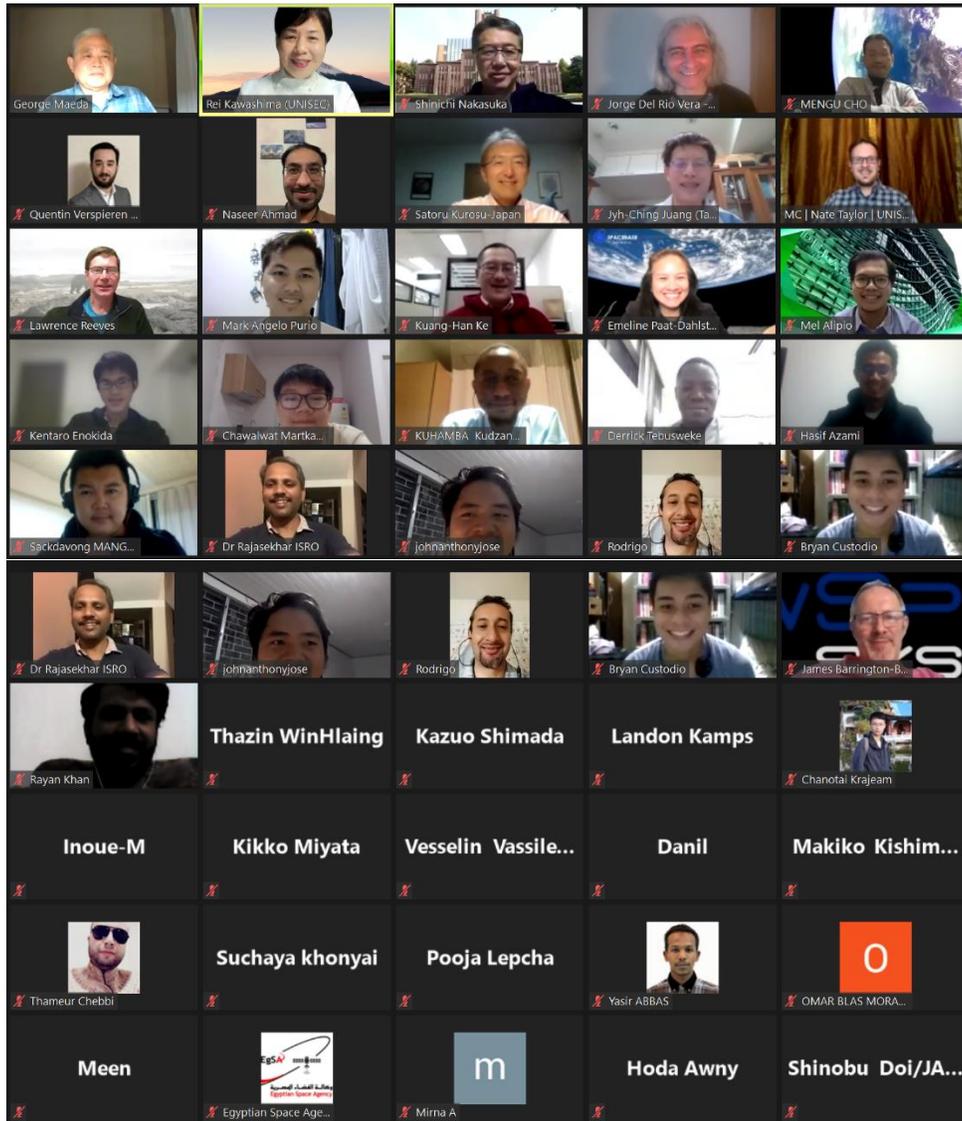# UNISEC-Global The 8th Virtual Meeting

April 17, 2021 22:00-00:00
(Standard Japan time GMT +9)

**The following report prepared by UNISEC-Global Secretariat
April 17, 2021.
Japan**

Table of Contents

1. Welcome and Opening remarks
Prof. Sinichi Nakasuka, University of Tokyo

Professor Nakasuka graduated from the Graduate School of Univ. of Tokyo, Doctor Course in 1988, and got a Ph.D. in Aeronautics. He joined IBM Research in 1988, joined Univ. of Tokyo in 1990 as a lecturer, and has been an Associate Professor of Dept. of Aeronautics and Astronautics since 1993. His research fields include space systems design and operation, navigation, guidance and control, small satellites, autonomy and intelligence for space systems, space robotics and machine learning.

