and IF in Operational Ground Segments - 1	Orphee Faucoz Agnese Del Moro
11:00 - 11:30	197	Payload health monitoring and management platform for space scientific satellite operation	Caixia Tian		
11:30 - 12:00	622	Towards an AI-enhanced robotic Digital Twin for space exploration assets	Evridiki Ntagiou		
12:00 - 12:30	552	Deeply Understanding Space Weather	Mathieu Schmitt		

WEDNESDAY 8TH MARCH 2023	LOCATION AJMAN A	CAN-6 COMMUNICATIONS ARCHITECTURES + NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	338	Compressed Bundle Reporting for Reliable Bundle Transmission in Disruption Tolerant Networking	Aida-Stefania Manole	Network Operations - Future and Present	Marco Lanucara Obadiah Kegege
11:00 - 11:30	611	LunaNet Governance: Organizing and Planning for LunaNet Operations	James Schier		
11:30 - 12:00	580	UHF communications with CubeL: the path to nominal operations	Pierre-Alexis Lagadrilliere		
12:00 - 12:30	673	NASA Delay Tolerant Networks: Operational, Evolving, and Ready for Expansion	Ivica Ristovski		

WEDNESDAY 8TH MARCH 2023	LOCATION SHARJAH D	FE-6 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	273	Adjustments of Insight SEIS and APSS operations in an energy-limited context	Jaillant Benjamin	End of life and contingency operations	Claude Audouy (CNES) Sammy Kayali
11:00 - 11:30	332	EnMAP vs. COVID-19: How to prepare for and conduct a LEOP during a pandemic	Katrin Wirth		
11:30 - 12:00	341	Lessons learnt from conducting a successful decommissioning of Metop-A	Stefania Tarquini		
12:00 - 12:30	316	IASI Instrument: End of life and technology tests	Eleonora Bassi		

WEDNESDAY 8TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	HFT-6 HUMAN FACTORS TRAINING AND KNOWLEDGE TRANSFER			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	439	Impact of remote working on the processes and methodology of Training and Simulations at the Galileo Control Centre	Jasmina Brajovic	Training and Simulations	Tristan Edwards Victor Grycenkov (NOAA)
11:00 - 11:30	387	Learning Satellite Operations by Play - Gamification for Spacecraft Operations Training of Subsystems Knowledge and Control Room Proceedings on the example of EDRS-C	Fabian Jaus		
11:30 - 12:00	430	Key factors for an effective and successful LEOP SPACON crash training	Carla Garcia		
12:00 - 12:30	643	Dramaturgy is everything - Psychology of great trainings	Klaus Noetzel		

12:30 - 13:30

LUNCH BREAK

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI A + B	MDM-7 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	304	Domino-X Multi-mission and Federation Services	Daniel Novak	Revectoring Old Missions to New Tasks/Multi-mission Approaches and Strategies	Alice Bowman (JHUAPL) Simone Pirrotta
14:00 - 14:30	385	Transforming Flight Operations Segment engineering services for the European Commission Copernicus Sentinels	Javier Hernando Bravo		
14:30 - 15:00	620	The Joint Polar Satellite System: Celebrating a Decade of Successful Operations and Preparing for JPSS-2 Launch	Satya Kalluri		
15:00 - 15:30	688	Operational Flexibility and Asset Retasking Enabled by In-Space Refueling	Zachary Burkhardt		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI C	OC-7 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	495	Delta-DOR with multiple spacecraft	Marco Menapace	Earth Observation	Christophe Belzile Ignacio Clerigo
14:00 - 14:30	449	Capturing the Moon with Copernicus Sentinel-2	Pablo Rodriguez Llorca		
14:30 - 15:00	418	Resources/ services/ demands relartionship on a federated CUBESAT constellation system operation perspective	Carlos Leandro Gomes Batista		
15:00 - 15:30	214	The importance of the Lifetime analysis for Constellation Management	Ylenia Di crescenzio		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI D	GSE-7 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	352	Experience and Lessons Learned from Open Sourcing NASA AMMOS's Mission Control Software	Josh Choi	Software Development and Maintenance	Markus Hobsch (DLR) Hamid Salim (MYSA)
14:00 - 14:30	470	Agile Design and Development of the Mission Operations Segment for HiVE Constellation of Microsatellites	Mahsa Taheran		
14:30 - 15:00	535	OHB Flexible Mission Control: Multi mission control center	Alan Moorhouse		
15:00 - 15:30	679	Data Systems and Infrastructure of the ESA Space Safety programme – latest developments, overview, and outlook	Dominik Marszk		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI E + F	AI-7 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	444	Bringing a Machine-Learning Based Novelty Detection Software Tool from Research to Production	Clemens Schefels	Approaches to introduce AI in operations	Agnese Del Moro Marc Duhaze
14:00 - 14:30	336	An innovative AI-based framework for on-ground anomaly detection and root cause analysis	Luca Manca		
14:30 - 15:00	303	Development of an actionable AI roadmap for automating mission operations	Gabriele De Canio		
15:00 - 15:30	278	A concept to convert Operational Simulators to a Digital Twin by using AI techniques	Pouya Haschemi		

WEDNESDAY 8TH MARCH 2023	LOCATION AJMAN A	CAN-7 COMMUNICATIONS ARCHITECTURES + NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	299	The evolution of future Mars communications architecture	Marco Lanucara	Evolution of Communications	Brian Giovannoni Stefania Tarquini
14:00 - 14:30	137	NASA Deep Space Communications: Future Mission Trends and Their Implications	Douglas Abraham		
14:30 - 15:00	548	Spacelink configuration and mission operations with the new ESA link budget tool	Maria Montagna		
15:00 - 15:30	435	Multipurpose S, X & Ka Band TT&C Antenna System for MEO, GEO and Lunar Communications	Andrea Calleri		

WEDNESDAY 8TH MARCH 2023	LOCATION SHARJAH D	GNC-1 GUIDANCE, NAVIGATION, AND CONTROL			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	147	On Track to Touch the Sun: Parker Solar Probe Flight Path Control Experience through Venus-5	Mar Vaquero	Flight Dynamics and Navigation	Mar Vaquero (NASA/JPL) Eiman Alnaqbi (UAEU)
14:00 - 14:30	161	Comparison of spacecraft vision-based navigation methods and proposal of a novel shadow-correction block	Aurélia Yasmina Réjane Bourgeaux		
14:30 - 15:00	317	Flight Dynamics Experience on Galileo Station Acquisition Operations	Frederic Schoutetens		
15:00 - 15:30	414	Innovative web-based technologies for the next generation of Flight Dynamics Systems	Mirco Rasotto		

WEDNESDAY 8TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	SSU-1 SAFETY + SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	572	Space Weather Environment During the SpaceX Starlink Satellite Loss in February 2022	Tzu-Wei Fang	Space Weather Services and Impacts on Space Operations	Alexi Glover (ESA) Andrew Monham (EUMETSAT)
14:00 - 14:30	617	Towards Solar Maximum: Increasing Space Weather Activity and ESA's Low Earth Orbit Spacecraft Operations	Alexi Glover		
14:30 - 15:00	458	Services for Spacecraft Operations support within the ESA Space Weather Service Network	Michel Kruglanski		

15:30 - 16:00

COFFEE

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI A + B	MDM-8 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	377	The Absence of Laws Regulating the Proliferation of Space Debris and its Implications on Space Operations	Ibrahim Alsabt	Regulations and Laws Affecting Operations/ International, Public, and Private Cooperation	Sami Asmar Jillian Redfern
16:30 - 17:00	455	The Implications of a State Classifying the Electromagnetic Spectrum as a Space Resource Rather than a Global Commons in connection with Space Ventures	George Anthony Long		
17:00 - 17:30	176	New Legal Challenges in International Space Law: Artificial Intelligence and Liability	Kathiravan Thangavel		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI C	OC-8 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	540	Operating Deep Space Autonomous Spacecraft: Ground Processes and Tools for Operability and Trust	Rebecca Castano	Ground Systems	Michelle Baker Ian Howley
16:30 - 17:00	479	Development of Automation tools for In-Orbit Operations	Theodora Varelidi Strati		
17:00 - 17:30	607	OPS-SAT-2: An ESA in-orbit laboratory for optical and quantum Ground-Space experimentation	David Evans		
17:30 - 18:00	415	Challenges in Operations Preparations when transitioning to EGS-CC based systems	Wolfgang Heinen		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI D	GSE-8 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	182	Concepts and Implementation of Generic Services and HMI Elements	Francesco Croce	Service Oriented Architectures	Markus Hobsch (DLR) Rossella Falcone (DLR)
16:30 - 17:00	271	Return Link Service Test Bed: a demonstrator platform for new future SAR Galileo Services	Cristobal Cuevas Garcia		
17:00 - 17:30	501	Following a fast changing world of space operations: a center ready to support the return to the moon	Cesare Capararo		

