

Program of the 3rd Moon Village Workshop & Symposium

Tokyo & Kyoto 5-8. Dec. 2019



Program is subject to change by coordination until the final program review by IPC.

4-Dec (wed)	18:00	Reception & Registration Cocktail Place : Riso-kai Club, Tokyo University of Science (TUS)
5-Dec (Thu)	Place : 17 th Floor, 1 st Building, Kagurazaka Campus, Tokyo University of Science (TUS)	
	9:00-12:20	Opening Program
	12:20-13:00	Sponsored Lunch
	13:00-15:20	Keynote Lectures & General Talks
	15:30-17:30	Breakout Sessions - <i>Five splinter sessions held in parallel</i>
	18:00-20:00	Sponsored Dinner (MVA, Guests & Sponsor Speeches) Place : Canal Café
6-Dec (Fri)	Place : 17 th Floor, 1 st Building, Kagurazaka Campus, Tokyo University of Science (TUS)	
	9:00-9:35	Special Session
	9:35-12:30	General Talks
	12:30-13:10	Sponsored Lunch
	13:10-15:30	Keynote Lectures & General Talks
	15:45-17:00	Panel Session
	17:00-17:50	Closing & Wrap-up of Tokyo Session
7-Dec (Sat)	Travel to Kyoto	
	17:00	Kyoto Reception Place : Former Head Office of Forest Research Station & Garden Hokubu (North) Campus, Kyoto University
8-Dec (Sun)	Place : Maskawa Nobel Laureat Memorial Building for Education and Research, Hokubu (North) Campus, Kyoto University	
	9:00-9:15	Opening Remarks
	9:15-12:15	Session I & II
	12:15-13:15	Lunch
	13:15-15:15	Poster Session
	15:30-17:00	Session for Education
	17:00-17:30	Summary and Closing remarks of Kyoto Session

Tokyo Session Program

Place : 17th Floor, Building No. 1, Kagurazaka Campus, Tokyo University of Science (TUS)

Time	Session Title	Theme	Speaker
9:00-9:20 Opening Program Master of Ceremony John Mankins (MVA)	Opening	MVA Opening Remarks (5min)	Giuseppe Reibaldi & John Mankins
		Opening Note by Local Organizing Committee (5min)	Yoshifumi Inatani (LOC Chair)
		Opening Address	Hiroshi Yamakawa (JAXA President)
			Shinichi Nakasuka (Space Policy Committee, Cabinet office & University of Tokyo)
		Jan Woerner (ESA Director General) - video message	
9:20-10:20	Co-Host Address & Lecture (60 min)	"Activities by Space Colony Center @TUS"	Chiaki Mukai (TUS)
		"Human Space Activities in Kyoto"	Takao Doi (Kyoto University)
		"Legal Aspects of the Moon Village"	Setsuko Aoki (Keio University)
10:20-10:30	Coffee Break (10min)		
10:30-10:45	MVA Overview (15min)	"MVA Overview"	Giuseppe Reibaldi (MVA)
10:45-12:05	Key Note Lectures I	"From ISS to the Moon and our Vision"	Koichi Wakata (JAXA Vice-President and Astronaut)
		"Gateway, Artemis and beyond"	Jim Green (Garvey McIntosh, NASA)
		"Chinese Lunar Programme"	Weiren Wu (CNSA)
		"Indian Lunar Programme"	Parameswaran Sreekumar (ISRO)
12:05-12:20	Award Ceremony: MVP - Mission Prizes 2019		
12:20-13:00	Sponsored Lunch		
13:00-14:20	Key Note Lectures II Chair Oleg Ventskovsky (MVA)	"The Luxembourg Space resource Initiative [SpaceResources.lu]"	Bob Lamboray (Luxembourg Space Agency)
		"Getting There, Being There"	Brent Sherwood (Blue Origin)
		"Lunar Exploration and Utilization Activities"	Maksym Degtiarov (Yuzhnoye)
		"Sustainability of Human Space Exploration to the Moon"	Naoko Yamazaki (J-Astronaut)

