Present of Satellite Communications in the U.S.A. and Canada

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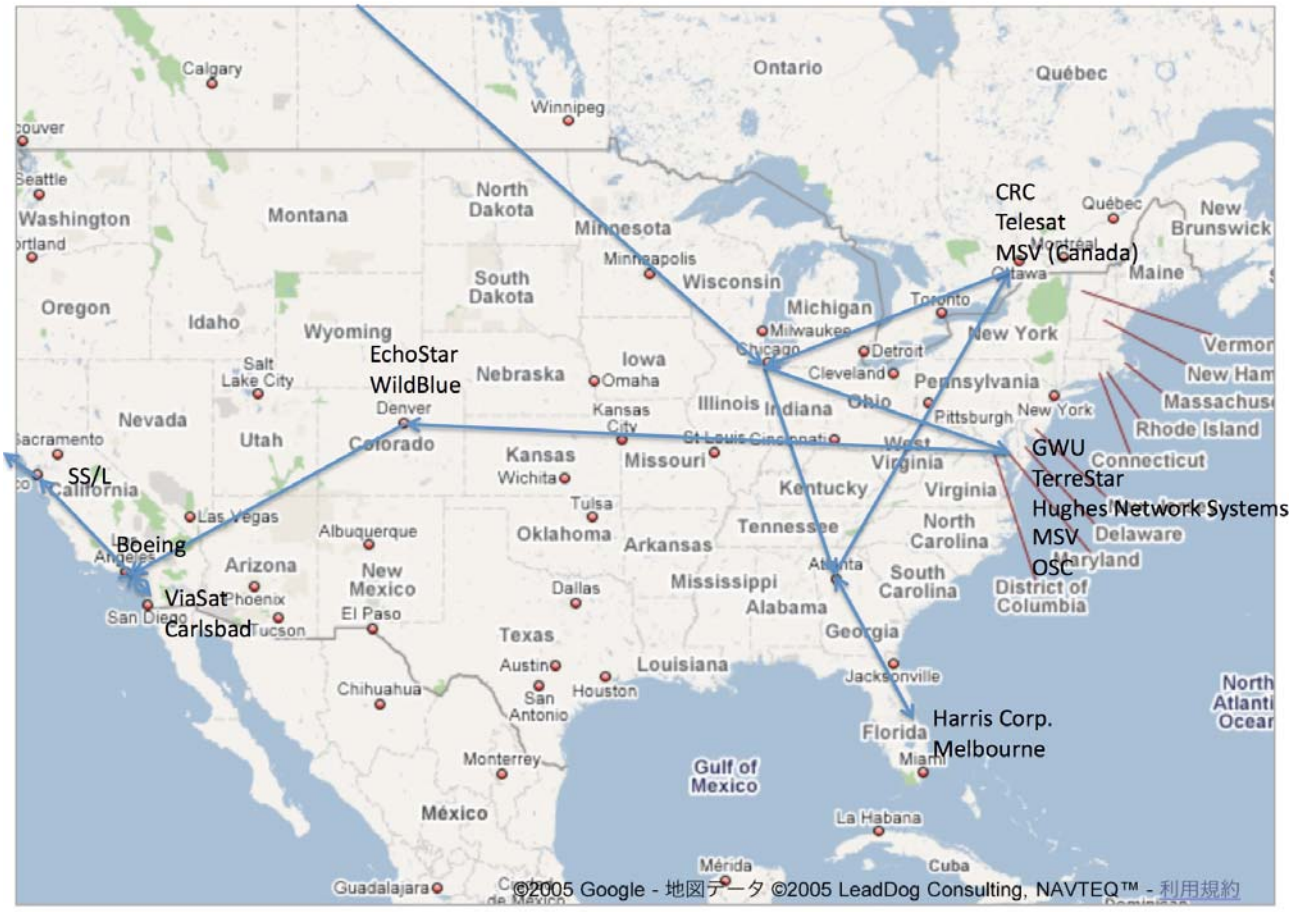
This is a summary report on my trip of visiting the satellite communication related universities, research institutes, operators and manufacturing companies in the U.S.A. and Canada during the period of two weeks from end-March to early-April, 2008 with my colleagues from the National Institute of Information and Communications Technology (NICT) and a person from Japan Aerospace Exploration Agency (JAXA), who attended halfway of the schedule. It was a considerably tight schedule because the North American continent is indeed big. The trip is shown in chart below.