WEDNESDAY 8TH MARCH 2023	LOCATION DUBAI E + F	AI-8 ARTIFICIAL INTELLIGENCE FOR SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	597	Introducing Artificial Intelligence to end-to-end service-oriented SATCOM systems	Leticia Alonso-Gonzalez	AI in Planning and Scheduling	Haleh Safavi Dr. Andreas Ohndorf
16:30 - 17:00	319	Operational results of the machine learning-based battery strategy management in the TerraSAR-X/ TanDEM-X Mission Planning System	Fotios Stathopoulos		
17:00 - 17:30	220	Online Learning for Spacecraft Memory Dump Optimization	Jonathan Pergoli		
17:30 - 18:00	128	Artificial Intelligence Enhancements to Imagery for Space Operations	Rodney Grubbs		

WEDNESDAY 8TH MARCH 2023	LOCATION AJMAN A	CAN-8 COMMUNICATIONS ARCHITECTURES + NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	544	NASA's Efforts to Commercialize Communications Services for Missions in Near-Earth Space	Gregory Heckler	New Approaches in Communications	Brian Giovannoni Marco Lanucara
16:30 - 17:00	229	CNES Ground Station Networks for Science	Laurent JOLIVET		

WEDNESDAY 8TH MARCH 2023	LOCATION SHARJAH D	GNC-2 GUIDANCE, NAVIGATION, AND CONTROL			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	429	Indirect monitoring of deployment of nanosatellite's external structural elements by motion dynamics analysis	Igor Belokonov	Attitude Determination and Control	Shinichi Nakamura (JAXA) Hessa Alkaabi
16:30 - 17:00	403	Attitude Control on TET-1 and BIROS - Experiences from the FireBird Mission and End of Life Operations	Lukas Hoffmann		
17:00 - 17:30	657	Unique Considerations for Placement of Star Trackers for Optimized Tracking and Pointing Capabilities	Vinit Kumar		
17:30 - 18:00	642	Attitude Ditermination and Control Subsystem Testbed	Eiman Alnaqbi		

WEDNESDAY 8TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	SSU-2 SAFETY & SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	649	The Prototype SafeSpace Service of Advanced Prediction of the Outer Van Allen Belt Dynamics	Ioannis Daglis	Space Weather Services and Impacts on Space Operations	Tzu-Wei Fang Lee-Anne McKinnell
16:30 - 17:00	650	Establishing a Spacecraft Anomaly Database for Correlation with Space Weather Effects	Andrew Monham		
17:00 - 17:30	652	ESA's Space Weather Monitoring System	Melanie Heil		
17:30 - 18:00	426	Explorative, Immersive Visualization of Space Weather Phenomena	Riccardo Fellegara		

16:00 - 17:30

TECHNICAL TOUR OF MBRSC

PROGRAM AGENDA

TIME	INFORMATION	LOCATION
08:00 - 18:00	Registration	DWTC
08:30 - 09:00	Keynote: Standards and Interoperability for Space Missions Success. Speaker: Mr. Sami W. Asmar	Sheikh Maktoum Hall B
09:00 - 10:00	Plenary Session 4: Lunar Communications and International Interoperability	Sheikh Maktoum Hall B
10:00 - 10:30	Coffee Break	Exhibition Area and Sheikh Maktoum Hall C
10:30 - 18:00	Oral Presentations	Several locations. See following pages for details

THURSDAY 9TH MARCH 2023	LOCATION DUBAI A + B	MDM-9 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	184	Design and Development of a CubeSat-scale Robotic Arm Test Bed to be Deployed to the International Space Station	Jin Kang	Mission Design for Robotic Missions	Young H. Lee (NASA JPL) Haleh Safavi
11:00 - 11:30	567	Mission Design & Operations Approach for the HelioSwarm Mission	Matthew D'Ortenzio		
11:30 - 12:00	300	Extended opportunities of a mission to Sedna	Vladislav Zubko		
12:00 - 12:30	519	Assembly of Space Based Solar Power Satellite using Space Robotics	Sejal Jain		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI C	OC-9 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	380	On-board Machine Learning Fault Detection and Diagnosis for Automatic Beacon Structure Customization	Aysha Alharam	Operations Concepts - 1	Sean Ryan David Evans
11:00 - 11:30	308	Automation of the sentinel-5P routine pass activities	Daniel Mesples		
11:30 - 12:00	365	Integrated Mission Operation Concepts for the Dream Chaser® Cargo System	Jason Gabbert		
12:00 - 12:30	598	Use of MBSA model for ensuring mission continuity	Vincent Casanovas		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI D	GSE-9 GROUND SYSTEMS ENGINEERING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	129	Navigation Systems Analysis: Low Cost Design and Implementation of a Security Event Logging Framework	Robert Beswick	System Engineering for Operability	Rodney Grubbs (NASA/MSFC) Navid Dehghani (JPL)
11:00 - 11:30	193	SAR/Galileo Return Link Service (RLS) Monitoring: An automated 24/7 global coverage system	Mathilde Dufour		
11:30 - 12:00	204	Openvocs, a light-weight Voice Communication System for Space Mission Control	Falk Schiffner		
12:00 - 12:30	205	Role-based Multi-Chat System for Space Mission Control	Falk Schiffner		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI E + F	HSO-1 HUMAN SPACEFLIGHTS AND OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	267	PyCon2 Managing virtualized control rooms safe and efficient	Ilja Verspohl	ISS Utilisation and Operations - 1	Cesare Capararo (ALTECSPACE) Francois Jocteur-Monrozier (CNES)
11:00 - 11:30	504	UTISS3: the ISS Utilization service provided by ALTEC for ASI's "Minerva" mission and future payloads	Rosa Sapone		
11:30 - 12:00	295	NASA's Cold Atom Lab Four Years of Quantum Science Operations in Space	Kamal Oudrhiri		
12:00 - 12:30	585	The Operational Challenges of the Multiscale Boiling Investigation on the International Space Station	Denis Van Hoof		

THURSDAY 9TH MARCH 2023	LOCATION AJMAN A	CAN-9 COMMUNICATIONS ARCHITECTURES + NETWORKS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	451	ESA's DSA New Norcia 3: Geographical considerations for the site selection of a new deep space ground station antenna	Francisco Pimenta	Advances In Our Communications Networks	Brian Giovannoni Marco Lanucara
11:00 - 11:30	557	NASA's Space Communication and Navigation Program's Architecture for Data Delivery via Cloud Services	Philip Baldwin		
11:30 - 12:00	632	Development of a Hybrid Ground and Space Communications Network for LEO Satellites	Brian Chandler		
12:00 - 12:30	635	On the Design of a Modular Plug-and-Play Satellite Communication System	Mariam Al Darmaki		

THURSDAY 9TH MARCH 2023	LOCATION SHARJAH D	GNC-3 GUIDANCE, NAVIGATION, AND CONTROL			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	219	Stellar project: the Galileo emergency warning service (EWS) demonstrator	Sylvain Delattre	Global Navigation Systems and Applications	Abdollah Masoud Darya Shaikha Alghaithi
11:00 - 11:30	397	Seasonal Variation of the GNSS Ionospheric Delay Observed Over the UAE	Abdollah Darya		
11:30 - 12:00	231	Galileo RETURN LINK SERVICE Evolutions	Maxime Fontanier		
12:00 - 12:30	670	GNSS-Multicarrier-Broadband-Waveform Satellite System Emulator	Charles Lee		

THURSDAY 9TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	SSU-3 SAFETY & SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	695	Integrating Space Weather into Satellite Operations:Necessity or Dead End	Dominique Montero	Space Weather Impacts and Collision Avoidance	Alexi Glover (ESA) Andrew Monham (EUMETSAT)
11:00 - 11:30	-	DISCUSSION: Can space weather services improve safety and reliability of space operations?	-		
11:30 - 12:00	476	Operational concepts and design of mitigation actions for collision avoidance	Pau Gago Padreny		
12:00 - 12:30	496	Evolution of Canadian Conjunction Analysis Capabilities and Services	Viqar Abbasi		