Time	Session Title	Theme	Speaker
14 : 20-15 : 20	Chair Munetaka Ueno (JAXA)	“How Lunar Society in 2040 will be Operated?”	Shigeru Imai (JAMMS)
		“Spacebit Mission One: An International Partnership to Demonstrate New Walking Rover Technologies”	Pavlo Tanasyuk (Spacebit)
		“Business promotion on the Moon”	Atsushi Uchida (Mitsubishi Research Institute)
		“Legal issues arising from utilization of space resources on the Moon”	Shimpei Ishido (Attorney-at-law, Nishimura Asahi)
15 : 20-15 : 30	Coffee Break (10min)		
15 : 30-17 : 30 Breakout Session ①	TOPIC Moon Village Architectural Considerations Chairs John Mankins / Yoshifumi Inatani	“Introduction with the MVA Architecture White Paper”	John Mankins
		“Membrane distillation for polishing water originating from moon regolith reduction processes”	Dries Demey (QinetQ Space)
		“Utilizing the Moon’s most prominent features, the soil and the craters; an Architectural Concept”	Angelus Chrysovalantis Alfatzis (National Technical University of Athens)
		“Space Architecture with Centrifugal Force on the MOON”	Takuya Ono (Kajima Co.)
		“Structural Approach in Space Architecture and Social Optimization for Space Habitation Facilities”	Hiroshi Yamashita (Numerical Simulation Tech)
		Discussion/Recommendations by the Co-Chairs	

15 : 30-17 : 30 Breakout Session ②	TOPIC Human on the Moon Topics (incl. Culture) Chairs Chiaki Mukai / Michelle Hanlon	“Introduction with the MVA Cultural Consideration White Paper”	Michelle Hanlon
		“ILOA 5 Moon Missions, Galaxy Forum, First Women on the Moon Update Toward 2020”	Steve Durst (International Lunar Observatory Association)
		“Life at the “Moon Village”: how imagination and environment entangle to bring new ‘worlds’	Aliça Okumura-Zimmerlin (UCLondon)
		“Assessment of Cancer Risk from Radiation Hazard in Space”	Akihisa Takahashi (Gunma University)
		Discussion/Recommendations by the Co-Chairs	

Time	Session Title	Theme	Speaker
15 : 30-17 : 30 Breakout Sessions ③	<p>TOPIC</p> <p>Roadmap to a Market on the Moon (Business & Commerce Topics)</p> <p>Chairs</p> <p>Misuzu Onuki / Oleg Ventskovsky</p>	“Introduction with the MVA B&C White Paper”	Oleg Ventskovsky (MVA)
		“Marketing strategies & applications to help build the Moon society”	Makoto Arai (Dentsu Inc.)
		“Applications of Space Technologies to Sustainable Construction Business Opportunities”	Yoonsun Lee (Hanyang University)
		“Supply Chains and End Users – The Business Case for the Lunar Frontier”	Jim Keravala (OffWorld)
		“Blockchain Systems supporting the Moon society”	Pavlo Tanasyuk (Spacebit)
		“Legal challenges to promote space ventures”	Motoko Mizuno (JAXA)
		Discussion/Recommendations by the Co-Chairs	
15 : 30-17 : 30 Breakout Sessions ④	<p>TOPIC</p> <p>Coordination & Cooperation (including Legal Topics)</p> <p>Chairs</p> <p>Giuseppe Reibaldi / Setsuko Aoki</p>	“Introduction with the MVA C&C White Papers”	Giuseppe Reibaldi
		“Closing the Gap in Space Law: An Implementation Agreement for the Moon Treaty”	Dennis C. O'Brien (The Space Treaty Project)
		“Jurisdiction and nationality on the Moon”	Naohiro Kitamura (Century Law Office)
		“Applying the space law to the community on the Moon?”	Tetsuji Odan (Mori Hamada & Matsumoto)
		“Harmonization of Interfaces for Moon Exploration”	Maria Terekhova (Yuzhnoye State Design Office)
		“Realizing the Moon Village: Participation of Emerging Space Countries”	Ghamin Alotaibi (Kuwait University)
		Discussion/Recommendations by the Co-Chairs	
15 : 30-17 : 30 Breakout Sessions ⑤	<p>TOPIC</p> <p>Science on the Moon & the First MVA Payload</p> <p>Chairs</p> <p>Junichi Haruyama / Elissavet Koumi</p>	“Introduction with the MVA Payload Pre-Phase A results”	Elissavet Koumi (Morpheus Avatar Systems)
		“UZUME: Pioneer Missions to Establish Moon Villages in Lunar Caverns such as Lava Tubes”	Junichi Haruyama (JAXA)
		“Astrophysics on the Lunar Surface”	Abdullaziz Mohamad (PAAET)
		Gravitational-wave observatory on the Moon”	Munetaka Ueno (JAXA)
		Discussion/Recommendations by the Co-Chairs	
18 : 00-20 : 00	Sponsored Dinner@ Canal Café - Guests & Sponsor Speeches		

