

## \* A saint's maid knows satellite communications!!

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**S**upposing life had accidental encounter, involvement with satellite communications was just fate for me. I was assigned to the Space Communications Wireless Network Group in April, 2007. I helped the investigation report creation work of Mr. Sachio Shimoseko who was active in this wireless sector, now famous in the field of satellite communications.

This is the reason why I dived into the field of satellite communications, although I did not know it at all. The report contains “Mobile Satellite Communications”, “Large Satellite Antenna”, “Military Satellite”, “Ka-band Satellite Communications” and the current status of satellite communications activities in the world. While I was working, I have gradually found that I do not know. For example:

- *A communications satellite is an artificial satellite sent to space for the purpose of tele-communications*
- *A geostationary orbit is a satellite currently around gone at the same speed as rotation of the earth. GEO, it seems that it is stopped but it is rotating.*
- *Global Positioning System Satellite have been launched many so far, presently more than 20 satellites are spinning around the Earth.*
- *Because the another used satellites was launched all over the world, around the Earth has become a very confused state.*
- *Military satellites that not only the communication, and is also used for other purposes.*
- *Japan was the first development of Ka-band satellite systems in the world*

When I create documents, I must read back them many times. Its meaning: decide to good position of figures; unify the styles of the tables etc. That is to say, I need careful work. For me, this work was as if to decipher the difficult satellite communication introduction. However, I was fascinated by the writing skill and the abundance of information with Mr. Shimoseko. I have drawn more and more to the charm of the deep wide variety of satellite communication while I was working

Mr. Shimoseko, who is more than 70 years of age, has been involved in satellite communication service more than 40 years ago. The abundance of his knowledge is amazing.

Actually, a video disk which I borrowed from him was shocking. Suddenly, between Japan and the United States across the Pacific Ocean TV relay that took place in November 1963, is the moment to change the coverage of President Kennedy's assassination. Would there be the country where understood the situation of the case day immediately in a country except the United States in those days?

In addition, what I have had special attention in this investigation was a tour to Canada and the United States in which Mr. Shimoseko's group has been from April to March 2008. Documents which they have brought were very interesting for me. Of course I couldn't understand the documents about research work. Promotional



▲ Group photo after a workshop organized by the Space Communication Systems Laboratory, NICT

Video and Introducing Brochures that arrived from famous big company (Boeing, Harris, Hughes, etc.) in the world was aroused my curiosity. I would no longer get out from the field of satellite communications anymore.

Recently, overthrew the long-term administration by the uprising of the people that have been called in many fields through Facebook on the Internet in North Africa Jasmine Revolution in Tunisia, Egypt revolution, such as Libya situation has confused still, but one after another new government has drifted up. When I heard this fact, it has the words that I occurred to. It was O3b, Networks Ltd.

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The British Channel Islands Jersey in the English Channel founded in 2007 by entrepreneur Mr. Grey Wyler in the U.S., it began from having established O3b Networks Ltd. for the purpose of the Internet services using a satellite to developing countries etc.

The name "O3b" stands for "[The] Other 3 Billion". Optical fiber network is unavailable developing countries, Asia, Middle East, Africa, and Latin America, O3b was established for the people of about three billion people who do not receive an Internet connection. O3b plans to use the frequency band of Ka-band.

Although O3b was no relation to this revolution in fact, it was deeply impressive just to think which I described until last year in "State of the Ka-band satellite communication systems in the world".

I remember that I take it at time of lunch, "an electric wave of O3b may cause reformation of society", "you can install an antenna in the remote place", "there is a method to make an antenna with a wok" and swelled by the rambling conversation.

Currently, the mainstream of frequency of Japan is C-band and Ku-band. The Ka-band satellite that was put into practice for the first time in the world in 1985, in the reason that it rain attenuation is large and a device is expensive, can be found in situations where use does not progress.

In comparison with the Ka-band satellite system of the foreign countries where development is remarkable sweeping over the world now, Japan is in an unsatisfactory state. But it is related to the area of a country. There is no country that ground-network webs are equipped fully like Japan, and as a result a satellite communications service is not popular in Japan.

However, the importance of the satellite is recognized at the time of the disaster. In the Great East Japan Earthquake that occurred on March 11, 2011, Tokyo Fire Department and Japan Air Self-Defense Force requested us to use our satellite for relief of a stricken area. We provided a broadband connection by using ultra-high-speed Internet satellite WINDS, the "KIZUNA", in operation. WINDS was developed at our laboratory and was launched on February 23, 2008.

Otherwise, the observation satellite ALOS "Daichi" and engineering test satellite ETS-VIII "Kiku VIII" played an active part. The persons involved in ETS-VIII and WINDS received the letter of thanks from commendation within NICT, Tokyo Fire Department, and the Defense Agency in the quick work by this great earth-



▲ Dr. Masato Tanaka (left), the author (center) and Mr. Sachio Shimoseko (right)

quake, respectively. Because I realize very well of the people of the laboratory involved in this activity, it was an event of pride for me.

Our laboratory is developing new space communication technologies such as Satellite Laser Technology to transmit high-speed large-capacity data, Satellite-Terrestrial Integrated Mobile Communication Systems (STICS) and so on. I am looking forward to the future which these researches are in practical use.

In Japan, it is a satellite communication system in which the activity is not well known, but it's an outstanding performance in the case of emergency.

I would like to express my special thanks of gratitude to Mr. S. Shimoseko, Director M. Tanaka, Dr. R. Suzuki and other members of our laboratory who gave me the golden opportunity to do this investigation works of space communications related research which I didn't know it at all.

*\* A saint's maid became to be able to know a world satellite only a little!!* ■

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\*Quotation of the proverb: A saint's maid quotes Latin.