12:30 - 13:30

LUNCH BREAK

THURSDAY 9TH MARCH 2023	LOCATION DUBAI A + B	MDM-10 MISSION DESIGN AND MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	323	ArgoMoon and LICIACube: Italian first missions operated in Deep Space	Simone Pirrotta	Mission Design for Robotic Missions	Young H. Lee (NASA JPL) Alice Bowman (JHUAPL)
14:00 - 14:30	371	Titan Robotic Mission: Mapping and Sampling of Land and Lake	Prathmesh Barapatre		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI C	OC-10 OPERATIONS CONCEPTS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	384	Space and Ground Integrated Operation Control for Space Satellite Missions	Meng Bai	Operations Concepts - 2	Katrin Wirth Christophe Belzile
14:00 - 14:30	586	TT&C over S-band with CubeL: finding a middle way between CSP, CCSDS and ECSS	Mr. Tobias Bruegge		
14:30 - 15:00	383	Joined ESA-DLR Procedure Management Environment	Francois Trifin		
15:00 - 15:30	477	Management of Multi-Customer Operations In-Orbit	Theodora Varelidi Strati		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI D	STO-1 SPACE TRANSPORTATION OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	210	Space Rider - The operational concept for the first and ambitious European affordable reusable space transportation system	Daniela Borla Tridon	Space Transportation Vehicles and Services	Craig Cruzen (NASA MSFC) Julio Monreal (ESA)
14:00 - 14:30	324	Automatic and adaptive event-based observation execution engine onboard the European stratospheric balloon observatory	Mahsa Taheran Vernoosfaderani		
14:30 - 15:00	499	ESA Space Rider: Payload end to end operations of the European multi-purpose transportation and in orbit servicing system	Fabio Caramelli		
15:00 - 15:30	553	GSOC's Service Oriented Ground System "HCC" - Status and First Experiences From Sounding Rocket Missions	Armin Hauke		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI E + F	HSO-2 HUMAN SPACEFLIGHTS AND OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	187	Evolution of Hardware and Philosophy of Emergency Response Actions on the International Space Station and Future Spacecrafts	Barry Tobias	ISS Utilisation and Operations - 2	Thomas Muller (DLR) Ian Howley
14:00 - 14:30	466	Relocation of the Atmosphere-Space Interactions Monitor (ASIM) on the International Space Station	Julien Dufey		
14:30 - 15:00	516	The Compasso Mission: Operational Strategies for Validating Optical Technologies On-Board the ISS	Matthias Dauth		
15:00 - 15:30	640	Science and Education Portfolio for UAE Long-duration Astronaut Mission 2023	Eman Altunaiji		

THURSDAY 9TH MARCH 2023	LOCATION AJMAN A	PS-1 PLANNING AND SCHEDULING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	335	ExoMars Trace Gas Orbiter: Evolution of the science operations concept during the nominal and extended mission phases	David Frew	Experiences from missions, systems and tools I	Marc Duhaze Maria Theresia Woerle (DLR)
14:00 - 14:30	202	EnMAP MPS: Challenges, Enhancements and Evaluations of the Early Mission Phase	Christoph Lenzen		
14:30 - 15:00	334	Evaluating the new CCSDS Mission Planning and Scheduling standard: How TGO and EnMAP could have benefitted from an interoperability standard for the exchange of mission planning and scheduling information	Peter van der Plas		
15:00 - 15:30	536	Human and Robotic Exploration Data Base	Mathieu Schmitt		

THURSDAY 9TH MARCH 2023	LOCATION SHARJAH D	GNC-4 GUIDANCE, NAVIGATION, AND CONTROL			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	162	Adaptation of pre-existing orbit determination library for interplanetary missions	Aurélia Yasmina Réjane Bourgeaux	GNC and Astrodynamics Software	Mar Cols-Margenet Noura Alameri
14:00 - 14:30	655	Development and usage of the GODOT astrodynamics software at Telespazio Germany	Francesco Castellini		
14:30 - 15:00	684	Efficient Solution for Thrust Distribution of Simultaneous Forces and Torques	Mar Cols-Margenet		
15:00 - 15:30	533	Validation approach for the CNES Autonomous Navigation solution accommodated on the ExoMars rover	Michel Delpech		

THURSDAY 9TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	SSU-4 SAFETY & SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	223	Fixed covariance estimation in GPS-based operational orbit determination: a realistic input for collision probability monitoring	Petr Kuchynka	Advances in Collision Avoidance Techniques	Gerard Galet (CNES) Michael Schmidhuber (DLR)
14:00 - 14:30	101	An onboard AI-based space debris detection and localization system	Yaqoob Alqassab		
14:30 - 15:00	150	AI Deep Learning Radar Target Detection & Classification Model for Real Time Space Debris	Muneera Almalki		
15:00 - 15:30	376	CASCADE – A demonstrator for rule based coordination of conjunctions	Jonas Radtke		

15:30 - 16:00

COFFEE BREAK

THURSDAY 9TH MARCH 2023	LOCATION DUBAI A + B	DM-1 DATA MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	412	Innovative data processing for push-frames technology from iSIM sensor	Manuel Montesino	Data Management-1	Suzanne R. Dodd (NASA JPL) Marc Niezette
16:30 - 17:00	312	The Colour and Stereo Surface Imaging System (CaSSIS): Science data handling and archiving	Matthew Read		
17:00 - 17:30	483	A New Age for Data Exploitation in Science and Mission Operations	Vicente Navarro		
17:30 - 18:00	564	Fully automated cloud based science data processing for Emirates Mars Mission	Omran Alhammadi		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI D	STO-2 SPACE TRANSPORTATION OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	405	Test operations on the Upper Liquid Propulsion Module (ULPM) of the new European launcher Ariane 6 on the upper stage test facility P5.2	Peter Lutz	Rocket Propulsion	Craig Cruzen (NASA MSFC) Alexander Schmidt (DLR)
16:30 - 17:00	93	Design of reusable rocket engine	Saqer Alrusheidi		
17:00 - 17:30	413	Hybrid Propulsion System for Space Tugs	Berke Öznalbant		

THURSDAY 9TH MARCH 2023	LOCATION DUBAI E + F	HSO-3 HUMAN SPACEFLIGHTS AND OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	136	Investigations on Lunar Operations Concepts for Human Spaceflight	German Zoeschinger	Lunar Human Exploration	Cesare Capararo (ALTECSPACE) Ian Howley
16:30 - 17:00	146	Space Radiation characterization for a safe Human Space Exploration and Colonization	Alessandro Bartoloni		
17:00 - 17:30	342	Crew Training and Concept of Operations Testing for Future Lunar Mission at the ESA-DLR LUNA Facility	Andrea E. M. Casini		
17:30 - 18:00	584	NASA Deep Space Network Preparations for the Artemis II Crewed Mission to the Moon	Kathleen Harmon		

THURSDAY 9TH MARCH 2023	LOCATION AJMAN A	PS-2 PLANNING AND SCHEDULING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	497	PintaOnWeb - The Front End of GSOC's Next Generation Mission Planning Systems	Armin Wiebigke	Experiences from missions, systems and tools II	Maria Theresia Woerle (DLR) Peter Van Der Plas
16:30 - 17:00	604	Oversubscribed Scheduling for NASA's Deep Space Network: A Comparison of Optimization Techniques	Mark Johnston		
17:00 - 17:30	301	The Colour and Stereo Surface Imaging System (CaSSIS): Planning and commanding high resolution imaging at Mars	Miguel Almeida		
17:30 - 18:00	545	Modified mission planning schemes for the aging CYGNSS mission with expanding scientific pursuits during high beta angle seasons	Amanda Alexander		

THURSDAY 9TH MARCH 2023	LOCATION SHARJAH D	GNC-5 GUIDANCE, NAVIGATION, AND CONTROL			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	285	Low-thrust Eaeth-Saturn trajectory with miltiple gravity assists and unpowered orbit insertion	Roberto Maurice Flores Le Roux	Flight Dynamics, Trajectory Design and Formation management	Fabio DAmico (ASI) Shinichi Nakamura (JAXA)
16:30 - 17:00	135	Optimization of low-thrust flights between periodic orbits around libration points in the Earth-Moon system	Olga Starinova		
17:00 - 17:30	226	Adaptive LQR Control of Space-Based Solar Power Systems using Satellites Formation Flying	Thais Cardoso Franco		

THURSDAY 9TH MARCH 2023	LOCATION SHEIKH MAKTOUM B	SSU-5 SAFETY & SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
16:00 - 16:30	181	Jamming Assessment and Identification (JASI) service ramp-up	Matthieu Thierry	Space Situational Awareness and Coordination	Michel Doyon Claude Audouy (CNES)
16:30 - 17:00	675	Spacecraft Safety Made Stronger: Taking the Space Data Center to the Next Level	Daniel Oltrogge		