Tokyo Session Program

Place : 17th Floor, Building No. 1, Kagurazaka Campus, Tokyo University of Science (TUS)

Time	Session Title	Theme	Speaker
9 : 00-9 : 35	Special Session Chairs Giuseppe Reibaldi (MVA)	“Using Starship to Build a Base on the Moon”	Paul Wooster (SpaceX)
9 : 35-10 : 50	General Talks II TOPIC Moon Village Architectural Considerations Chairs Jan Kolar (MVA)	“Common Lunar Landing Pads – Built In-Situ – Are a Legal and Economic Imperative”	Michelle Hanlon (For All Moonkind and the Center for Air and Space Law)
		“Universal Design for All Space Habitat (U-DASH): A Study on Architectural Planning Criteria of Moon Village”	Huai-Chien Chang (HelioX Cosmos Co.)
		“General Rules on How to Live on the Moon and the Related Research”	Yoji Ishikawa (Obayashi Co.)
		“Planetary Automation Construction Technology”	Tai Sik Lee (Hanyang University)
		“The OffWorld Solar System Toolkit – How to Build Civilization to the Stars”	Jim Keravala (OffWorld)
10 : 50-11 : 00	Coffee Break (10min)		
11 : 00-12 : 30	General Talks III TOPIC Moon Village Architectural Considerations Chairs Kaori Sasaki (JAXA)	“Envision of Space Colony Construction via Moon”	Shoyo Hyodo (MHI)
		“Consumer and Producer in the Moon Surface Society”	Michio Isayama (IHI AEROSPACE Co., Ltd.)
		“TOYOTA Contributes to Human Exploration through Pressurized Crew Rover”	Hirofumi Inoue (TOYOTA)
		“Elastic Wheel for Lunar Rover”	Makoto Ishiyama (Bridgestone)
		“ASTRAX Lunar City Development Project Overview”	Taichi Yamazaki (ASTRAX)
		“To the Moon and back, your comms made simple: Relay communications services around the Moon in 2023”	Nelly Offord (Surrey Satellites Technology Ltd)
12 : 30-13 : 10	Sponsored Lunch		

Time	Session Title	Theme	Speaker
13 : 10-14 : 30	Keynote Lecture III Chairs Shinichi Kimura (TUS)	“What ispace is going to do on the Moon (TBC)”	Takeshi Hakamada (ispace)
		“The Moon: How we got there, why we went, and what it means?”	John Horack (Ohio State University)
		“MVA and UN COPUOS, promoting cooperation, norms and synergies”	Dorin Prunariu (Astronaut and former Chairman of COPUOS)
		“The International Astronautical Federation – Connecting @II Space People to Move Forward to the Moon”	Christian Feichtinger (IAF Executive Director)
14 : 30-15 : 30	General Talks IV TOPIC Human on the Moon Topics Chairs Yuko Inatomi (JAXA)	“Functional space foods improve the QOL in moon village”	Takeshi Nikawa (Tokushima University)
		“Effect of hypogravity on human physiology on the Moon surface”	Satoshi Iwase (Aichi Medical University)
		“Effect of the Hybrid Training Method on the Disuse Atrophy of the Musculoskeletal System of the Astronauts Staying in the International Space Station for a Long Term”	Naoto Shiba (Kurume University)
		“Moon Olympics”	Makoto Arai (Dentsu Inc.)
15 : 30-15 : 45	Coffee Break (15min)		
15 : 45-17 : 00	Panel Session Moderator / Chair Taro Asazuma (ispace)	“How to Make Moon Village Happen”	Naoko Yamazaki (Astronaut) Pavlo Tanasyuk (Spacebit) Dorin Prunariu (Astronaut and former Chairman of COPUOS) Shigeru Imai (JAMSS) Naohiro Uyama (Shimizu Co.) Kae Masuhara (Dentsu Inc.)
17 : 00-17 : 50	Closing & Wrap-up of Tokyo Session Chair Giuseppe Reibaldi(MVA)	Report from Breakout Sessions	John Mankins (MVA)
		Summary of WS and Symposium MVP – Activities Prize Award Next (4th) MV Workshop & Symposium Announcement Introduction to Kyoto Session	
		Concluding Remarks	Giuseppe Reibaldi (MVA)
18 : 05-18 : 50	Press Conference	Giuseppe Reibaldi, John Mankins (MVA) Chiaki Mukai (TUS), Takao Doi (Kyoto University), Setsuko Aoki (Keio University), Yoshifumi Inatani (LOC, JAXA)	



