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For a Changing Satellite Industry, Adaptability is Key to Future Growth

By Warren Ferster – October 16th, 2018

ANNAPOLIS, Md. – Prevailing trends in satellite telecommunications have brought the industry to a crossroads, the successful navigation of which will depend on what happens on the ground as much as in space.

Bandwidth prices have dropped sharply amid a capacity glut magnified by decreasing demand from television broadcasters, a longtime anchor customer for satellite operators. These developments have shaken some of the luster from an industry that just a few short years ago was awash in profits.

To succeed in the years ahead, the industry must adapt, in part by cutting infrastructure costs in space and on the ground, according to experts gathered here at a user conference sponsored by Kratos, a provider of satellite ground systems and services. To thrive, it must find a way to integrate satellites more closely with – and in the process grab a larger share of – the broader telecommunications business.

“This is a moment that is called a singularity,” Thierry Guillemain, former executive vice president and chief technical officer at global satellite operator Intelsat, said in a keynote address at the conference. “That means it’s a moment where there is no way to predict what will happen next.”

Bandwidth price erosion is expected as high throughput satellites (HTS) in geostationary orbit are joined by large constellations in lower orbits, said Guillemain, now president of the New Space Directions consultancy. Each orbit offers unique advantages, he said, noting that geostationary satellites, which hold fixed positions 36,000 kilometers above the equator, can cover large areas economically and quickly, but suffer from signal delays – or latency – that can disrupt certain applications. Constellations in lower orbits have far less latency, but require many satellites to achieve global coverage, he said.

Another trend on the space side is the commoditization of satellite hardware, a notable example being the push by global satellite operator SES for standardized, software defined satellites that can be rapidly reconfigured on orbit depending on market demand. Standardization will enable manufacturers to crank out satellites assembly-line style, lowering costs through economies of scale. Guillemain raised the possibility of operators being able to buy satellites off the shelf, whereas now they are made to order in a process that typically takes two years or longer.

“It almost makes the satellite irrelevant,” Phil Carrai, president of Kratos Technology and Training Division, said of the forces now shaping the industry. “If you have that much capacity and the satellites are reconfigurable then the real action’s got to be in the network; if you’re going to differentiate it’s got to be on the ground side.”

The changes that must take place on the ground range from consolidation and automation of satellite operations and network management functions, to the introduction of individual user terminals that connect seamlessly with different satellites regardless of orbit or ownership, officials said at the conference. Some of these changes are already underway.

Stuart Daughtridge, vice president of advanced technology at Kratos, said his company is beginning to move away from what he characterized as “stovepipe” architectures where different command and control functions are handled by discrete systems, each with its supporting personnel and infrastructure. Increasingly, he said, Kratos is offering systems that consolidate multiple functions, such as satellite control and signal monitoring, on a single platform.

In an ideal world, this interoperability would even transcend corporate proprietary boundaries, enabling systems provided by one company to work seamlessly with those supplied by competitors. However, at least one speaker said that might be a bridge too far.

“I don’t see a big prospect of the different operators and different providers coming together and creating standards that remove their ability to differentiate,” said Dan Sullivan, chief technology officer at Kratos. More realistic is a degree of commonality that would allow customers of one operator to access unique services offered by a different operator, he said during a panel discussion on the industry’s future.

One thing everyone seemed to agree on is the satellite industry’s need to become more closely integrated with the broader global telecommunications grid, of which it represents just a small fraction.

“We as an industry are less than 1 percent of a \$6 trillion terrestrial networking services capability,” Eric Watko, executive vice president of products, marketing and strategy at SES Networks, said during the panel discussion. “So how do we get into that market segment?”

A big part of the answer is economic – getting prices to a point where the large telecommunications companies see value in adding a satellite component to their networks. In that respect, the declining cost of bandwidth could be more blessing than curse, provided the industry is successful in significantly reducing its operating costs.

Guillemin said promising growth areas for a satellite industry with reduced overhead include machine-to-machine communications, connected vehicles, and other applications that feature closer integration between the satellite industry and the Internet. If bandwidth costs get low enough, new, unanticipated applications are likely to emerge, he said.

The good news, Daughtridge said, is that terrestrial bandwidth prices dropped 99 percent during the 15-year period from 2001 to 2016, but the industry nonetheless grew massively by introducing new services to their offerings. “I think that’s the kind of period we’re entering as an industry where we’re going to put up a lot more bandwidth but we’re going to see growth,” he said.