Rei Kawashima, SSP'94 and MSS95

Secretary General, UNISEC - Global Chair, Committee for International Relations, University Space Engineering Consortium (UNISEC - Japan)

A DAY IN THE LIFE

INTRODUCTION

Please list your ISU affiliation - Program & Year

SSP1994 and MSS 1995 - 1996

Tell us a little about yourself - Personal Background (Social, Economic, Educational)

Let me talk about my childhood first. I was born and raised in a small town called Akabira, which is located in the centre of Hokkaido, Japan. Akabira's main industry was coal-mining which was destined to decline. It was a painful experience to see my classmates leave the town one by one as their fathers lost their jobs.Knowing "efforts and results may not be directly related to each other sometimes.... especially when circumstances are changing" during my childhood gave me a chance to contemplate the meaning of life.

The movie "October Sky" reminded me of my childhood, and realised that similar stories were everywhere.... Unlike Homer Hickam in October Sky, I was not attracted by space when I was a kid. I wanted to become a writer and studied Chinese literature at university. I had nothing to do with "space".

My first encounter with "space" was in the English training programme for three newly selected Japanese astronauts, at a language service company where I worked in Japan. I was assigned as an assistant, taking care of the training. It is an interesting coincidence that the name of the company was "ISS". The second encounter occurred in my English conversation class. I took the class to survive in the company as the main target of business was English, not Chinese. In the class, one question from the teacher of the class changed my life. It was "Do you think the World War III will happen or not." I was naïve enough to believe that it will never happen, but the teacher who was a political scientist showed many reasons why it may happen. When I felt totally hopeless, a word of "space" came into my heart. I just believed my intuition, "Key to peace is space" and, since then, I have been searching for how I can contribute to a peaceful world through space. When I heard news of the ISU permanent campus, I thought that it would be my first destination. All three words of "International, Space and University" sounded attractive. This is the beginning of my journey in the space field.

Do you still work in the space sector?

Yes, I am happy to be able to contribute to the space sector.

Please summarise your role in 2 sentences

Promote and facilitate practical space projects/ activities at university level and manage and develop an international NGO called "UNISEC-Global" UNISEC stands for University Space Engineering Consortium.

ISU INVOLVEMENT

How did ISU influence or assist you in your career & current role/function?

ISU provided me with basic knowledge of various space fields, space friends from all over the world, and opportunities to think deeply about "roles and meanings of space exploration and development."

Have you maintained contact with many of your ISU classmates?

Yes, it iswonderful that we can keep such a close relationship after graduation.

In 2015, MSS classmates got together in Strasbourg,

with a kind invitation from ISU, and really enjoyed celebrating the 20th anniversary of the Masters together.

SSP1994 classmates are also keeping in touch, and still have a strong bond.

How often do you leverage your ISU network to achieve your role/function objectives?

Some important contacts that support our activities were given by my ISU experience. I have many ISU people whom I want to appreciate, but here I would like to mention three people.
Werner Balogh was a classmate in both SSP and MSS. The Basic Space Technology Initiative (BSTI) that he created under the United Nations Programme on Space Applications, and that he has been implementing since 2009 as Programme Officer in the United Nations Office for Outer Space Affairs, gave me lots of hints and network.

Mengu Cho was a TA during my MSS. Kyushu Institute of Technology, where he worked after ISU, joined UNISEC in 2005. His contribution for non-space faring countries has been outstanding. He created a scholarship programme called United Nations/Japan Long-term Fellowship Programme "Post-graduate study on Nano-Satellite Technologies (PNST)", in cooperation with UNOOSA. He also launched a new CubeSat project called BIRDS with university students from non-space faring countries such as Mongolia, Bangladesh, Ghana and Nigeria.

John Mugwe was also my classmate both in SSP and MSS. He has contributed to the Nano-satellite Mission Idea Contest as regional coordinator in Kenya since 2010. His inputs were very helpful when I considered how we can promote collaboration worldwide to involve non-space faring countries. I am pleased to see that Kenyan students are currently building their CubeSat in cooperation with an Italian university.

