

# Tomorrow's connections

## Boeing-led team works on developing future military satellite system

By JOEL R. NELSON

When you're seeking to help transform the way the U.S. military communicates globally, it makes sense to build on advances you've made over the last 40 years.

That's what Boeing Space & Intelligence Systems is doing under a \$514 million risk-reduction and system-definition study contract for the Transformational Satellite Communications System Space Segment (TSAT SS), which eventually will include five satellites plus ground control and gateway elements. Working under a contract awarded in January 2004, S&IS, a unit of Integrated Defense Systems, leads one of two contractor teams that are developing and demonstrating critical technologies and preparing a preliminary system design. The U.S. Air Force is expected to select one contractor late this year for the development and production phase.

Once deployed around 2015, TSAT will give the U.S. Department of Defense a secure, high-capacity global communications network. Even more significant, it will enable network-centric operations for U.S. military services, providing Internet-like capabilities for armed forces anytime, anywhere. TSAT will be the backbone of the DoD's high-bandwidth networked communications.

"TSAT is the space-based link of the future communications network," said John Peterson, Boeing's TSAT SS program director. "It will provide the high-capacity bandwidth required for evolving airborne intelligence, surveillance and reconnaissance missions. It also enables true communications on the move for warfighters—meaning they can always be connected, whether traveling on foot or riding in a vehicle, or anywhere else."

### USE WHAT WORKS

Reducing risk is a key objective of the current study contract effort. Boeing's approach is to use what's known to work. Accordingly, S&IS applies proven technology from its four decades of experience.

One example is Boeing's onboard digital signal processors, which redirect com-

munications bandwidth to different areas on the ground as service demand shifts. These processors have long been a differentiator in S&IS-built commercial satellite programs such as Thuraya, which provides mobile phone service to an area encompassing more than two billion people.

Also, TSAT's antennas draw upon designs S&IS originally created for military and commercial satellite communications programs in the 40-plus years it has been building satellite systems.

With Spaceway—whose two satellites (S&IS is building a third) were designed to deliver high-speed, two-way Internet, data, voice, video and multimedia applications across North America—S&IS can lay claim to having launched and demonstrated the only true space-based communications network. Such expertise translates to higher mission assurance and lower risk for the Air Force.

Moreover, in contrast to its study-contract competitor, S&IS draws upon best-of-industry expertise. The team includes Cisco Systems (routers), Hughes (Spaceway network design) and IBM (high-speed electronics). Achievements of the team's members include devising technology such as the routers that carry more than 80 percent of traffic on the World Wide Web.

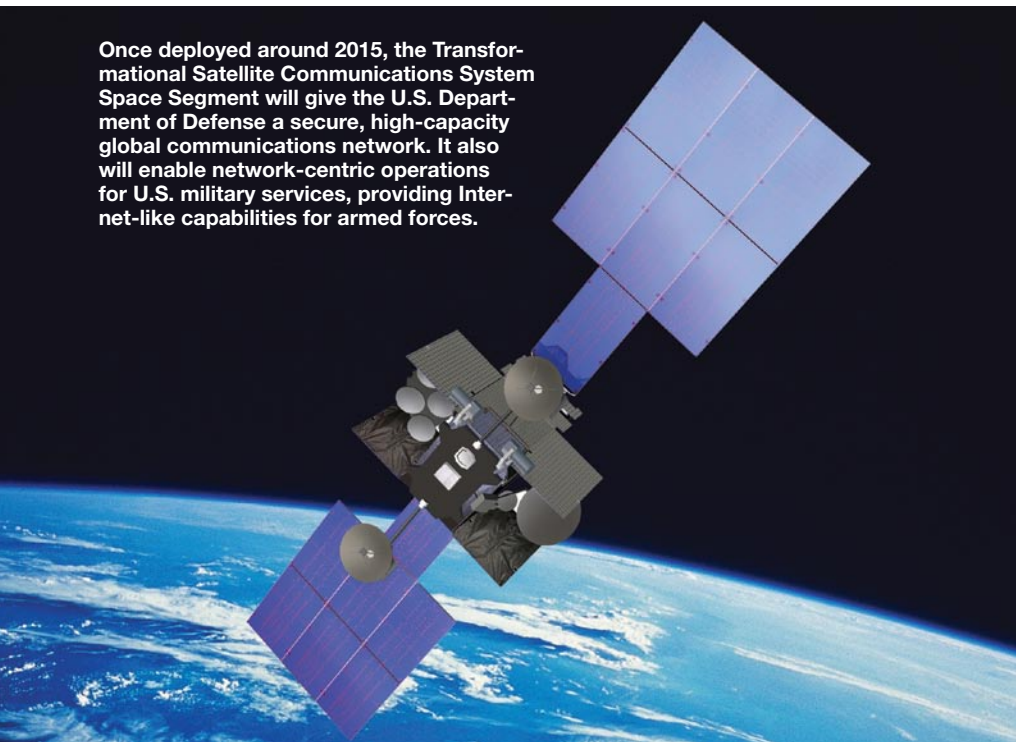
"Our teammates bring their domain expertise in specific areas; we bring our expertise in space-qualifying them," Peterson said. "The network aspect of TSAT is critical. We actually see TSAT as a network program, not a satellite. We specifically sought network expertise in selecting our teammates, not only the usual satellite developers."

Considering the ambitious scope of TSAT, Peterson is confident the S&IS team understands its customers' needs and is fully prepared to meet them.

"The team has worked extremely hard on the technical challenges, and everything has gone very well so far. There have been no showstoppers. We're ready to go on TSAT," he said. ■

*joel.r.nelson@boeing.com*

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