19:00 - 22:00

CONFERENCE DINNER

PROGRAM AGENDA

TIME	INFORMATION	LOCATION
08:00 - 14:30	Registration	DWTC
09:00 - 10:00	Plenary Session 5 - Planetary Defense	Sheikh Maktoum Hall B
10:00 - 10:30	Coffee Break	Exhibition Area and Sheikh Maktoum Hall C
10:30 - 11:30	Special Session - To-orbit transportation, in-orbit support and on-Earth recovery of space payloads	Sheikh Maktoum Hall B
10:30 - 15:30	Oral Presentations	Several locations. See following pages for details

FRIDAY 10TH MARCH 2023	LOCATION DUBAI A + B	DM-2 DATA MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	322	Applying Continuous Integration for Operational Products in the Mission Preparation Environment	Annabell Langs	Data Management-2	Zeina Mounzer (TPZ) Mark Johnston
11:00 - 11:30	656	Video That's Out of This World: A Snapshot of Video Distribution from Across the Solar System	Jennifer Christopher		
11:30 - 12:00	235	A New Data Archiving and Service System Specialized for South Korea Satellite Data Policy	Myungjun Lee		

FRIDAY 10TH MARCH 2023	LOCATION DUBAI C	CSO-1 COMMERCIAL SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	296	A gateway to all space mobility solutions: Launch.ctrl software by Precious Payload	Thu Vu	Integrating Commercial Aspect into Space Operations	Christophe Belzile Gladys Magagula (SANSA)
11:00 - 11:30	361	Accelerating Innovation in the Space Sector through Public-Private Partnerships	Paul Kiesling		
11:30 - 12:00	515	Autonomous tracking of Resident Space Objects using multiple ground-based Electro-Optical sensors	Khaja Faisal Hussain		

FRIDAY 10TH MARCH 2023	LOCATION DUBAI E + F	HSO-4 HUMAN SPACEFLIGHTS AND OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	236	Opportunities for transfer of knowledge in space biology and medicine	Anna Kussmaul	Medical and Biological Aspects of Human Space Flight	Thomas Muller (DLR) Mark Lupisella
11:00 - 11:30	406	Assessment of Mental Stress on Analog Astronauts' during Isolation and Confinement	Hasan Al-Nashash		
11:30 - 12:00	453	Autonomous uLtrasound Image improvement SyStEm (ALISSE) for guiding astronauts to take clinically valuable images in future long manned space missions	David Miraut		
12:00 - 12:30	556	Orbital Reef: Redefining Commercial Space Station Operations	Todd Mosher		

FRIDAY 10TH MARCH 2023	LOCATION AJMAN A	PS-3 PLANNING AND SCHEDULING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
11:00 - 11:30	221	A Real-Time Re-Scheduling Algorithm for Spacecraft Instrument Operations Optimization	Jonathan Pergoli	Novel concepts and future applications I	Vladimir Nazarov (IKI) David Frew
11:30 - 12:00	246	Proactive-reactive on-board planning for complete goal-oriented automation	Riccardo Maderna		
12:00 - 12:30	480	Unsupervised Hierarchical Planning for Geostationary Satellite Missions	Michael Schmeing		

FRIDAY 10TH MARCH 2023	LOCATION SHARJAH D	CSIS-1 CROSS SUPPORT, INTEROPERABILITY, AND STANDARDS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
11:30 - 12:00	327	Functional Resources – Model Driven Standardization for Monitoring and Control	Holger Dreihahn	Cross Support, Interoperability, and Standards - 1	Ibrahim Al-Midfa Eisa Al-Shamsi
12:00 - 12:30	530	A flexible and robust framework for the secure systems engineering of space missions	Soumya Paul		

FRIDAY 10TH MARCH 2023	LOCATION SHEIKH MAKTOUM C	SSU-6 SAFETY & SUSTAINABILITY OF SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
10:30 - 11:00	402	Preparing for sustainable satellite operations using ESA's Debris Mitigation Facility (DMF)	Jonas Radtke	Space Situational Awareness and Coordination	Alexi Glover (ESA) Andrew Monham (EUMETSAT)
11:00 - 11:30	606	The IOAG Working Group on Sustainability of Operations in Space (SOS WG): Findings and Recommendations in Spectrum Operations	Fabio D'Amico		
11:30 - 12:00	524	Legal instruments supporting sustainable development of space exploration	Kaja Hopej		
12:00 - 12:30	-	DISCUSSION: Do we have the means to ensure earth orbit sustainability in the New Space era?	-		

12:30 - 13:30

LUNCH BREAK

FRIDAY 10TH MARCH 2023	LOCATION DUBAI A + B	DM-3 DATA MANAGEMENT			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	434	Ten Billion Transfers per Day and How to Follow Them – The Evolution of the System Monitoring and Reporting Tools	Victor Sierra Urueña	Data Management-3	Suzanne R. Dodd (NASA JPL) Zeina Mounzer (TPZ)
14:00 - 14:30	587	Blockchain meets space, space meets blockchain	Juan Carlos Gil		
14:30 - 15:00	314	How MBSE can help AIV domain. A practical approach	Nieves Salor Moral		

FRIDAY 10TH MARCH 2023	LOCATION DUBAI C	CSO-2 COMMERCIAL SPACE OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	328	Improving satellites constellations monitoring and diagnostics with CASTeC	Chiara Brighenti	Framework to instigate more Commercial Participation in Space	Christophe Belzile Gladys Magagula (SANSA)
14:00 - 14:30	450	ICE Cubes Media Set - Adding new capabilities to the ISS by enabling user friendly live outreach and media events during the commercial Axiom-1 mission	Saliha Klai		
14:30 - 15:00	511	From ISS European Institutional training to private astronauts training services	Cesare Capararo		
15:00 - 15:30	608	An Agile Mind-set for Mission Operations in Commercial Space	Edoardo Cocci		

FRIDAY 10TH MARCH 2023	LOCATION DUBAI D	STO-3 SPACE TRANSPORTATION OPERATIONS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	173	Digital Transformation of a Spaceport: Kourou Space Center example	Alain Bardoux	Spaceports	Julio Monreal (ESA) Peter Lutz (DLR)
14:00 - 14:30	461	The European Offshore Spaceport for Microlaunchers - GOSA	Andreas Stamminger		
14:30 - 15:00	612	The CDO and the SETTERS - Key elements of modernisation of Guiana Space Centre	Jean-Noel Hourcastagnou		
15:00 - 15:30	111	The opening of commercial space port in Dubai: The design and the requirements of the launch site	Djamel Metmati		

FRIDAY 10TH MARCH 2023	LOCATION AJMAN A	PS-4 PLANNING AND SCHEDULING			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	388	Evolving Spacecraft Quantum On-Call Scheduling	Sven Pruefer	Novel concepts and future applications II	Maria Theresia Woerle (DLR) Peter Van Der Plas
14:00 - 14:30	302	Intelligent Multi-Agent based Automated Negotiation of Mission Scheduling for Satellite Constellation	Insik Jung		
14:30 - 15:00	456	Towards Generic Planning of Optical Links	Anna Fuerbacher		
15:00 - 15:30	517	Automated Planning and Scheduling System for a Heterogeneous Spacecraft Constellation	Remy Derollez		

FRIDAY 10TH MARCH 2023	LOCATION SHARJAH D	CSIS-2 CROSS SUPPORT, INTEROPERABILITY, AND STANDARDS			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	199	Implementing the CCSDS Service Management Interface at GSOC – Challenges, Obstacles and Considerations	Marcin Gnat	Cross Support, Interoperability, and Standards - 2	Ibrahim Al-Midfa Roman Victor Chavez
14:00 - 14:30	467	A New Future for Archive Interoperability and Preservation	Mike Kearney		
14:30 - 15:00	159	The Technology Described in the Orange Book CCSDS 551.1-O-2 Correlated Data Generation and Prospects for Its Further Development	Valery Vorontsov		
15:00 - 15:30	201	A new approach to inter-agency station scheduling at GSOC	Edoardo Barbieri		

FRIDAY 10TH MARCH 2023	LOCATION SHEIKH MAKTOUM C	FE-7 FLIGHT EXECUTION			
TIME	**PAPER ID**	**SESSION INFORMATION**	**AUTHOR**	**SESSION NAME**	**CHAIR & CO-CHAIR**
13:30 - 14:00	498	Canada's NEOSSat space telescope: Ten years of resilience and innovation	Viqar Abbasi	Evolving Mission Capabilities	Nathalie Corcoral (CNES) David Milligan
14:00 - 14:30	346	Lunar Observations in Copernicus Sentinel-3: Implementing a new operation into a flying mission	Pablo Arriazu		
14:30 - 15:00	208	The EDRS mission and its operational experiences to date from GSOC perspective	Gregor Rossmanith		