In the future, I think the ISU worldwide network will help to achieve "Vision 2020-100" which is described as "By the end of 2020, let's create a world where university students can participate in practical space projects in more than 100 countries."

CAREER PATH

How has your career developed to arrive where you are?

Whenever I met something / somebody whom I got inspiration from, I tried to keep and deepen it. For example, in 1999, I was introduced to a totally new approach in space engineering education with "CanSat" by Prof Shinichi Nakasuka of the University of Tokyo. The Coke-can sized model satellites proposed by Prof Bob Twiggs of Stanford University were being developed by students at the University of Tokyo and the Tokyo Institute of Technology. I saw promising futures in their activities because they were trying to make it by themselves without any textbook or instructor. In the next year, the students started to develop "CubeSat" which was also proposed by Prof Twiggs. UNISEC was established to support the activities.

Such relationships with people and things led me to a new stage/world, where I tried to seek an opportunity in any difficult situation and did my best there. For example, UNISEC did not have enough financial resources for promotion. Then, I published two books that introduced CanSat and CubeSat through commercial publishers. My desire to become a "writer" was also fulfilled somehow. The publishers promoted our activities through advertising the book. The same cycle happened again and again...

5 years ago, where did you see yourself today?

In 2012, I had already started to work towards realising Vision 2020-100. I knew it was an ambitious goal and I was not very sure what to do, and did not know where I would be 5 years later. I am quite happy to see where I am now because I am still working on it and more and more people are joining our activities.

5 years from now, where do you see yourself?

In 2022, I hope UNISEC-Global will be a successful international NGO in the space field. It will provide training programs, conferences, competitions, seminars, etc. Also, various collaborative space projects which are being proposed, such as the Earthquake Precursor Investigation project or Water quality monitoring with Nano-satellites, will be pursued with international participants in a sustainable way. I hope I'll be promoting and

CubeSat XI-IV launched in 2003 (courtesy of Nakasuka Lab, The University of Tokyo)

facilitating the activities worldwide by writing and talking.

Why?

Sustainable management and continuous new challenges for local chapters are important. If I can contribute to effective management of local chapters (UNISEC-xxx) with my experiences, I would be more than happy.

What does this mean to you?

When I studied at ISU, I was wondering whether human beings, as a species, were qualified to explore deep space yet. Gaps between nations are huge, and only people from rich countries can join space exploration and development. If the world could become a place where university students in more than half of the countries on Earth can join practical space projects, then the human species would be eligible to explore beyond their solar system? It seems to be a paradox, but the premise of such a world, where university students in more than 100 countries can participate in space projects, is that the world is peaceful and that people can collaborate.

- **Personally** My goal is to contribute to making a peaceful world. There must be infinite paths to that goal. I think that one of the paths could be to ensure space engineering education can be acquired everywhere.
- **Professionally** I want to contribute to the world with my knowledge, skills and experiences. I hope I can write a book to encourage and inspire readers.

CURRENT JOB

What do you most love about your job/ business? (What gets you up in the morning?)

I can help others explore and uncover their real power and potential through creating a platform for practical space activities at university level worldwide. I am happy when I can serve others and feel that I am making others happy.

What are you working on now?

I am working on behalf of my organisation to become a permanent UNCOPUOS observer with points of contact in the local chapters, hoping to get it this year. Also, I am working on promoting and preparing the 8th CanSat Leader Training Program (CLTP) which is a training program for professors and instructors to learn how to conduct CanSat hands-on training by experiencing. <http://www.CLTP.info>

In 2017, we will organise two competitions related to nano/micro satellites:
The Pre-5th Mission Idea Contest workshop plus local competitions http://www.spacemic.net and the 2nd Debris Mitigation Competition http://unisec-global.org/dmc/.

