

# **Satellite Communications in the Asia-Pacific Region, Today and Tomorrow**

## **KEYNOTE SPEECH**

**By**

**Yasuo Otaki**

*President*

*The Asia-Pacific Satellite Communications Council*

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Mr. Houlin Zhao, Director of the Telecommunication Standardization Bureau (TSB), Mr. Robert W. Jones, Director of the Radiocommunication Bureau (RB), Distinguished Guests, Ladies and Gentlemen!

First of all, let me thank you for kindly inviting me to give the keynote speech for the Workshop on Satellite in IP and Multimedia. It is a great honor for me to represent the Asia-Pacific Satellite Communications Council (APSCC) in this event.

APSCC was established in 1994 in Seoul, South Korea, and has played a key role in promoting the development and cooperation of satellite communications and broadcasting in the Asia-Pacific region. One of the major roles of APSCC is to offer a forum of discussion where views and ideas about new technology, systems, policies and satellite services can be freely exchanged for the betterment of the Asia-Pacific region. Facing a new era of convergence of communications and broadcasting, we have to seek solutions and move forward into the next generation of satellite industry. Currently, the APSCC consists of 86 organizations, including satellite communications operators and broadcasters, satellite manufacturers and launch system providers from 31 countries.

Today, I would like to present an overview of satellite communications in the Asia-Pacific region in relation to APSCC activities.

### **Narrowband and Broadband Internet/Always-on Connection**

In the narrow and broadband Internet in the Asia-Pacific region, there were 575.8 million Internet users in 2001. In 2002, the number of Internet users will have passed the 839.8 million and 1.1 billion people will log onto the Internet in 2003. In 2001, the Asia-Pacific region accounted for

twenty-eight percent of the total global Internet user population. The number of broadband Internet users worldwide was 32 million at the end of 2001. In 2002 and 2003, this number will increase to 53.8 million and 79.2 million respectively. Thirty-six percent of global broadband users will be located in the Asia-Pacific region in 2001. Under the tremendous growth of the Internet users, satellite communications, which provide inexpensive telecommunication networks and are used as a means to bridge digital divide, will become increasingly important in the Asia-Pacific region

The “Internet” will become synonymous with “Broadband,” which provides high-speed links and always-on Internet connectivity. Though the dot.com bubble has burst, South Korea is still proud of its leading position in broadband penetration. Hong Kong, Taiwan, Japan and the United States have high rates of broadband penetration as well. South Korea's remarkable growth in broadband is being driven by applications and services tailored for broadband connections. In the beginning, online games created demand for broadband services, but now other innovative services are delivering content over high-speed network. These services are Internet broadcasting, Internet telephony, stock trading and much more. New demand and content for broadband services is growing. The economic conditions in Hong Kong, Taiwan and Japan are depressed but broadband networks are growing even under these adverse business conditions.

### **IP-based Satellite Services**

Recently, the Internet Protocol (IP) telephony business that involves voice and data transmissions over the packet-switched IP-based networks has shown robust growth. While the number of new entrants offering IP telephony services has reached almost 400 in Japan, not many companies are entering the IP-based satellite business. I'd like to introduce Japan's IP-based satellite services.

The first IP-based satellite service named “DirecPC” with 24Mbps data rate in one-way links was started for corporations by Space Communications Corporation (SCC) in October 1996. In June 1999, NTT Satellite Communications Inc. started “MegawavePro” service that boast 30Mbps data rates. Today, two kinds of this service, MegawavePro-IP for corporations that can send digital IP information on a multicast basis and by individual requests and MegawavePro-V to transmit MPEG-2 video and CD-quality-like audio in real time are being provided. IP-VPN or Intranet is using for return channels.

In December 2000, KDDI Corporation started two-way satellite IP service using SCC's Superbird B2 transponder for the “Skycast” service. In this system, Ku-band VSAT stations with a 75cm

antenna and 1W-out door unit (ODU) is employed as a remote terminal to serve 1.5Mbps outbound and 128kbps inbound data rates. SCC also begun two-way service, for 'DirecWay', with 24Mbps outbound and 256(x N)kbps inbound data rates in April last year.

It is a fact that most satellite networks in the Asia-Pacific region are mainly used for backbone networks. Therefore I am expecting more growth of this service when the NSS-6 satellite and iPSTAR satellite are launched.

### **Digital Satellite Broadcasting**

In Japan, following CS digital broadcasting services by Japan's JSAT Corporation (JSAT) and SCC, the satellite digital broadcasting utilizing BSAT-2 on 110deg. E, that is a dedicated satellite only for the broadcasting service and is being operated by Broadcasting Satellite System Corporation (B-SAT), were started by Japan Broadcasting Corporation (NHK) and commercial broadcasting stations in December, 2000. BS digital broadcasting enabled to transmit higher quality of video and sound signal, and to broadcast multiple channels and high-speed data in comparison with the traditional BS analog broadcasting. Currently, 7 high-definition TV and 3 standard TV broadcasts using 4 BS channels are in service. Digital satellite broadcasting also provides interactive capabilities between broadcasting station and home server using integrated services television receiver.

This May, SCC and JSAT launched the CS, which is called the "110degree-CS", into geostationary orbit on 110deg. E to enable collocate operation with BS. By the collocation of satellites, only one home antenna can access to two satellites, BS and "110degree-CS".