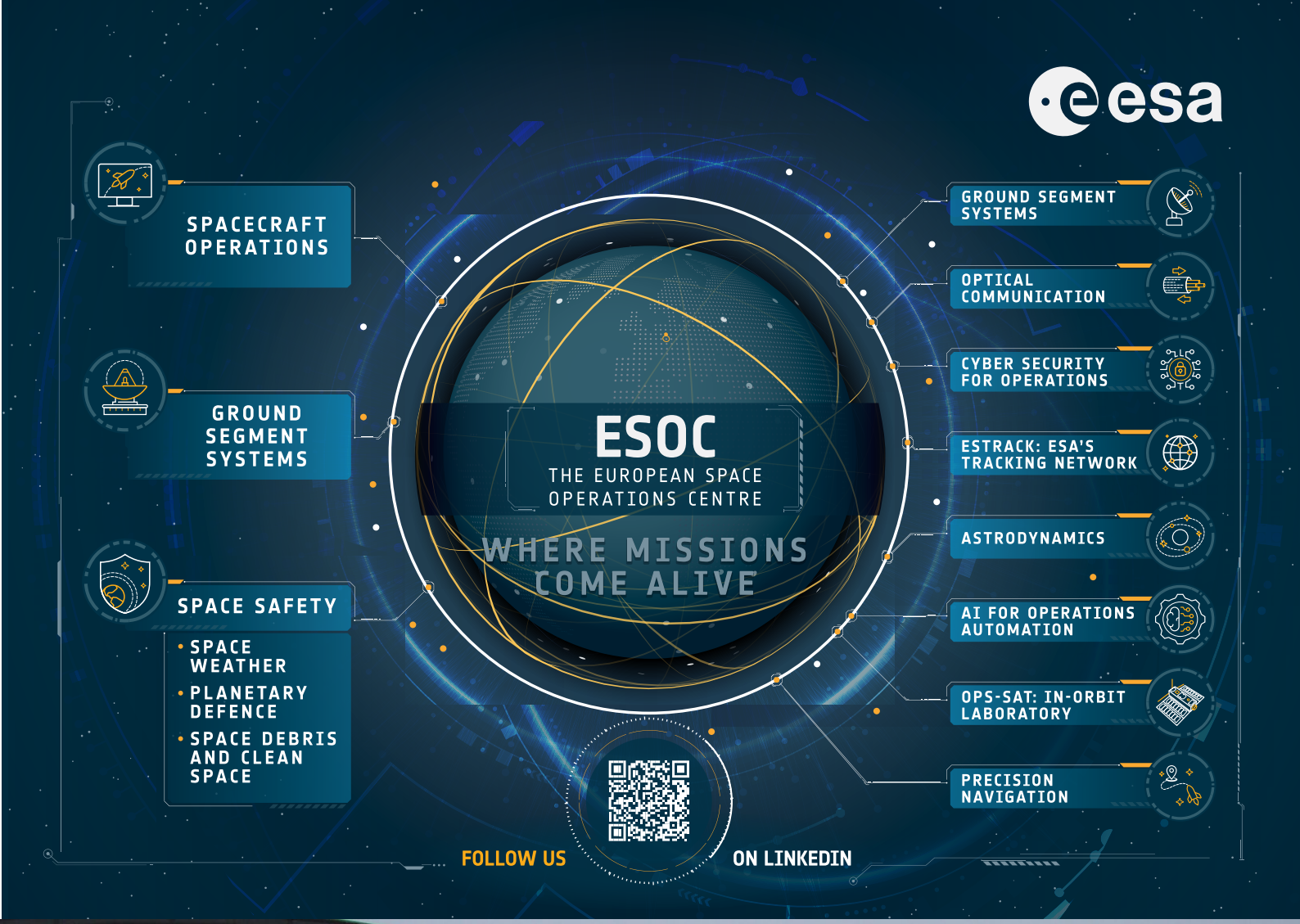
15:30 - 16:00

COFFEE BREAK

16:00 - 17:00

CLOSING CEREMONY

SHEIKH MAKTOUM HALL B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Awards and Recognitions

International SpaceOps Awards - 2023

Back in December 2005 at a meeting in Rome, the Executive Committee and Committee-at Large approved the establishment of an awards and recognition program for the International SpaceOps Organization.

These prestigious awards recognize and honor the outstanding efforts of teams and individuals whose exceptional contributions are critical in overcoming space operations problems and assuring success; those teams or individuals whose exceptional contributions are critical to an anomaly recovery, crew rescue, saving a space mission, or creating a new paradigm in space operations; those individuals who contribute exceptional achievements and/or a lifetime of achievement; and those individuals who provide distinguished service and support to the SpaceOps Organization and SpaceOps Conferences.

2023 Winners will be annouced at the Closing Ceremony

PHOTO CREDIT: TWITTER: THE INTERNATIONAL SPACEOPS AWARD FOR OUTSTANDING ACHIEVEMENT (AOA) 2021 (WINNERS: MAVEN MISSION OPERATIONS TEAM)

Awards and Recognitions

International SpaceOps Awards - 2023

THE INTERNATIONAL SPACEOPS AWARD FOR OUTSTANDING ACHIEVEMENT (AOA)

Presented for outstanding efforts in overcoming space operations and/or support challenges and recognizes those teams whose exceptional contributions were critical to the success of one or more space missions. The International SpaceOps Exceptional Achievement Medal, or EAM, is presented to give unique recognition to an individual who has distinguished himself or herself in the field of space operations and support.

The recipient is an individual whose exceptional contributions were critical to the success of a space mission or who has achieved a significant contribution to the field of space operations.

THE INTERNATIONAL SPACEOPS LIFETIME ACHIEVEMENT MEDAL (LAM)

Presented to give unique recognition to an individual who has distinguished himself or herself in the field of space operations and support over an extended period of time. The recipient is an individual whose illustrious career and exceptional contributions were critical to the success of several space missions or who has made many significant contributions to the field of space operations.

THE INTERNATIONAL SPACEOPS DISTINGUISHED SERVICE MEDAL (DSM)

Presented to give unique recognition to an individual who has distinguished himself or herself with service to the SpaceOps organization. The recipient is an individual who has shown exceptional dedication to the interests of the organization by making significant contributions over an extended period of time.

THE INTERNATIONAL SPACEOPS APPRECIATION AWARD (SAA)

Recognizes the contribution of members of the SpaceOps Organization after supporting at least two SpaceOps Conferences and upon their departure from the organization, or to individuals who have provided great service to the organization.

THE INTERNATIONAL AWARDS GROUP

Led by Chair Richard (Greg) Marlow and Co-Chair Kevin Marston, is pleased to welcome you to SpaceOps 2023.

We thank you for joining us in recognizing and celebrating the achievements of our awardees.

Social Events

Monday 6th March 2023

Welcome Reception
18:00 – 20:00 / Exhibition Area + Sheikh Maktoum Hall C

All delgate attendees will be invited to the welcoming reception. While enjoying coffee and refreshments, it will be a great chance to meet up with former colleagues and make new aquaintances. **Join us for this engaging ice-reaker to build partnerships and professional networks.**

Wednesday 9th March 2023

Conference Dinner (19:00 – 22:00 / Etihad Museum)

A dynamic 21st century museum, Etihad Museum is focused on inspiring its visitors with the story of the founding of the UAE. The 25,000 m2 landmark is befittingly located at the very place where the UAE was founded in 1971. Through a unique visitor journey, the various pavilions house experience-driven exhibitions, interactive programmes and education initiatives that explore the chronology of events that culminated in the unification of the Emirates in 1971, with a key emphasis on the period between 1968 and 1974. The programmes also aim to educate visitors about the nation's constitution, in particular - the rights, privileges and responsibilities that it bestows upon the people of the UAE.

Transportation

Shuttle Busses will take the conference attendees to the Conference Dinner (Etihad Museum) from the Registration Area at Dubai World Trade Centre. Busses will leave at exactly 18:30 sharp. Busses will bring guests back to DWTC after the technical tour ends. Participants who have registered for the Conference Dinner can receive their tickets from the registration desk.