Pictured: Professor Shinichi Nakasuka, the University of Tokyo.
Core idea of opening statement: satellite development as a problem solving activity

Highlights:
- Satellite building should be seen as a problem solving activity
- Satellite development is done through "Inverse Reasoning"
- Most real life issues are can be solved using the "Inverse Reasoning" technique
- From "Wants" (Results) to "How to Realize" (Solutions) is called "Inverse Reasoning"
- Formal education teaches forward reasoning, no opportunity to teach inverse
- Most of the problems do not have solutions, need multiple skills to solve such problems
- Satellite development or CanSat development is a good tool to learn problem solving
- Satellite integrates different areas into one
- Strong desire to solve problem is needed in order for such training is required
- Example: ARLISS (A rocket Launch for International Student Satellites) since 1999
- Comeback Mission: Coming back to initial position after launch
- Modification of strategy after initial feedback from implementation of idea can improve solution
- Leverage human network to solve real world problems using the skills learned from development process
- Aim is to develop general problem solving skills

Pictured: Professor Shinichi Nakasuka showing the importance of satellite/cansat training as a way for students to learn skills to solve general, real-world problems.

2. Presentation "Access to Space for All"

Dr. Jorje Del Rio Vera, UNOOSA

Dr. Jorge Del Rio Vera is a telecommunication Engineer and has a PhD in earth observation. Dr. Vera has been interested in space since childhood and started his career in the Group of Physical Oceanography of the University of Malaga where he used remote sensing to study the Mediterranean Sea. He has worked with organizations such as NASA Goddard Space Flight Center, European Space Agency, NATO and European Global Navigation Satellite Systems Agency. He is currently the scientific affairs officer at Office for Outer Space Affairs in the United Nations (UNOOSA) promoting international cooperation in the peaceful uses of outer space.

Pictured: Dr. Vera from UNOOSA speaking on "Access to Space for All"

Highlights:
- The presentation's heading is based on UNOOSA's program
- Background on UNOOSA: UN's Home for Space and diplomacy, is as old as sputnik (first satellite)
- The prevailing question has always been: Is outer space important?
- On the outlook, space looks expensive and does cost a lot of money
- Looking at Maslow's hierarchy of needs, basic need comes first
- Sustainable Development Goals (SDG) carter to basic need primarily but some go higher to the hierarchy
- However, important to understand that 40% targets can be supported by space technologies
- Modern societies cannot be possible without space technologies
- Myth 1: Space is expensive. Hollywood movies are more expensive in some cases. There are new inexpensive ways to achieve space in resource constraint enviroments
- We tend to look at front cost rather than cost savings. Cost saving benefits of space is huge
- Myth2: Space is only for few countries. There are already 95 member countries on UN COPUOS. It is not only for few countries
- UNOOSA provides support if a country becomes spacefaring without national space law and policy, without economic analysis, development of technology and human resource
- UNOOSA provides opportunities or infrastructure
- UNOOSA is keen to develop responsible and sustainable behavior
- (DropTes) for microgravity/hypergravity experiments
- Solving real world problems having been trained in space technology (Example from Guatemala where they used skills they learned from space to solve COVID-19 problems)
- Satellite development through Satellite Development Track (KiboCube). PNST program at Kyutech is developing key human resource for developing nations
- Exploration Track through the ISONscope program
- Using space to reach SDG
- Skills development from space and can be very valuable
- When thinking about the future, there is no scenario where space will not be involved
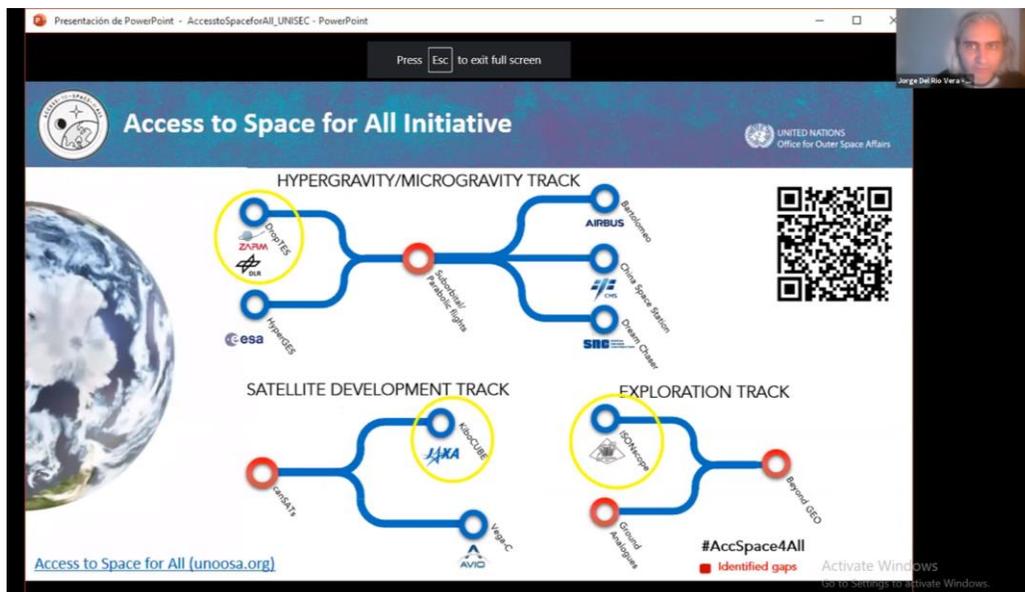
Pictured: Dr. Vera illustrating different aspects in which Access to Space for All is supporting three key technologies that fosters space collaboration and development; Hypergravity/Microgravity, Satellite Development Track and (Space) Exploration Track.

