



< Biography> Mr. Hayashi, 62 was granted a bachelor's degree in Communication engineering from Osaka University in 1963. Following university, he joined NEC, where he has been involved with Satellite Communications since. In April 2000, he was Executive General Manager of Aerospace of Defense Operation Unit, and Senior Vice President of NEC Networks. At present, He is assigned the position of the company's first president since April of 2001.

Interview with CEO

NEC TOSHIBA Space Systems, Ltd.
President Hiromi Hayashi

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Interview with CEO

The Space Systems divisions of NEC and TOSHIBA merged in April of 2001. One year has passed since Mr. Hiromi Hayashi was assigned the position of the company's first president. We asked Mr. Hayashi about the results of the merger and his management policy in space business.

Int. - Thank you very much for finding time in your busy schedule for this interview. NEC TOSHIBA Space Systems Ltd. was established in April 2001 after the merger of the space divisions of these two large corporations. However, as we understand it, the operation of this new company started last October. I would like to ask about the activities of the company in this time frame.

Hayashi:

I have always considered space business in Japan to be quite challenging. With three big companies dividing the Japanese space market, the competition in this arena was harsh. Being an NEC employee, I was aware that while our company was strong in the sphere of communications, it lacked strength in the mechanical field. I thought that a merger of two companies would be an beneficial step in advancing the development of the Japanese space

industry. At that time, TOSHIBA was also considering such a merger and both interests successfully resonated. In April 2001, after one and a half-year of negotiations, a new company, NEC TOSHIBA Space Systems, Ltd. was established. Integration of business



activities and formation of the company's organization took place in a preparation period of six months, so official operation of the company started in October 2001. Now two companies capable of producing satellites in the Japanese space market remain, this creates a healthy level of competition to drive further development in the space industry.

Int. - Both NEC and TOSHIBA had their strong points in the field of satellite development. How are you utilizing these mutual advantages in the process of merging and how are you planning to

bring about the synergy effect?

Hayashi:

Divisions of both companies have their weaknesses as well as their strong points, but they also possess areas in which they compliment each other, which

enables us to explore new possibilities in space business. Not taking advantage of this integrated capability would make the process of merging pointless, I think. But since the divisions of both companies had been working in the same field of space development, after the

merger there is several areas with similar activities in the new company. If after reorganization these areas do not advance it will be difficult to say that we advanced as result of the merger. My focus is to create a competitive company making the most of our synergism and reorganization.

Int. - Last year NEC TOSHIBA Space Systems was selected to be a prime contractor for the ultra high-speed Internet satellite - WINDS. At the same time your company has a great expertise in integrating small-size satellites such as OICETS and MDS. Apart from the

communications satellites, you also work on earth observation, scientific and other types of satellites that vary in accordance



with their application. There are specific tendencies in the development of spacecraft design such as increasing the size to that of the European Alfa-bus but also making smaller, highly functional satellites. What do you think is the future direction of the Japanese satellite technology development?

Hayashi:

Even in pursuit of future visions, it is important to pay attention to the current business difficulties. I would like to see the space industry continuing its development based on the heritage obtained from past experience, exploring new spheres and accumulating new knowledge which will empower our company to progress. In this sense, our long-term work with scientific satellites has been contributing a great deal in the

area of international science. We expect the Japanese government to clearly set future business objectives in

the space industry and we are ready to take the responsibility of accomplishing these goals. In our future work on the medium/small –size ultra high speed Internet Satellite – WINDS, a very important point for us is to pursue growth in integration of such systems. Successful development in this field will

be our first step in venturing production of this type system as whole.

Since production of large-size satellites is not easy from the perspective of the international market competition, we would like to put more effort into integration of medium and small size satellites. I think there are favorable conditions in the world economy for increasing demand for network services; smaller satellites that can be used for communications, remote sensing and other applications. And this is the sphere, where would like to concentrate.

Int. - Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) are currently working on I-SPACE project.

One of the central themes of this cooperation is application of Information Technology (IT) in Space development. What is your opinion on technological progress with utilization of IT?



Hayashi:

This is not the easiest time for R&D. I think that research and development in space industry is not possible without fundamental support from the

government. And the reason for that is not only the scale of this industry, but also without sufficient support it is also very easy to be defeated in the world of harsh competition in advanced technologies.

This is where we

Hayashi:

Global development requires acceleration of the speed. I think it will be a general direction for the development of world industries in the future. We have been chasing the IT in the past, and I think it is important to continue our IT-oriented activity using our previous experience.

Int. - NTSpace is paying great attention to its own area of research and development, but what do you expect from national research organizations, like Communications Research Laboratory (CRL) ?

sincerely hope for distinctive policy from the government. The Technology Policy Board has already accepted such policies

We hope that government policies continuously consider space programs that demonstrate space qualification of the new technology spheres. We hope continuous leadership. For example some time ago Japan took the leadership of the development of the millimeter wave technology, ahead of other countries and accordingly reached excellent results, unfortunately, these days the leadership is obvious. . Therefore we would like CRL to continuously hold the worlds

Leadership in development programs of advanced technology. We think it is important that manufacturers participate in these programs and promote them as total national programs.

Int. - CRL is planning to promote strategic technology development.

Hayashi:

My wish is that this development would progress through cooperation and exchange of human resources with manufacturers.

Int. - Yes, in deed, TAO is practicing this system and CRL would like to promote it.

I think that satellite production business is one of the main spheres of the space development. However, as a result of launch failures of the experimental satellites, Japan seems to be a little behind its European and American partners. Please tell us what you think about development direction of this area and is there international cooperation, such as partnership in the pan-pacific region?

Hayashi:

I think there are basically two directions. For Japan having independence in technology development, where industries possess their own know-how strength is very important. It is this type

of industries that should be first of all looked after by the government. I think that this freedom of business has to be incorporated into the space industry as well. Support by the national policies will provide fundamental support to the space business enterprises. There should be a mechanism of utilization of these results by the government and their further application to the needs of the nation. I think this subject is quite important. Also we cannot underestimate the importance of business development in cooperation with international companies. We are strengthening our ties with partners in Europe and America. These days we are not trying to produce everything necessary on our own; we are searching globally for the best solutions there are. Because Space development is not an industry that can progress in a leap, it seems to be appropriate to follow the fundamental strategy of industrialization of the technological independence development. There are Asian countries that would like to build their own satellites using Japanese technology. We would like to jointly work with these countries in the international cooperation, on the government-to-government basis hoping for the assistance from that level.

Int. - We would like to thank you for your time and informative answers that you provided us.