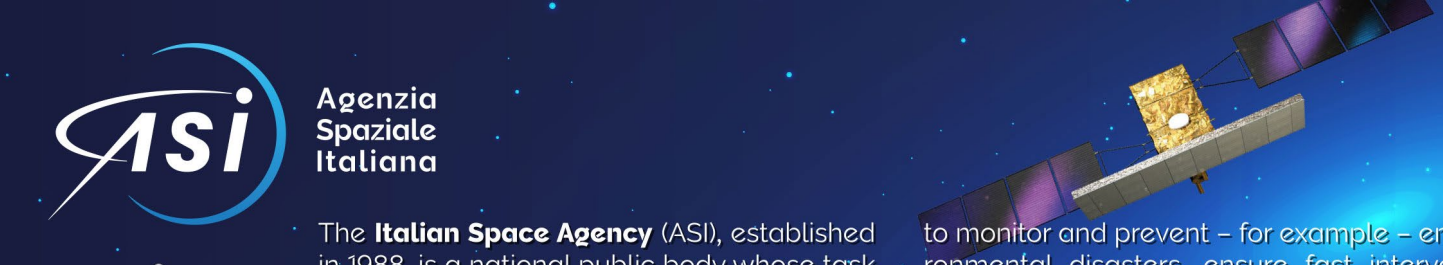
Friday 10th March 2023

Closing Ceremony
16:00 – 17:00 / Sheikh Maktoum Hall B

A closing ceremony will organised to commemorate the success of the conference and to remember SpaceOps2023. The next SpaceOps will be revealed following the closing keynote talk. We cordially welcome you to join us in celebrating the success of the 17th International SpaceOps throughout the course of five days.

Again, thank you to everyone who helped make this amazing event a reality.

Agenzia Spaziale Italiana



The **Italian Space Agency** (ASI), established in 1988, is a national public body whose task is preparing and implementing the Italian space policy, in agreement with the Government's guidelines. The Agency has established itself as **one of the most important global stakeholders** on the scene of space science, satellite technologies and the development of tools to reach and explore the cosmos. Today, the ASI plays a primary role both at a European and at a global level. In fact, it has a close and continuous partnership relationship with the NASA, which has led the ASI to participate in some of the most interesting scientific missions in the last few years.

Thanks to the activity of the ASI, the **Italian scientific community** has obtained **unprecedented success** in the field of astrophysics and cosmology. As well as studying the Universe, you can observe Space from Earth to monitor and prevent – for example – environmental disasters, ensure fast interventions in crisis areas and measure the effects of climate change. Also in these fields, Italy is at the forefront with systems such as **COSMO-SkyMed** and **PRISMA**.

Italy, through the ASI and the national industry, also continues a research tradition in the field of space propulsion, in particular as the leader of the European programme for the **VEGA**, the launcher designed in Italy. However, today Space is no longer just an exceptional research sector, but is also an important **economic opportunity**. The market of satellite telecommunications and navigation – just to mention a field of application – is constantly expanding and ASI, with its experience in the manufacturing and orbiting of satellites, works so that Italy is ready to seize its opportunities.

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WORLD SPACE SUSTAINABILITY ASSOCIATION (WSSA)

World Space Sustainability Association

The World Space Sustainability Association NPIO (WSSA) is a non-profit, international advocacy body representative of the space ecosystem: public entities, regulators, operators, manufacturers, insurers, investors, scientific and academic institutions, individual stakeholders, and beyond.

The mission of the WSSA is to address challenges to space sustainability and optimize the present net sustainable value of the space ecosystem. Space sustainability requires us to go beyond a silo approach, be inclusive of all stakeholders, and act now to optimize the future of space. These values are at the core of the WSSA, supported by international private entities, governments, and other organizations as reflected by the diversity of its founding members.

As innovative space technology and ventures materialize, the effective coordination and direction of the space ecosystem grows in importance. The WSSA aims at being the unified voice of the space ecosystem, spearheading action on an array of space sustainability issues and challenges.

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We are trusted partners to our clients on a wide range of programs, and helping to define their space strategies and tackle challenges in the space ecosystem.
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The Department of Tourism and Commerce Marketing (DTCM) is the principal authority for the planning, supervision, development and marketing of tourism in Dubai. It markets and promotes the emirate's commerce sector, and is responsible for the licensing and classification of all tourism services including hotels, tour operators and travel agents.

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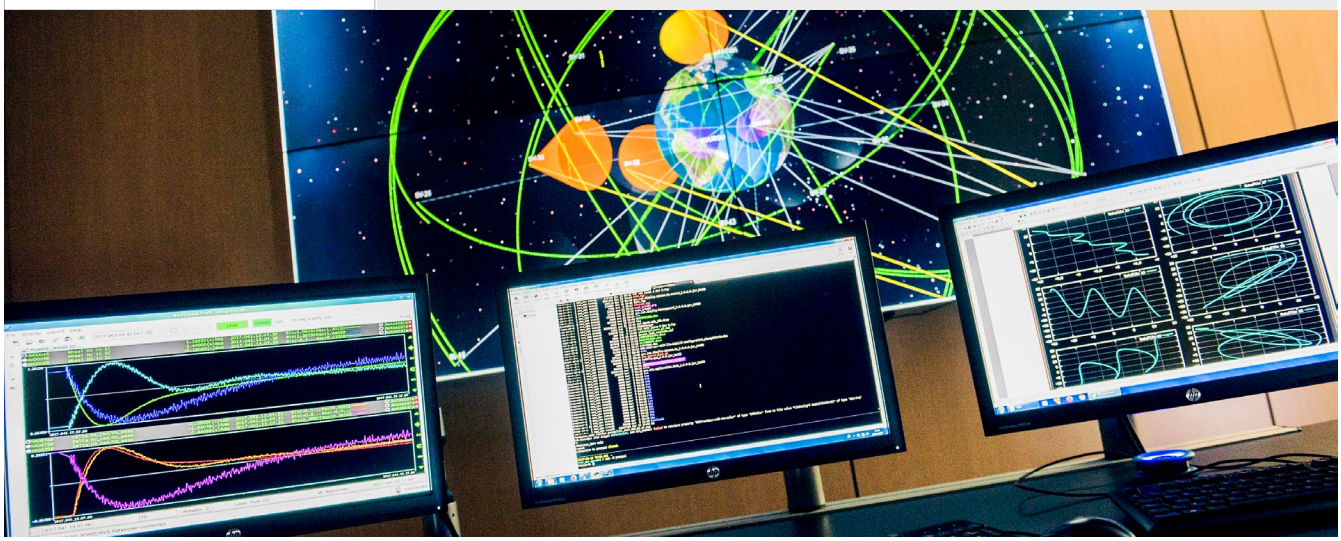

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Al Yah Satellite Communications Company P.J.S.C. (Yahsat) is a public company listed on Abu Dhabi Securities Exchange and subsidiary of Mubadala Investment Company, offering multi-mission satellite services in more than 150 countries across Europe, the Middle East, Africa, South America, Asia and Australasia.

Yahsat's fleet of five satellites reaches more than 80% of the world's population, enabling critical communications including broadband, video broadcasting, backhauling and mobile voice and data solutions. Based out of the United Arab Emirates, Yahsat provides a wide range of C, Ku, Ka, and L-band solutions for land, maritime and aero platforms to consumers, governments and enterprises. Our businesses consist of Yahsat Government Solutions, Thuraya, YahClick (powered by Hughes), YahLink and Yahlive. In 2020, Yahsat commenced construction of T4-NGS, the next generation telecommunications system for Thuraya, which is due to be in service by 2024.