Q&A

Emeline Paat-Dahlstrom: What is the requirement to be a partner?
*A: Very good question. We [UNOOSA] normally go through the partnership process through a dialogue. We have to check the goals that we have are aligned with the goals that partner have. Sometimes those conversations take quite a bit of time. If we want to come to the same destination, we will try to make it happen. **Flash News:** Before we used to approach partners. Now what we want to do is to make it easier for people to become partners. For those who want become partners, they can state which areas they would like to collaborate and we would also like to understand their needs [through the process]. I hope it will be open by the end of the summer.*

John Anthony Jose: Given the available tracks in your QR code, on which track you are currently focused on?
A: I am focused on the three, we deem the three equally important. And if you look at the tracks, they are overlapping a bit, so we cannot really focus on a single one.

3. Breakout Discussion and Sharing

Moderators: George MAEDA, Kyutech; Nate Taylor, UNISEC-Global.

Pictured: The topic subject for the breakout session regarding defining access to space

Highlights:
- Define term access, steps to take, realistic time frame to achieve the dream and state implications
- Entire meeting is divided into 6 breakout rooms (about 4-5 people in each room).
- Participants discuss the above agenda for 25 minutes.
- Representatives of each room make a 1 min summary to the entire meeting.

Summary of breakout group discussions

	1	2	3	4	5	6
	Landon	Mark	Quentin	Lawrence	Cho-sensei	Makiko
	Derrick	Chanotai	Mel	Thazin	Suchaya	Bryan
	Kawashima	Vesselin	Kentaro	Jorge	Chawalwat	Satoru
	Hasif	Thameur	Kuang-Han	Emeline	Danil	ESA
	Dr Rajasekhar	George	Timothy	Shinobu	Johnathon	Hoda
	Naseer	Rayan	James			Kikko

Group	Speaker	Comments
Room 1	Derick	Access means to gain launch opportunity. Space education is a way the step to achieve that. We think it will take about 10 years where emphasis should be given on education. There's a lot of competition from primary sectors from agriculture/education but it is important to raise awareness about importance of space, benefits and how it can support primary sectors.
Room 2	Mark	Access to space for all is promoting inclusivity in the use of space-related resources for the benefits of the people. We can have an audit on the needs based on priority and align the available space-related resources to address such needs.
Room 3	Quentin	Access means access to benefits of space, to space data and space infrastructure. This raises the question of what can and should be shared, what kind of capabilities are essentially possible because of security. The negatives could be sharing and space crowding. Regional cooperation can be a key way so that countries who know each other and have diplomatic relations avoid wasteful duplication while improving education/human resource building.
Room 4	Lawrence	Focus should be on education and growing interest in country/region through astronomy and space for young students. Show what are satellites and what satellites can do. Demonstrate and grow their interest. Cansats can be an interesting tool where first high school is targeted and can move into universities. Growing that capacity is important.
Room 5	John	Access means privilege on data and facilities on education and access to space knowledge. Realistic timeline is about 10-15 years (The is predicted by looking at progress made in the past decade). Positive way of use of space is disaster prevention/mitigation and improving space technologies. Negative is that space can be used in a wrong way and we can also have congestion in space.
Room 6	Makiko	Each country has many problems such as typhoon in the Philippines. Earth observation can reduce the risk and help prepare for that. It is important educate by introducing space to the everyone.