Kyoto Program

Travel to Kyoto

- Kyoto historic site excursion (optional)
- Kyoto Reception (17:00) @Former Head Office of Forest Research Station & Garden
Hokubu (North) Campus, Kyoto University

Kyoto Session program

Place : Maskawa Nobel Laureat Memorial Building for Education and Research
Hokubu (North) Campus, Kyoto University

Time	Session Title	Theme	Speaker
9 : 00-9 : 15	Opening Chair Satoko Tsujihiro	Opening Remarks	Takao Doi (Kyoto University) Setsuko Aoki (Keio University) Giuseppe Reibaldi (MVA)
9 : 15-10 : 30	Session I TOPIC Moon Village Association activities: Introduction to General Public Chairs Dorin Prunariu (Astronaut and former Chairman of COPUOS)	"MVA Overview"	Giuseppe Reibaldi (MVA)
		"Architecture needed for Moon Village"	John Mankins (MVA)
		"Making Business in the Moon Village"	Oleg Ventskovsky (MVA)
		"Education & Public outreach activities of MVA"	Elissavet Koumi (Morpheus Avatar Systems)
10 : 30-10 : 45	Coffee Break (15 min)		
10 : 45-12 : 15	Session II TOPIC Various activities aiming at building society on the Moon Government, Commercial sector and Ventures for Kyoto General Public Chairs Satoshi Iwase (Aichi Medical University)	"JAXA's space exploration now"	Hiroshi Sasaki (JAXA)
		"Encouraging commercial sector's activity for exploration"	Kazuyoshi Kawasaki (JAXA)
		"Building Businesses on the Moon"	Misuzu Onuki (Space Access)
		"Investing in Space"	Hideki Kanayama (Shimizu Co.)
		"A Commercial Lunar Surface Exploration Program Including the First Lunar Cave Mapping Mission"	Pavlo Tanasyuk (Spacebit)
		Q&A Session	
12 : 15-13 : 15	Lunch		
13 : 15-15 : 15	Poster Session Facilitator Tomoyuki Tajima (Kyoto University)	Kyoto University Space Unit is promoting and encouraging activities of young students including high school boys and girls. In the poster session, they show these student activities by 20-30 posters and on-site presentation. Exchange with attendants are to be made. # The title/name/affiliation of the posters are listed in Page 16.	
15 : 15-15 : 30	Coffee Break (15min)		

Time	Session Title	Theme	Speaker
15 : 30-17 : 00	Session for Education Chair Takayuki Hoson (Osaka City University)	“Introduction of space unit activities”	Masahiro Terada (Kyoto University)
		“Establishing an international institute for the development of next-generation space nutrition researchers”	Takeshi Nikawa (Tokushima University)
		“Space Law Education of Keio University”	Setsuko Aoki (Keio University)
		“Space Education Program of the Tokyo University of Science: Mission Oriented Space Education”	Shinichi Kimura (Tokyo University of Science)
		“JAXA space education: Space for humanity”	Kaoru Sasaki (JAXA)
		Q&A Session	
17 : 00-17 : 30	Summary and Closing Remarks of Kyoto-Session Chair Sin Mineshige (Kyoto University)		Takao Doi (Kyoto University) Setsuko Aoki (Keio University) Yoshifumi Inatani (LOC) Giuseppe Reibaldi (MVA)

