Looking Back 10 Years of Experience in Satellite Developments

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I am writing here for the second time. It's been ten years since I submitted the last essay in 2001. I would like to look back over the past decade.

Ten years ago, "KIZUNA" (WINDS) the high-speed internet satellite was at a very early stage of conceptual design. Now it in orbit, and being operated very well for various satellite experiments; it's a really impressive achievement.

In my last essay I explained that my major in university was not satellite communications and when I started my job, I was a layman. Everything was very new to me, so I tried extremely hard to get used to handling all of the new equipment.

At that time, several satellite development programs were in progress at NICT (CRL at that time) and were already in the development phase, but I had absolutely no knowledge of how to proceed for satellites development. I thought that the specifications developing satellites were predetermined and under these conditions I tried to experiment.

Then I was involved in the Gigabit satellite project - the original form of WINDS - and I realized for the first time that a satellite could "be made" in the true sense of the word. Of course, I knew that a satellite could be physically produced but it was refreshing to understand that we could conceive a new satellite development project freely, in terms of; the functionality and performance or what kind of missions were to be undertaken, and the range of the antenna, which had I assumed were set conditions.

I believe that people involved in satellite development are well aware that even though you can conceive ideas freely it is actually very difficult to put them into practice. I learned the process of conceptualization of a satellite - they had to be manufactured, launched and eventually put into operation.

After the basic mission design concept of KIZUNA (WINDS) was completed, I was learning each day from manufacturing the BBM to day of launch. I was surprised that the selection standards for satellite components was very strict, I was confused how to obtain the necessary parts or

how to mount them, and thought again during the heat stress simulation that space is vacuum. Obviously, there are space limitations inside a satellite when considering the arrangement of components.

During the process, I had to draw on knowledge that I had learned in school, although at that time, I didn't pay it much attention because it wasn't part of major. I was happy to realize that that all my university curriculum hadn't been a complete waste.

▲ Together with coordinators of the international conference, held in Matera, Italy in 2008: The author at the center of this photo.

A satellite project relates to various departments and has to cooperative with each of them, it isn't just manufacturing hardware. Until that time I could only think about communication missions but satellites are not only about communications, but also satellite buses.

I had many opportunities to debate with many people, the manufacture of the WINDS mission apparatus, the interface adjustment with the bus system and other mission components, and how to utilize the WINDS network. The personnel network I cultivated there is extremely valuable to me. I would like to thank all the persons who I have met in various circumstances since I became involved in satellite communications.

At that interview, I replied "Yes, I would." If I were asked the same question now, I could reply with more confidence, "Yes, of course!"

At present, many universities have nano-satellite programs in their curriculums. I envy current students who can become familiar with satellite development through such programs. At the same time, I am looking forward to working with people who have flexible ways of thinking and the generation who grew up in an environment where they can think "what kind of functions should a satellite have."

My master's thesis was on remote sensing, but I thought I'd like to work in satellite communications. During my job interview at CRL the executives told me that satellite R & D was unrefined work rather than cool work and I was asked "do you really want to?"

From the satellite development process, to testing, and actual operation, it may be correct that some parts of satellite R & D cannot be called "research." However, if each step or idea can become a reality, it is not important whether it is cool or unrefined, I think so now again. At that interview, I replied "Yes, I would." If I were asked the same question now, I could reply with more confidence, "Yes, of course!" ■