Comments from Dr. Jorge Del Rio Vera, UNOOSA

Interesting not to hear space law and policy development. Focus has been on engineering and education. Understanding concept of space divide and space capabilities is key for access. We can also access space by data and being able to put space policy. Regarding timeframe, I have no idea but it is accelerating. The implications depends on how it's done. It has to be done in a responsible and sustainable behavior. There are risks paid by the whole world so it is important to prevent negative consequences.

Other comments
From MC | Nate Taylor | UNISEC-Global to Everyone:

Through education we can make space more accessible.
Step 1- Outreach programs, Step 2- Design course outline, Step 3- Subscription or membership forum
Step 4- Build Space Communicator Societies in School.

4. Regional Report: UNISEC-Japan

Prof. Mengu Cho, Kyushu Institute of Technology

Prof. Mengu Cho received his B.S. and M.S. degrees from the University of Tokyo and his Ph.D. degree from Massachusetts Institute of Technology, in 1992. After working at Kobe University and International Space University, he joined Kyushu Institute of Technology (Kyutech) in 1996. Since 2004, he has been a Professor. Currently, he is the director of Laboratory of Lean Satellite Enterprises and In-Orbit Experiments (LaSEINE). His research interests include spacecraft environmental interaction and satellite systems. He has supervised over 11 university satellite projects, among which 10 projects, 19 satellites, are already launched. In 2019, he received Frank J. Malina Astronautics Medal from International Astronautical Federation.

Pictured: Prof. Mengu Cho during the virtual meeting.
He introduced the activities of UNISEC-Japan.

Pictured: Prof. Mengu Cho's screenshot of slides presented on behalf of UNISEC-Japan

Highlights:

- Established as a NPO in 2002, now 49 laboratories from 36 universities
- 636 student members, 262 individual supports and 19 coorperate supporters
- Three Key Pilars: Human resouce, technological development and outreach
- More cooperate members (19), more financial support for UNISEC-Japan
- New generation of board members who are former UNISEC students
- FY 2020 programs:
    - Takumi Conference in July
    - Lesson learnt meeting (May-June, Sept-Dec)
    - General Assembly on August 1
    - Noshiro Space Event on Nov 21-23 which was done physically
    - Space Job Fair on Dec 5-6
    - ACTS CanSat Campaign on Dec 12-13 which was done physically
    - Annual workshop on Dec 19-20
    - KiboCube Academy Jan-Feb
    - UNISEC Academy Feb
- Everything done remotely except 2, affected by COVID-19
- No ARLISS this FY but ACTS Cansat conducted
- Adapting to COVID-19 meant new ideas such as Lessons Learnt sharing meeting which had 23 presentations with sincere and honest discussion
- Nanosatellite Mission Assurance Handbook which is 400 pages for JAXA (In Japanese)
- Space Job Fair connected students to industries. First done in 2019. 240 participants and 26 companies.
- Non Tokyo area participants were also connected which was good because of internet
- Possibility for World Space Job Fair? Perhaps in the future.
- UNISEC Academy: Online lectures on nanosatellite development operation and utilization.
    - UNISEC faculty members involved with range of topics from orbital mechanics to propulsion
    - Target employees of new space companies who are coming from non-space/technical background. Done in Japanse, new revenue stream for UNISEC
- **Announcement:**
    - UNISEC Japan signed MoU with JAXA on April 1, 2021
    - Utilization of CubeSat using ISS/Kibo for Academic Research
    - J-Cube is an inexpensive way for CubeSat release
        - International collaboration for capacity building
        - Domestic advanced missions, Upto 12U per year (Each of 1U-3U)
- KiboCube Academy in corporation with JAXA and UNOOSA. 6 lectures done. FY 2021 continue