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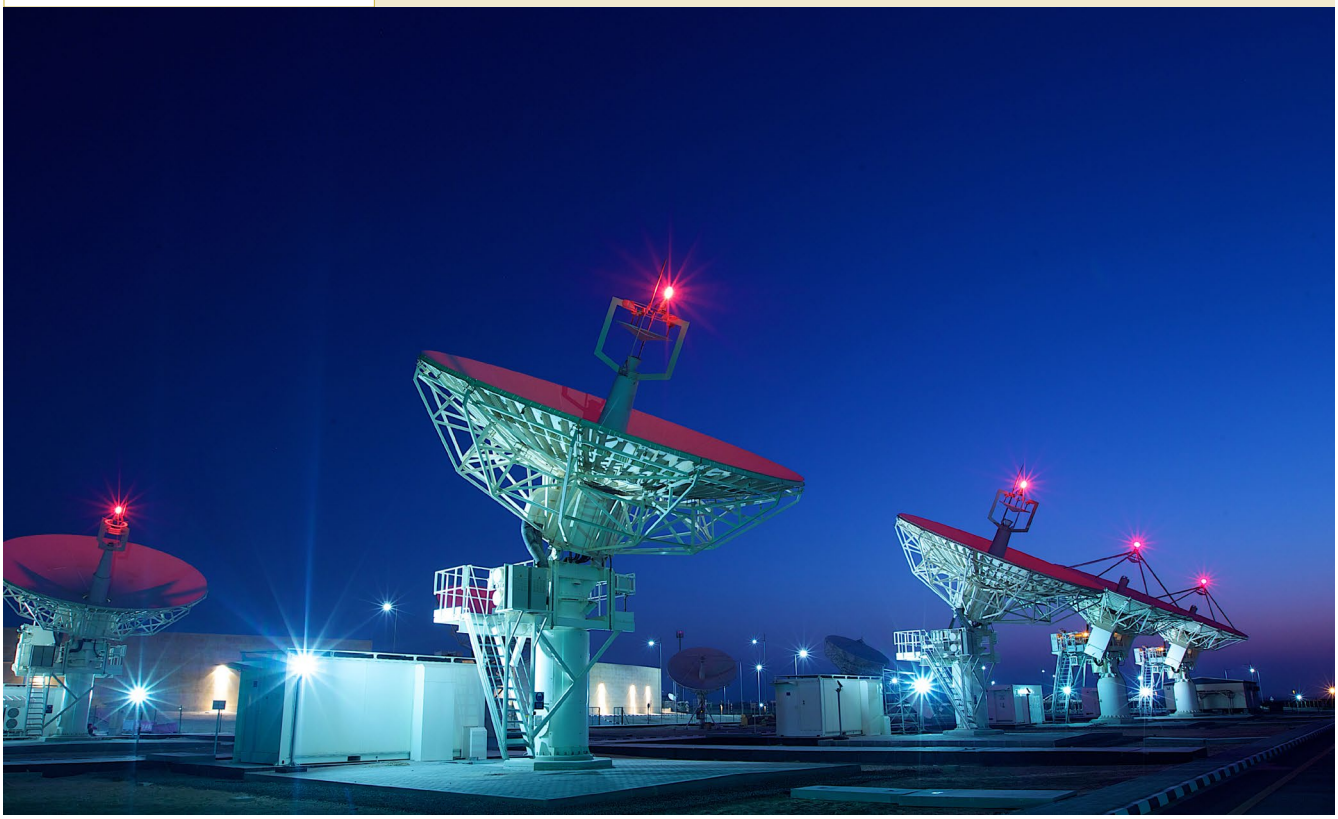

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ESA

STAND NO. SM09

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The European Space Agency (ESA) is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world. ESA's programmes are designed to find out more about Earth, its immediate space environment, our Solar System and the Universe, as well as to develop satellite-based technologies and services, and to promote European industries.

ESA's Directorate of Operations is Europe's centre of excellence for satellite operations and the systems on ground that support missions in space. It is also the home of ESA's growing Space Safety programme: protecting lives and infrastructure in space and on Earth from hazards originating in space.

Visit us to find out more about our activities, our ambitious new programme proposals, and business opportunities with ESA.

SANSA

STAND NO. SM39

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SANSA Hartebeeshoek (HBK) specialises in a wide range of space mission support services.

With over 60 years in operations, the Hartebeeshoek facility has become one of the most sought-after ground stations in the world. Through this ground station, SANSA operates and maintains more than 60 locally installed antennas and measuring instruments. The facility provides full-motion telemetry, tracking, and command (TT&C) antennae, and remote sensing systems across all frequency bands.

TT&C activities at HBK ground station are driven primarily by the needs of international clients. The operational efficiencies that these clients require have driven service quality consistency and reliable performance positioning SANSA as a reputable TT&C tracking station on the African continent.

SANSA aims to promote cooperation in space-related activities, foster research in space science, advance scientific engineering through human capital and support the development of an environment conducive to industrial development in space technologies. Overall, the agency currently boasts three sites in three locations, Hartebeeshoek, Pretoria and Hermanus, focusing on space operations, earth observation and space science respectively.

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ASI — STAND NO. SM22

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The Italian Space Agency, which was born in 1988, is a national public body steered and supported by the "Interministerial Committee for Space and Aerospace Policies" (COMINT). The Agency established itself as one of the most important global stakeholders on the scene of space science, satellite technologies and development of means to reach and explore the universe. Today the Italian Space Agency plays a leading role both at a European level, where Italy is the third major contributor to the European Space Agency, and at a global level. Nowadays, space is no longer just an unusual sector of research, but it's also an important economic opportunity, and ASI, with its experience in building and launching satellites into orbit, works so that Italy is ready to seize the opportunities.

From the essential questions on understanding the universe and the origin of life to experimenting new technologies, today, more than ever, space looks like the place to start in order for human beings to broaden their horizons, grow their awareness and guarantee a better future on Earth. Thanks to ASI, Italy is in the front row in this exemplary human enterprise.

CNES — STAND NO. SM24

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CNES (Centre National d'Etudes Spatiales) is the public establishment responsible for proposing French space policy to the Government and implementing it in Europe. It designs and puts satellites in orbit and invents the space systems of tomorrow; it promotes the emergence of new services that are useful in everyday life. CNES, created in 1961, initiates major space projects, launchers and satellites and is the natural partner of industry for pushing innovation. CNES has nearly 2,400 employees, men and women who are passionate about space, which opens up infinite, innovative fields of application; it intervenes in five areas: the Ariane launcher, scientific research, observation, telecommunications and defence. CNES is a major player in technological innovation, economic development and industrial policy in France. It also establishes scientific partnerships and is involved in numerous international projects. France, represented by CNES, is one of the main contributors to the European Space Agency (ESA).

SPACENAV — STAND NO. SM03

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SpaceNav is an applied mathematics and aerospace engineering company with proven abilities to deliver technical solutions on time and budget in the areas of Space Situational Awareness (SSA), Systems Engineering, and Mission Operations. Our strong background in mathematics and software development enables us to rapidly model, prototype, and deploy a variety of capabilities to mission stakeholders. SpaceNav's expertise lies in modeling and simulation, estimation, orbit determination, and optimization. We support commercial and military customers including the Missile Defense Agency and the United States Air Force, bringing technical expertise and experience from a multitude of programs spanning the DoD, NASA and NOAA customer base.

As a recognized leader in the space community, SpaceNav has been delivering state-of-the-art solutions in the Space Situational Awareness domain since 2009. Bridging the gap between theory and operations, we focus on advanced technologies and improving conjunction analysis operations through developing new tools and processes.

TELESPAZIO — STAND NO. SM49

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Telespazio Germany, a subsidiary of Telespazio - a joint venture between Leonardo (67%) and Thales (33%) - is a leader in consulting, tehcnology and engineering services, with over 400 employees providing expert services in a full range of systems and operations engineering, and ICT disciplines.

We enable our clients' business by developing ground-based, software-intensive systems for control, planning and data processing as well as for simulations and training. Post-development, we provide operations services, support through the entire programme lifecycle, up to fully outsourced services for our clients - at the highest quality and compluant with the necessary regulations.

Our roots and expertise in the space domain have helped us brand out into other market segments such as aviation, defence, security, and telecommunications, in which we have become a first-choice provider of solutions. Our decades of experience has helped us become a trusted partner to our clients, take full responsibility for solving their pains, support their evolution, and enable their business success, thereby making aerospace a commodity.

