



A Report on Participation at SILICON VALLEY SPACE WEEK SATELLITE INNOVATION SYMPOSIUM and the 2022 MILSAT SYMPOSIUM

Table of Contents

Overview	1
Overall impression and analysis.....	1
Main presentations and discussions.....	2
(1) Hybrid networks	2
(2) Importance of artificial intelligence (AI) in space technology	2
(3) Items relating to Earth observation (EO)	2
(4) U.S. corporate culture.....	2
Other miscellaneous comments.....	3

Overview

From October 11–14, 2022, the Silicon Valley Space Week (SVSW) symposium was held at the Computer History Museum in Mountain View, California, U.S. Mountain View is a core city of what is known as "Silicon Valley". The symposium was hosted by SatNews, a space media company. This year, two symposiums, which had been held separately in the past, were held together, i.e., the SATELLITE INNOVATION SYMPOSIUM on October 11–12, followed by the 2022 MILSAT SYMPOSIUM on October 13–14. At the MILSAT SYMPOSIUM, in terms of technology, business, and policy, and in addition to lectures and panel discussions, a small-scale exhibition was also held. The number of participants at the MILSAT SYMPOSIUM was said to be 950 people, and considering that the SATELLITE INNOVATION SYMPOSIUM alone saw 850 participants over three days, holding the two symposiums together made things even more crowded.

Overall impression and analysis

Euroconsult's World Satellite Business Week (WSBW), held in September, is a symposium that focuses on how to make money in space, specializing in business. Meanwhile, at the International Astronautical Congress (IAC) sponsored by the International Astronautical Federation (IAF), and which was held subsequently to the WSBW, each country gave presentations and exhibited their own unique prestige. However, on the other hand, SVSW can be said to be a symposium that makes you feel like you have come to finally "understand" the trends of U.S. space technology, business, and policy. Although the SVSW symposium does not provide or present solutions, it provides meaningful information on what issues are currently being addressed in U.S. space technology, business, and policy, and what discussions are taking place.

When I participated at the WSBW, IAC, and SVSW in succession, what stood out to me, in particular, was the development of space technology for the U.S. military. Over the past two years, I have become keenly aware of

the furthered evolution of U.S. military space technology amid the backdrop of the COVID-19 pandemic. At the same time, it seems that discussions on business and policy have deepened.

In terms of space technology, the gap between Japan and the U.S. has widened further over the past two years, and for those of us in Japan, it is now necessary to recognize that we are starting from a place where we are technically completely behind. It is necessary to be fully aware of the technical differences between Japan and the U.S., and based on this, for Japan, it is necessary to rethink its space technology from the perspective of what it can actually do.

For example, in terms of space communications, in Japan, there was finally a voice that is saying that it is necessary to develop a space mesh using a public-private dual-use satellite communication constellation, and this is now at the stage where the search for a budget and who might receive that budget has begun. On the other hand, in the U.S., of course low Earth orbit (LEO) private-sector communications satellite constellation services such as Starlink have already started up their engines, and what was being discussed at SVSW this time was a higher level of discussion. In other words, there was a lot of discussion about how to integrate multiple networks from different service providers, such as from the public-/private-sector and orbital LEO/medium-altitude orbit (MEO)/geostationary orbit (GEO) networks. Conventionally, GEO communication satellites, in particular, have provided one-to-one independent communication, but now there is a movement to build space mesh by relaying data using inter-satellite optical communications within constellations. Against this backdrop, discussions at SVSW actively involved integrating multiple space meshes so as to build a composite space mesh—just like integrating multiple terrestrial networks. Although the names of complex space meshes such as hybrid networks and connected networks have not yet been established, their necessity is commonly understood. When integrating multiple satellite communications and space meshes, there is demand for routing technology that sets communication routes, just like in the world of the terrestrial internet, and this function that integrates all of this as a whole is called "orchestration." However, the question persists: What types of systems does orchestration actually entail? And it seems that there is still no solution on how to implement routing, so this seems to still be under investigation. Moreover, it was conspicuous that the topic of connecting space communications and ground communications networks in the 5G/Beyond 5G era, which was widely taken up at the WSBW, was not taken up very much at SVSW. One can wonder: Is this evidence of a difference with the United States, where the defense and military

markets take the lead, compared to Europe, which seems to pursue a balance between the public and private sectors?

Looking at the progress of space communications technology using constellations in the U.S., in particular, this brought to mind for me what Japan should be doing in the future. From the fact that Japan currently does not have the technical and financial strength to build a global space mesh network comparable to the U.S., Japan needs to start investigating this. On top of that, for what Japan CAN do, for example, is that we can participate in parts of the hybrid network built by the U.S., or provide a major component of it. But if we do not formulate a strategy after calmly analyzing our own current technological and financial strengths, a resolute strategy for constructing a space mesh uniquely by Japan that is based only on some "notion" is dangerous. Unless we consider building a space mesh that can at least participate in hybrid networks in the U.S., Japan will end up building a closed network that simply leaves itself behind.

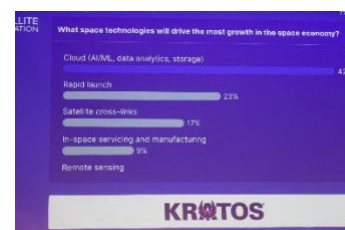
Main presentations and discussions

(1) Hybrid networks

<Omitted below>

(2) Importance of artificial intelligence (AI) in space technology

<Omitted below>



(3) Items relating to Earth observation (EO)

<Omitted below>

(4) U.S. corporate culture

<Omitted below>



Other miscellaneous comments

Whenever I visit the West Coast of the U.S. in areas such as Silicon Valley, what is ubiquitous is the Mexican food—which is not so popular in Japan but widely enjoyed on



the West Coast. As Tex-Mex cuisine, such food is generally considered to represent Mexican-influenced American cuisine. For me, who doesn't have a lot of experience in Mexico, perhaps it can be said that all Mexican food on the West Coast is Tex-Mex, indistinguishable from real Mexican food.

On this business trip, I enjoyed a common treat: meat wrapped in a round tortilla made from *masa harina* (ground corn flour). The cooking method and taste always differ depending on the restaurant, but what I ate this time (enchiladas) consisted of shrimp wrapped in a tortilla, covered with melty cheese sauce containing chili, then oven-baked. The combination of shrimp and cheese is always going to be delicious, but the volume was overwhelming. In general, Tex-Mex food has a lot of cheese and oil, which is a bit difficult for me as a older member of society, but it's still quite enjoyable, simply because how much this cuisine personifies the West Coast of the U.S.

Actually, enchiladas cooked in a lot of oil with a cheese sauce containing green chilies doesn't look very appetizing, to be honest. It appears kind of "sticky"—and as a dish, it doesn't really jump out at you. However, with the strong flavor of the shrimp and cheese, and if pairing it with garnishes such as *frijoles de la olla* (kidney beans, Mexican style), you will definitely feel that you are in the West Coast at last.

This time, I paired it all with a light beer, with lime. I also had some tequila, as recommended for after the meal, and which had a slightly amber color, and when I drank it straight, it gave me a burning sensation in my throat, while at the same time, it was soft and sweet.

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