5. Report: Evaluating Japanese University-led Space Development and Utilization of Capacity Building Programmes in Emerging Countries

Quentin Verspieren, University of Tokyo

Mr. Quentin Verspieren is a Researcher at the Intelligent Space Systems Laboratory (ISSL) of the University of Tokyo, where he is in charge of establishing international collaboration programs for space technology development and utilization, mostly targeting developing countries in Southeast Asia and Africa. In parallel, Mr. Verspieren is pursuing a PhD on the role of the military on international regime-making for space traffic management at the Graduate School of Public Policy, University of Tokyo and holds various consultancy positions in the Japanese government and Japanese space ventures. Mr. Verspieren obtained an MSc in Aeronautical and Space Engineering from ISAE-Supaéro in Toulouse, France and an MSc in Aeronautics and Space from the University of Tokyo.

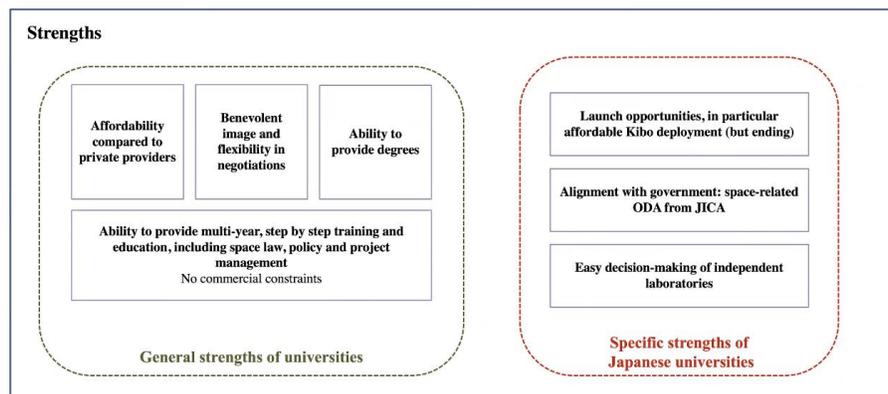*Pictured: Quentin Verspieren presenting his report*

Pictured: Outlining what influence Japanese have
over space development in developing naitons

Highlights:

- Different but interesting public policy approach
    - Funding from SciREX and MEXT
    - Co-evolution project where university and government work/research together
    - Team from Office of Space Ultilization and Promotion, and University of Tokyo
- Report focused on success evaluation, strength/weaknesses of "Japanese way", lessons, comparisons with other organizations outside Japan
- Study involved government, spin-off companies, universities and large corporations
- Studies included projects such as Diwata 1-2 (Philippines and Universities of Japan)
- Asia, Europe and Central America focus groups
- Japanese programs from University of Tokyo and BIRDS program from Kyushu Institute of Technology (Kyutech)
- Analysis of motivation funding organization where laboratories receive support
- Outside Japan, universities do not provide capacity building services. The spin-off companies do to scale up
- Thematic analysis: extent of support contributed to diplomacy of donor country, effectiveness and impact of COVID-19
- Strengths of Japanese capacity building: Central study was done on Kyutech
- Because of the BIRDS program, Kyutech is the most famous space university in Japan
- From weaknesses, the report has derived needs which is then recommended to the government
- To conclude, the report includes
    - Overview of university-led space capacity building and comparison
    - Lessons and good practices for both donors and recipients
    - Policy that is targeted to Japan but can be used for other countries
    - Study other areas and find lessons to extend current research
- Analysis: Role of universities vs role of commercial providers. benefits of spin-offs for scaling up projects. Role of government, Differences of approach with japanese providers
- Thematic analysis of capacity building
- Geographical perspective after looking, thematic analysis
- what extent such projects contronite to the diplomacy of the donor country, specifically in the case of japan
- What extent the programs were effective in terms of education
- and little bit about impact of covid-19, capacity building requires hands on activies