List of the Poster Session

	Title	Name	Affiliation
P-1	Space and Mathematical Education	Hidenobu Tsuritani	Kyoto University
P-2	Space Development Timeline with Industrial Structure	Akito D. Kawamura, 3D printer group of the Space Unit	Astronomical Observatory of Kyoto University, Kyoto University
P-3	Space Education with STEM	Takuya Inoue	Doshisha University
P-4	Moon Moto PJ	Hiro Hamada, Mitsuru Hamada, Takuya Matsumoto	RIDE DESIGN, HAL, Osaka Institute of Technology, Mikage High School
P-5	Space Camp at Kyoto University	Hirai Hayate, Kuge Maiko, Machida Iori, Matsumura Hiroki, Ohashi Hiroki, Onishi Ryutarō, Ozaki Ryu, Shirakawa Yuki, Uno Kohei	Kyoto University
P-6	3D printed Space Robot	Kohei Uno	Kyoto University
P-7	Space Experience	R.Kita, T.Matsutani Y.Nakamura, S.Ishida, M.Eda, Yui Hashimoto	Kyoto Kogakuin High School
p-8	Artificial Gravity Network for Human Space Development	Takuya Ono, Makiko Nagura, Junya Yamamoto, Hisafumi Suzuki, Genta Kurihara, Juniya Okamura	Kajima Corporation
p-9	Space Camp at Biosphere 2 ~Aim for Human Activity on Mars~	Hiroaki Sato, Ami Hashimoto, Tomomi Kubo, Yusaku Miyashita, Hayate Hirai, Masahiro Terada, Yosuke A. Yamashiki, Takao Doi	Kyoto University
p-10	Biosphere 3 ~A Human Habitat on Mars~	Hiroaki Sato, Ami Hashimoto, Tomomi Kubo, Yusaku Miyashita, Hayate Hirai, Masahiro Terada, Yosuke A. Yamashiki, Takao Doi	Kyoto University
P-11	Six-days Practice of Space Travel 2018	Azusa Ito, Motoki Sotsuka, Junichiro Nakazawa, Kaname Taniyasu, Kenji Miki, Tomoki Okamura, Nao Hoshinouchi, Gaito Masuda, Yuki Matsuda, Daichi Kazama, Aki Yoshioka, Yu Kasuya	Kyoto University
P-12	New Sensibility in Zero Gravity	Azusa Ito, Hirochika Mikami, Nao Hoshinouchi, Sachika Shibukawa, Yu Kasuya, Yuto Kanai,	KPC-4 (Kyoto-university Parabolic Challenge)
p-13	Investigation of the Spatial Cognition in Microgravity	Yusaku Sato, Sachika Shibukawa, Masaya Amo, Teruhisa Ohara, Lena Sasaki	Kyoto University
p-14	OriHime: Weaving Our Material Distance with Heart Warming and Robotics	Kunihisa Ohno, Maho Sasaki	Kyoto University
p-15	Scientific Illustration and Computer Graphics of eOplanets in Extrasolar Planet's Catalogue EXOKyoto	Nami Kimura, Yosuke Yamashiki	Kyoto University
p-16	SPACE Development Forum 2019 Report	Atsuhiko Gomi	SPACE Development Forum
p-17	Medical Treatment in Space by Space Infusion Device—ENMEI—	Yuya Miyajima, Kiyosei Ogawa, Junichiro Nakazawa, Yusaku Miyashita, Mio Kobayashi, Eriko Akayama	Kyoto University
p-18	Activities to Promote Public Awareness of Space Development in Asia-Pacific Region	Muneo Takaoki	Miina Sciences
p-19	Apes on the Moon: How Primatology Contributes to Astrosociology	Tomoyuki Tajima, Hiroki Ohta, Takao Doi	Kyoto University
p-20	How to Live in the Water-Rich Satellite, Enceladus.	Nao Hoshinouchi	Kyoto University
p-21	Beginner's Guide on Exoplanet Observation in Kyoto	Kenji Miki, Takao Doi, Yosuke Yamashiki, Masaki Deguchi	Kyoto University
P-22	The Design of the Moon Base	Yu Kasuya, Soma Okaoto, Kohei Uno, Junichiro Nakazawa	Kyoto University
p-23	Society for Potential Use of Timber in Space	Kenji Miki, Takao Doi, Kaito Masuda, Azusa Ito, Tomoya Hirata, Motoki Sotsuka, Koji Murata, Masashi Nakamura, Keiichi Baba	Kyoto University
P-24	Our Eco	Nao Hoshinouchi, Daesung Huh, Hotaka Iwami, Kaito Masuda, Teruhisa Ohara, Yuichiro Ota	Team Our Eco
p-25	Conceptual Design of Wooden CubeSat	Motoki Sotsuka, Kenji Miki, Koji Murata, Masashi Nakamura, Takao Doi	Kyoto University