Final presentations of both competitions will be held in the 5th UNISEC-Global Meeting held in Rome, in Dec 2-4, 2017. Efforts to enrol new local chapters and raise funding are being made continuously. I'm also working towards publishing a new International Academy of Astronautics (IAA) book (collection of 4th Mission Idea Contest and Deorbit Device Competition), and I'm also trying to write a book on UNISEC history so that the original intention will be understood by the future generations.

Why does this matter to you?

All of them are related to our Vision 2020-100 which is based on peaceful applications. My aspiration is to contribute towards creating a peaceful world. Both inner peace and outer peace are important as I think they are influencing each other.

How do you measure success personally?

How many universities/regions join the activities and can go to the next stage in a sustainable way. Also, how many individuals I can build trustworthy relationships with.

What are the most important changes happening in the Space industry from your perspective and how do you think they'll affect your present role?

Non-governmental organisations' contribution to space industry is getting bigger. Small private companies are becoming especially important to the space industry. Due to this new trend, university students have more options in their future plans. It is also good news for nano-satellite developers, as more companies are producing parts so they have more options.

What was you most significant Success

- **What was it?** Establish UNISEC-Global

CanSat (courtesy of Nakasuka Lab, The University of Tokyo)

- **Why did it work?** 10-year experience in Japanese UNISEC and given budget for international activities (2010-2014). I met nice, motivated people worldwide.
- **What did you learn from it?** Keep mind clear and treat all things that happen seriously, focus on solutions not problems

What was you most significant Failure

- **What was it?** Couldn't manage financial matters properly leading to staff redundancies.
- **Why didn't it work?** A big project (and the funding) ceased in 2014, and couldn't get enough new funding.
- **What did you learn from it?** Careful planning and continuous efforts for fund raising are necessary.

UNISEC SPECIFIC QUESTIONS

UNISEC places a great deal of interest in cubesats. UNOOSA together with Kyutech offer a fully sponsored Master's degree which places emphasis on cubesat engineering. However, what this program does not currently do is to assist the specific developing nation establish a cubesat engineering laboratory – without which the knowledge gained via the UNOOSA/Kyutech program is difficult to utilise. Has UNISEC considered assisting with the establishment of cubesat engineering laboratory's?
I think Kyutech is assisting the specific developing nations establish a CubeSat. (BIRDS project) Their CubeSats will be launched soon.

The European Space Agency, NASA and the Canadian Space Agency all offer opportunities for students to fly experiments on board parabolic flight aircraft. Has UNISEC, with JAXA funding, considered supporting microgravity science?

Of course, if there are any opportunities to support students' space activities, we would love to explore the possibility. (Always need to consider the finance, though.)

Do participants of UNISEC ever experience complications associated with ITAR, i.e. the export of cubesat technology made partly of components/subsystems developed in the United States?

I have not heard about such a case. I think Japanese universities manage building satellites with mostly Japanese parts these days. Some universities purchase components from Europe.

The Mission Idea Contest is a superb opportunity for institutions, primarily in emerging space nations, to gain prominence but even so, such projects can be very costly. In order to foster international cooperation, has UNISEC every considered presenting a project where each partner contributes to a larger project where the entire team collectively works towards developing a microsatellite? Each partner nation would have its own ground receiving station and thus be able to acquire data on its own country.

Thank you for your nice suggestion. Yes, we would love to do it. Again, we need to consider the financial resources at the same time.

Actually, Kyutech is realising it through the BIRDS project.
http://birds.ele.kyutech.ac.jp/

Anything Else You'd Like to Say?

I think that support for education could be the most beneficial investment. It is the key to a better future. It seems almost everybody is interested in talking about education as they are able to contribute to education in some way. That's why I believe it should be possible to make a collaborative platform among universities beyond national boundaries, and to discuss among executives who represent governments and/or companies.
What I want to see is that governments and industries compete to contribute to space education through various ways such as providing free launch slots, supporting travel funding, offering technical support and monetary contributions for meaningful missions.

Thank You very much for your participation!

Thank you for giving me such opportunity.