Pictured: An overview of strengths of Japanese university-led capacity building
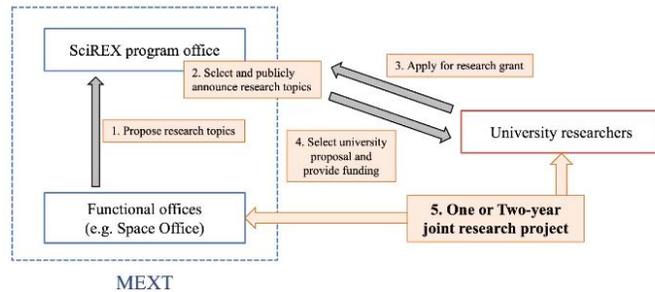
Pictured: Report was done on a co-evolution basis where both government and university was directly involved in writing and drafting recommendations. Full report's link is below

Full Report: https://stig.pp.u-tokyo.ac.jp/?p=4061
Email for Contact: q.verspieren@pp.u-tokyo.ac.jp

6. New member acknowledgment, Announcements and Closing

Rei Kawashima, UNISEC-Global

Pictured: Kawashima-san announces new members for the UNISEC-Global Community

Highlights:
- No new local chapters
- 2 new university members (National Formosa University and National Taiwan Ocean University)
- As of March 19, 2021, UNISEC-Global Community has 21 local chapters, 186 university members and 7 corporate members
- **Next Virtual Meeting:**
    - **May 15, 2021 10:00PM – 0:00 AM (JST)**
    - No confirmed speaker and local chapter presentation as of yet. Discussion topic and Corporate presentation TBD
    - UNISEC-Global Meetings will take place on the **Third Saturday** of almost every month on 2021
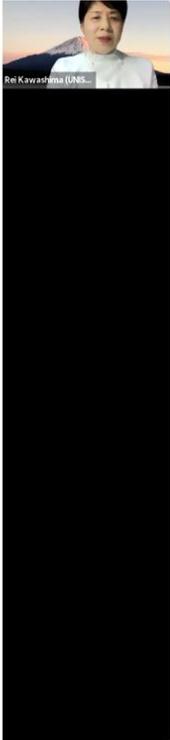

Pictured: Kawashima-san showing events planned for 2021

- **2021 Planned Events**
    - STSC-UNCOPUOS on April 19-30, 2021
    - 13th IAA Symposium on Small Satellites on Earth Observation (Virtual) on April 27-29, 2021
    - MIC7 abstract submission due by July 7, 2021
    - Samara Space International Summer Space School on August 30-Sep 10, 2021
    - IAC2021 in Dubai on October 25-29, 2021
    - MIC7 final presentation on Nov 13, 2021
    - APRSAF 2021 on Nov 30-Dec 3 in Vietnam
      [Question: Is APRSAF confirmed? Rei: Not yet]

- **Event by ISU presented by Emeline Paat-Dahlstrom (SpaceBase)**
    - ISU conducting an Executive Space Course for the first time
    - For professionals and non-space background executives
    - Focused in the Asia Pacific Region, conducted on 17-21 May 2021, China Standard Time
    - 5-day online program on fundamentals of space from planning to mission design
    - Program Fee: $3500 USD
    - Registration www.isunet.edu/ssc (Deadline: April 30, 2021)

Pictured: Emeline presenting about ISU's Executive Space Course

- **Event by Stellenbosch University in partnership with UNISEC-Global presented by James Barrington-Brown**
    - 1st IAA Aftican Symposium on Small Satellites
    - 29 Nov – 1 Dec 2021, Stellenbosch, South Africa
    - Topic: SmallSat Missions to Alleviate Poverty in Africa
    - Contact Details: ldw@newspacesystems.com website: www.iaa-africa2021.co.za
    - Deadline: 16, August 2021; Finalist announcement: 30 September 2021

Pictured: James giving details about Student Mission Competition at Stellenbosch,

- **Event by Samara University for XVI Summer Space School**
    - Dedicated to Yuri's 60th anniversary to space
    - Details: http://volgaspace.org/school_cms/
    - August 30 – September 10, 2021, Samara

Pictured: Kawashima-san explaining details of Samara University's annual Summer Space School

- **Event by AMOS Conference (EMER-GEN) presented by Quentin Verspieren**
    - Everyone can attend because it's both in person and online
    - Program designed for young professionals and students who have plans for space career
    - Anyone interested in space sustainability, STEM, space technology
    - Co-orgnaized by Space Generation Advisory Council in Hawaii annually
    - Details: https://amostech.com/emer-gen/

Pictured: Quentin explaining about AMOS Conference and benefits of attending

Pictured: (Left) Lawrence Reeves and (Right) Cristian Chavez providing updates on local chapters

