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PROFILE **Richard Lober**

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Commercial Appeal

Only a small portion of the work performed by Hughes Network Systems of Germantown, Md., serves defense and intelligence agencies. The vast majority of the company's business is focused on providing satellite broadband services to business and consumer markets around the world.

The firm's government business has grown during the last few years, however, as Hughes officials focus their efforts on moving commercial products and services into the public realm to meet local, state and national needs. Hughes' Richard Lober expects growing demand for military satellite communications, coupled with increasing

pressure to trim federal spending, to spur government officials to take a closer look at ways commercial satellite communications technology can meet many of the military's requirements.

Hughes Network Systems is a wholly owned subsidiary of Hughes Communications Inc., which was acquired in June for \$2.2 billion by Echostar Corp., the Englewood, Colo.-based builder of satellite television set-top boxes and provider of related services.

Lober, who joined Hughes in 2008 after working at Cubic Communications and Watkins-Johnson Co., spoke recently with *Space News* correspondent Debra Werner.

Can commercial satellite communications equipment work in military environments?

The first concern is that commercial technology, including satellite terminals or cell phones, is not rugged enough. And that's true. But it's fairly easy to put a rugged wrapper around the commercial technology.

On the other hand, it would be hard for the military to try to duplicate the tens or hundreds of millions of dollars that commercial industry has invested in communications networks and communications waveforms.

Hughes has participated in a U.S. Air Force study on ways the military can use commercial satellite technology to save money. What suggestions do you have?

As a first step, I would encourage the military to look at the networks it is using right now and to figure out a way to use more modern technology to get away from single-channel-per-carrier networks. Those are networks that are in place all the time, 24 hours a day, seven days a week, whether you use them or not. I would encourage the military to move to more advanced satellite technologies and network management technologies.

Would those technologies enable various users to share communications bandwidth?

Yes. Bandwidth is shared all the time. Telephone calls are made on shared networks. But the networks are designed in such a way that when you pick up the phone, your chance of the call not going through is very, very low. When you design your systems that way, multiple people can share a network. A lot of the commercially available satellite technology today offers that capability.

You can also set your network management systems up so, for example, if a three-star general needs to have a very important video teleconference, the bandwidth and the priority will be there. But if that teleconference does not occur or if it ends early, that bandwidth will automatically be made available to others to use.

Are military agencies receptive to the idea of shared networks?

Yes. Some are moving to those networks. They probably could move a little bit quicker in some areas. The airborne intelligence, surveillance and reconnaissance area is using some fairly dated technology in terms of bandwidth efficiency. Making some changes there could help quite a bit.

I think the whole area of network management is going to be a large issue facing the military, whether it applies to satellite networks or cellular networks.

Are cost concerns likely to slow down adoption of new network management tools?

It's not a large cost issue. It's a little bit cultural. A lot of the lower-level units want to operate their own networks because

it's extremely critical that their communication goes through. But, on the other hand, if it was operated on a higher level, you could do a little bit more sharing and be a little bit more efficient.

Is any hardware investment required?

There will be some hardware upgrades required. But a lot of the cost of these satellite terminals is in the satellite dish and in some of the radio frequency components. The core network technology is usually not a very expensive piece. That technology could be upgraded on existing networks at relatively low cost, and the military would pick up those savings on the bandwidth leasing side.

What are some of the impediments to reducing the cost of military satellite communications?

A lot of times, the program development or hardware side may not be measured as strongly on the operational cost of the system as they are on the development cost. You have one set of people who are typically running a program, buying the hardware and designing the system. For the Army, that may be the Communications Electronics Command. And you have another group of people, for example at the Defense Information Systems Agency, who buy the bandwidth. Trying to pull the two together would help.

Are there other ways to save money?

What we found in the Air Force study on the commercial use of satellites by the military is that savings could be found by taking a little bit more of a system-level approach. At Hughes we design satellite systems. We build the ground segment. We build the terminal equipment. We don't manufacture satellites but we take a large role in the design of that satellite, working with our partners and looking at the tradeoffs of the entire system. We ask, for example, "Can I have the satellite do a little bit more and have the ground side do a little bit less?" I think that, at least in the past, military satellite programs included separate pieces. The Air Force Transformational Satellite, or T-Sat program, was broken up into a ground segment led by one team of people, a space segment led by another team of people and a terminal segment that had not yet been established when the program was canceled. That hurt the program.

We were part of the T-Sat program on the Boeing team. I think a system-level approach to satellite communications will be important going forward.

Is it difficult to adopt a systems-level approach in an organization with so many satellite communications customers?

It is difficult. The Air Force has been the traditional flier and operator of satellites. It has the space domain in its charter. And yet you have the Army and the Navy that are probably the bigger users of satellite communications. I think the Defense Department has done a good job in the last few years



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of trying to pull all that together and look at all the requirements. It is taking a hard look at how to go forward after T-Sat because, unfortunately, the program was canceled.

Probably the big debate right now is over what we call protected communications. Satellites like the Advanced Extremely High Frequency run some very special waveforms that are highly resistant to jamming. So does commercial industry try to look at similar ways to do that? Or is there a middle ground that might satisfy at least 80 percent of the need if not the final 20 percent?

What do you think of the Defense Department's Assured Satcom Services in Single Theater program, an initiative to lease a commercial communications satellite to serve U.S. forces in the Middle East, North Africa and Central Asia?

I think it's a good idea. I know there are some questions and concerns in Congress about whether the Defense Information Systems Agency (DISA) or the Air Force should be managing a satellite procurement program. Whether it is DISA or whether it is the Air Force, I think there are a lot of costs that can be saved by leasing a commercial satellite.

The military services want to improve their ability to communicate on the move. Is that now possible and is existing satellite communications technology helping to make it easier?

Communications on the move is improving. It has come a long way over the last 10 years. Ten years ago, antennas were so large you probably could not even put an antenna on a vehicle. So there has been a lot of progress. But to see communications on the move adopted in a very large way, we are going to need another order of magnitude decrease in antenna size and antenna cost. That's one thing Hughes is looking hard at. How can we optimize our waveform, our network technology to drive antenna size and reduce cost?

Is it difficult to make those types of investments in this budget environment?

Fortunately, Hughes is fundamentally a commercially oriented company. Most of our customers are large commercial enterprises or consumers. We try to leverage a lot of commercial off the shelf or modified commercial off the shelf products for the military. Reducing antenna size does not represent a huge investment in the scheme of things. Going forward, the military is going to have to rely more on commercial industry particularly in the communications area because technology is evolving so quickly.