EXHIBITION LAYOUT

Exhibition Layout

Exhibition Hall Operation Hours as follows

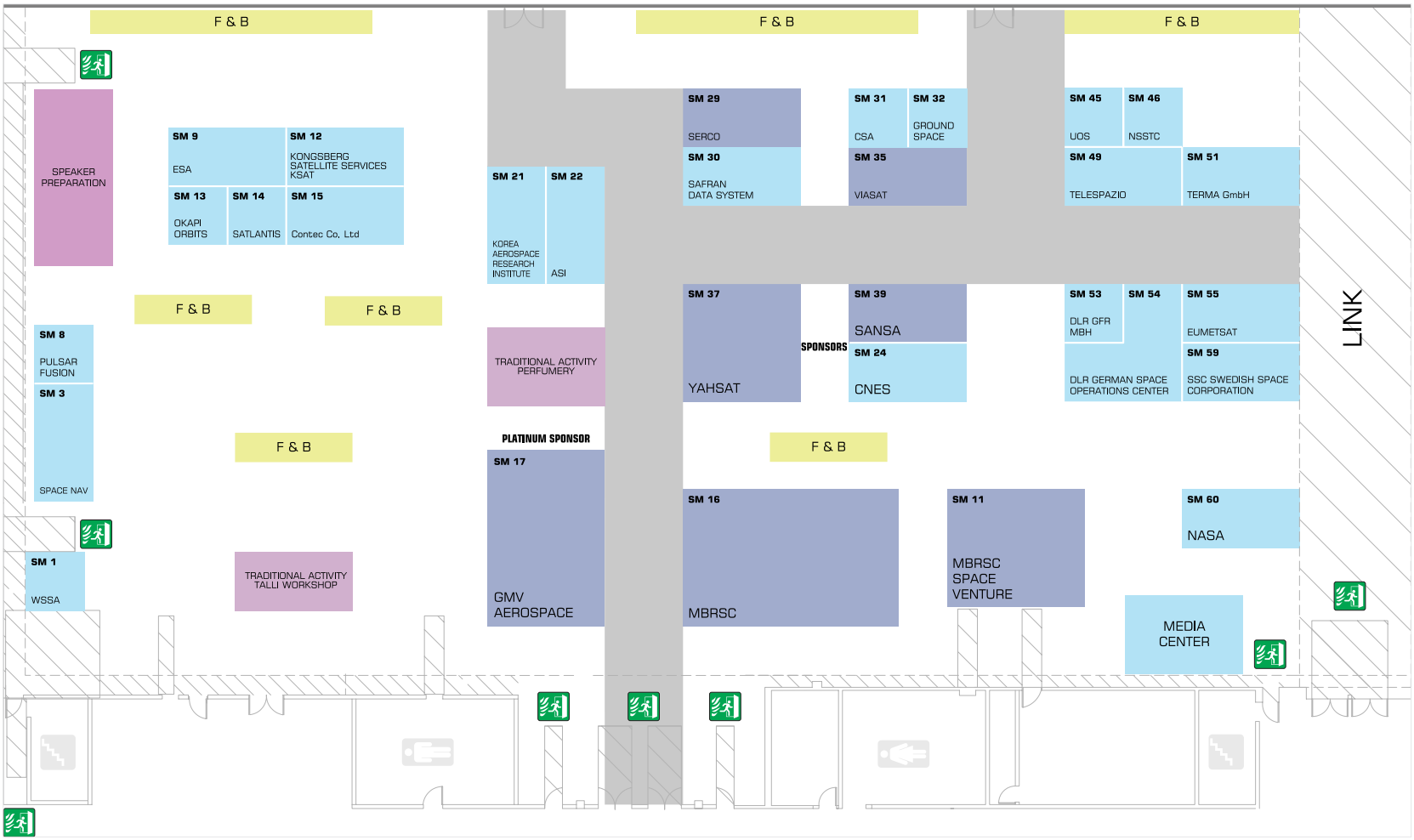
March 06, 2023
11:00 -18:00

March 07, 2023
09:00 – 18:00

March 08, 2023
09:00 – 18:00

March 09, 2023
09:00 – 18:00

March 10, 2023
09:00 – 15:30



Our Exhibitors

EXHIBITOR	STAND NO.
MBRSC	16
MBRSC - Space Venture	11
GMV	17
Yahsat	37
ESA	09
Sansa	39
ASI	22
CNES	24
Spacenav	03
Telespazio	49

EXHIBITOR	STAND NO.
DLR - Gsoc	54
DLR GFR MBH	53
Eumetsat	55
Government of Canada.CCMEO	31
GroundSpace	32
Kari	21
KSAT	12
National Space Science & Technology Center	46
Okapi:Orbit	13
Pulsar Fusion	08
Safran Data System	30
Satlantis	14
Serco	29
Swedish Space Corporation	59
Terma GmbH	51
University of Sharjah	45
Viasat	35

VENUE DETAILS

Venue Details

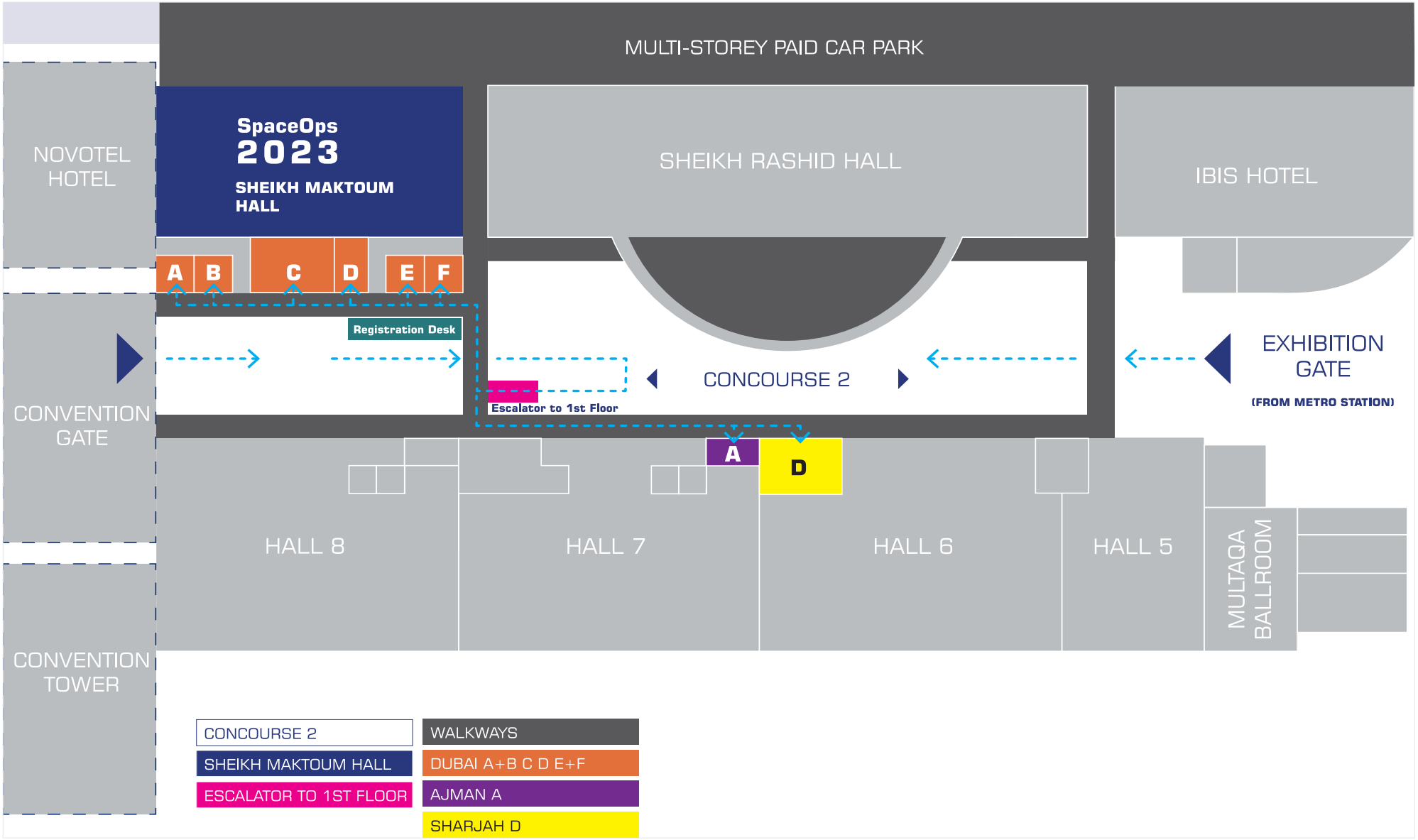
At Dubai World Trade Centre (DWTC) the only limit is your imagination.

As the region's largest events venue, we offer every type of service and support all under one roof. Our business was founded on one simple idea creating better events and experiences.

If you can imagine it, we'll make it happen. Dubai World Trade Centre is centrally located within the commercial business district of Dubai amidst the city's iconic landmarks. VENUE DETAILS AND FLOOR PLAN With over 30 years experience and more than one million square feet of multi-purpose space, we have welcomed some of the world's most high-profile events. A destination in itself, DWTC hosts more than 500 events across international trade fairs, mega consumer shows and prestigious conventions - and welcomes more than 3 million visitors from 160 global markets every year. With the Dubai International Convention and Exhibition Centre at the heart of our complex, DWTC is home to the commercial offices of Sheikh Rashid Tower and the Convention Tower.

With our own fully onsite serviced accommodation at The Apartments as well as our associate onsite hotels, Novotel and Ibis, a good night's sleep is within arm's reach. The result is a complex fully integrated into the business heart of Dubai.

Venue Map


MULTI-STOREY PAID CAR PARK
NOVOTEL HOTEL
SpaceOps 2023
SHEIKH MAKTOUM HALL
SHEIKH RASHID HALL
IBIS HOTEL
A
B
C
D
E
F
Registration Desk
CONCOURSE 2
EXHIBITION GATE
(FROM METRO STATION)
Escalator to 1st Floor
CONVENTION GATE
A
D
HALL 8
HALL 7
HALL 6
HALL 5
MULTAQA BALLROOM
CONVENTION TOWER
CONCOURSE 2
SHEIKH MAKTOUM HALL
ESCALATOR TO 1ST FLOOR
WALKWAYS
DUBAI A+B C D E+F
AJMAN A
SHARJAH D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