PURPOSE

There are comments in Japan that there is no technology development item anymore, because the present middle term plan of JAXA does not have a development project of a communications satellite. Furthermore, because there has been no experimental communications satellite for more than 10 years since launching failure of ETS-VI and COMETS, the difficult situation exists to progress Japan's satellite communications technology development. However, technical development considerably advances worldwide during these days, especially new mobile satellite communications and new practical use of Ka band satellite communications advance steadily particularly in the U.S.A. Furthermore in particular, the technical development for military



communications satellite represented by TSAT advances very much, because the use of satellite communications is indispensable for the U. S. military. We wanted to get these new technical information, but since it will be difficult to get military information, this time we chose the visit places in the U.S.A. and Canada, focusing on the development situation of commercial satellite, the practical utilization situation of mobile satellite communications and Ka band satellite communications.

CONTACT TO VISIT

If we would visit with no appointment, they would think in a wonder / distrust. So it is necessary to contact to make an enough preliminary arrangement. Therefore we asked any acquaintance of the U.S.A. or Canada to introduce us towards an appropriate person of the visit site, and Prof. Pelton, the George Washington University, Dr. Kitazume, Jepico Corp. and Mr. Tsang, CRC, Canada, helped us. But for the place where there is no relationship so far, I traced it from Web, and finally succeeded in contacting an appropriate person of the visit site. Most of visits were the place where we visit for the first time. So we wondered what kind of deal they gave us and we were nervous. However, all of visits gave us their hearty welcome and relieved us. We were not only heaved a sigh of relief, but also we do not bear it in sense of thanks.

PREPARATION OF DOCUMENTS

Since it was the time when the WINDS satellite was launched successfully in Japan and an argument of the Space Fundamental Law advanced, we reported and explained the research and development status of satellite communications technology conducted in Japan. We prepared the following things as a document to be able to speak about topics of research and development in NICT and JAXA.

- Overview of NICT's Satellite Communications Research
- Satellite Communications Research Projects in NICT
- Optical Space Communication Research
- JAXA's Satellite Programs

We compiled the above documents to CD-ROM and brought with us. We also gave presentation at the visit. The people at visits were interested in listening our presentation.

VISIT AND INFORMATION

Of course it is natural that there is a company secret information, but, the people in each visit welcomed us in open mind. Name of visits and investigation items are listed in Table below.

DATE	VISIT	LOCATION	INVESTIGATION ITEMS
25-Mar	Harris Corp.	Melbourne, FL	Large deployable antenna and Ka band equipment
26-Mar	CRC	Ottawa, Ont. Canada	Ka band satellite communication technology and disater mitigation technology
26-Mar	Telesat & MSV	Gloucester, Ont. Canada	Ka band satellite communication and astellite broadcasting
27-Mar	Pro.J.N. Pelton, GWU	Washington,DC	Future satellite communication business
28-Mar	TerreStar Networks	Reston, VA	S band mobile satellite communication
28-Mar	Hughes Network System	Germantown, MD	Mobile satellite communication, Ka band satellite communication, Thuraya, and Spaceway
31-Mar	MSV (Mobile Satellite Ventures, LP)	Reston, VA	L band mobile satellite communication
31-Mar	OSC	Dulles, VA	Manufacture of commercial communication satellites and small satellite
1-Apr	EchoStar	Englewood, CO	Ku band satellite broadcasting
1-Apr	WildBlue Corp.	Englewood, CO	Ka band broardband satellite communication
2-Apr	ViaSat	Carlsbad, CA	Ka band low-cost earth station, ViaSat-1
3-Apr	Boeing	El Segundo, CA	Antenna for MSV satellite, status of commercial satellite development
4-Apr	SS/L	Palo Alto CA	Manufacture of commercial satellites, ViaSat-1

WHAT FOUND BY ACTUAL INVESTIGATION

This investigation unveils several things that cannot understand unless we visit actually. I summarized to the following three.

- Satellite communications operators in the U.S.A. and Canada are connected each other through investment and/or management. So there might be cases: competitor each other in one case or partner each other in another case.
- SS/L and OSC are manufacturer for commercial satellites, while Boeing assigns its 80% of capacity to military satellites.
- There seems to be technology oriented companies (for example, MSV, ViaSat, Harris, OSC, SS/L, and WildBlue), while business oriented companies (for example, Telesat, TerreStar, and EchoStar).

More detailed technical information of the investigation will be reported in the other opportunity.

ACKNOWLEDGMENT

We thank the people of visit organizations and companies for their willing accept of our visit very much. We are also in debt to many people including Prof. Pelton, Dr. Kitazume and Mr. Tsang about our visit. We deeply appreciate their cooperation.