- **Brief updates on their local chapter's progress**
    - UNISEC-Canada by Lawrence Reeves
        - First National High School CanSat Competition going on
        - Launch from small rockets hasn't been possible
        - The CanSats will be dropped from helicopter
        - The competition will be conducted by late May
    - UNISEC-Chile by Cristian Chavez
        - No plans as of yet and is waiting for new projects
        - However, Chavez is working with "Chile," which is Chile's association for space
        - Planning on kits with real chemical rockets and CanSats to train 15-18 year olds. Idea was presented at IAC Bremen

- **Closing Comments by Dr. Jorje Del Rio Vera**
    - Felt like more time was needed for breakout session. Good to see all people involved
    - Great exchange of information overall and had a good time chatting with people
    - Work done by UNISEC is great and we need more of UNISEC

Pictured: Follow us on our social media pages and get involved!

7.   Participant Statistics

95 registered participants from **38** countries/regions participated in the 8th Virtual UNISEC-Global Meeting.

Country/Region	Number of registrants	Country/Region	Number of registrants
Afghanistan	1	Nepal	3
Argentina	2	New Zealand	1
Australia	1	Pakistan	1
Bangladesh	1	Peru	1
Bulgaria	3	Philippines	15
Cambodia	2	Poland	1
Canada	2	Russia	2
Chile	1	Rwanda	1
Egypt	3	Saudi Arabia	1
Ethiopia	1	South Africa	2
Germany	1	Sudan	1
Ghana	1	Sweden	1
Honduras	1	Switzerland	1
India	2	Taiwan	1
Japan	25	Thailand	2
Kenya	4	Tunisia	2
Lima	1	Turkey	2
Mexico	1	United Kingdom	1
Mongolia	1	USA	2

8.   Participant Questionnaire

Do you know "Access to Space for All" initiative by UNOOSA?
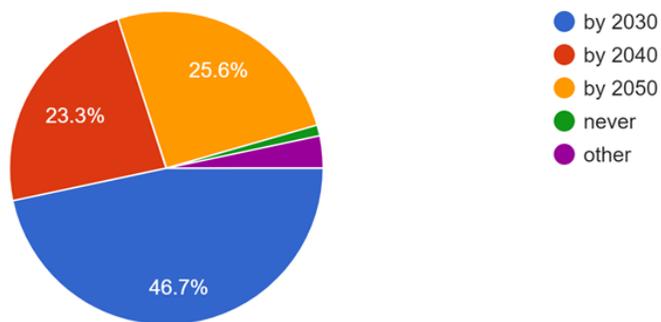88 responses

- Yes
- No

40.9%

59.1%
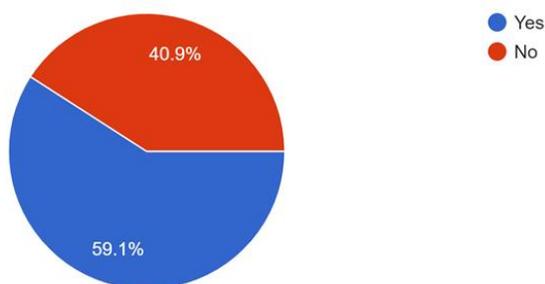
Do you think "access to space for all" is a good idea?

89 responses

- ● Yes
- ● No
- ● Maybe

89.9%

10.1%
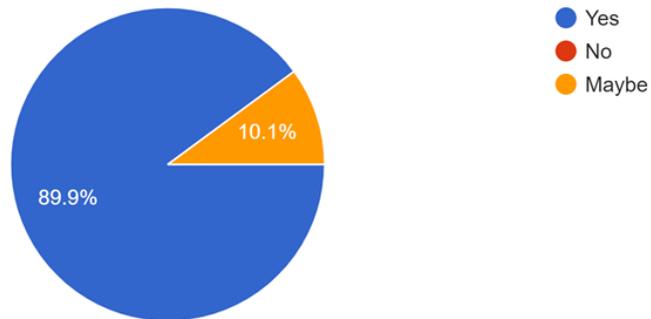
When do you think the situation where all can access to space will be realized?

90 responses

- ● by 2030
- ● by 2040
- ● by 2050
- ● never
- ● other

25.6%

23.3%

46.7%

Thank you