After Philippine's "Dream" for most of domestic islands serviced in April, last year, South Korea's SkyLife started BS digital broadcasting via Koreasat-3 satellite in this March. TV Plus also started satellite digital broadcasting in Hong Kong this August.

### **Communications and Broadcasting Satellites**

To respond to increasing demand, many geostationary communication and broadcasting satellites have been launched and are now in service in the Asia-Pacific region. For instance, Intelsat-902 and -904, Insat-3C and Jcsat-8 for the fixed satellite service, Bsat-2A for the broadcasting satellite service, and N Star-c for the mobile satellite service have been successfully launched last year. And NSS-6 and iPSTAR, which have the capability to provide a flexible networking, will be

launched by New Skies Satellites late in this year and Shin Satellite Public Company Ltd. late in next year respectively.

The NSS-6 is a high-power satellite with two-way broadband capability and will be launched at 95deg. E on December 6, this year. This satellite will play in providing digital video and high-speed Internet connectivity services via six Ku-band spot-beams covering Asia, one each for India, China, Australia, the Middle East and Southern Africa, Northeast Asia and Southeast Asia. In addition, this has 12 Ka-band spot-beams to communicate between metropolitan cities.

The iPSTAR satellite to be located at 120 deg. E has 84 spot-beams covering highly populated area, 3 shaped-beams for lightly populated area, and 7 regional broadcast-beams using Ku-band for users and Ka-band for 18 gateways. Since the iPSTAR satellite provides the satellite-based last-mile broadband Internet services, all kind of multimedia contents (video, audio, voice, data) and services (Internet access, video/audio/data broadcasting, corporate VPN, transactional VSAT, telephony, etc.) are applicable.

### **Satellite R&D Projects**

Now, I'd like to introduce three major satellite research and development projects proceeding in Japan. First one is an R&D project called the Quasi-Zenith Satellite System. The aim of this project is to develop new orbital utilization and frequency-sharing technology on existing congested geostationary satellite orbit. The satellite constellation of this system consists of three or more satellites. These three satellites are moving on three inclined geosynchronous orbits of 45deg. which are separated by every 120deg. on the equator to provide the same locus on the earth. Since one of three satellites is always looked up around the zenith for 8 hours per day, it is enable to provide 24-hour services by handing over three satellites one after another without blockage by tall buildings at the downtown area. The Quasi-Zenith Satellite System is the most appropriate system for countries at the high latitudes. This system provides integrated services for mobile communications, broadcasting and navigation for public, corporate and private users, and also provides land mobile communications without the satellite tracking system of mobile earth stations. Recently, a new company called Advanced Space Business Corporation was established as a business arm of Quasi-Zenith Satellite Systems.

Second, there is an experimental satellite called Wideband InterNetworking engineering test and Demonstration Satellite (WINDS). This is an On-Board Processing (OBP) satellite, which is being designed for high-speed Internet connections featuring 155Mbps downlink speed and will be

launched in 2005.

As I may introduce a recent trend in Japan, the Asia Broadband Project was proposed by the Ministry of Public Management, Home Affairs, Posts and Telecommunications. The aim of this project is to develop broadband infrastructure and to promote utilization of broadband including IPv6 using WINDS and the Quasi-Zenith Satellite System. In addition, it has been planned to provide the super high-speed test bed using WINDS for the international R&D activities in the Asia-Pacific region.

Last is the Engineering Test Satellite-VIII (ETS-VIII) that is being designed for multimedia mobile satellite communications. This satellite has a large-scale deployable reflector antenna (17m x 19m) and will be launched in 2004.

### **High Data Rate Communication Experiment**

During the 2002 FIFA World Cup Games, the high-data-rate communication experiment via satellite was conducted. The experiment tested 3 high-definition panorama video transmissions from South Korea to Japan to display images on a super-wide screen measuring 3m in height and 16m in width. This test was carried out by Japan's Communications Research Laboratory (CRL). From Japan to South Korea, the experiment to transmit 3-dimensional high-definition video signal was carried out by South Korea's Electronics and Telecommunications Research Institute (ETRI).

### **Satellite Launching**

In the satellite launching industry, Europe's Ariespace, which has a dominant market position of more than half of the world's commercial satellite launch market today, has introduced the new Ariane 5ECA, an upgraded version of the Ariane 5, this year. Lockheed Martin and Boeing developed new rockets, the Atlas V which was successfully launched on this August and Delta IV which also successfully delivered the satellite on November this year respectively.

In Japan, the H-IIA rockets have been improved to be more reliable and cost effective by National Space Development Agency of Japan (NASDA) last year. The 4<sup>th</sup> H-IIA rocket launch to carry the Advanced Earth Observing Satellite II (ADEOS-II) is planning on December 14 this year. In addition, China and Russia are also intent on entering the satellite launch market. Therefore, competition in the launch industry is expected to become tougher in the Asia-Pacific region.

## **Conclusion**

The information communication technology (ICT or IT) industry has driven growth and innovation in new communication technology but now the industry is in a slump. On the other hand, demand is rising for network infrastructure in developing countries. To bridge the digital divide, we need to find practical solutions and resources for providing an affordable network for developing countries, which in turn could revive the IT industry.

Finally, I hope that this Workshop on Satellite in IP and Multimedia will prove to be productive and most enjoyable for all of you.

Thank you for your attention!