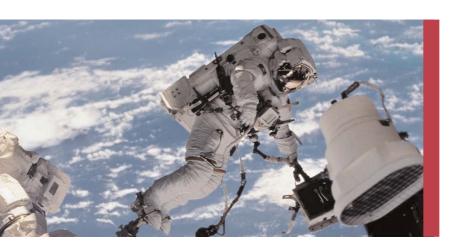Despite the incredible technological advances made throughout history by space programs here in the US and abroad, industry experts agree the next wave of technological breakthroughs for space are coming through partnership between the public and private sector. This shift will have a dramatic impact on the way in which the public and private sectors do business together. Driven by the promises of ubiquitous broadband communications, the satellite industry, in particular, has much to gain from partnerships with private industry.

Traditional satellite programs, as well as other public sector initiatives, were once characterized by proprietary systems custom built for a specific program. With timetables and budgets continuing to shrink, the public sector simply cannot continue with this model. The paradigm shift to relying on commercial

from the ground up are enormous. The increasing demands for broadcast and broadband availability, especially in remote areas of the world, can best be met through space.

"It's not enough for a vendor to take a wireless router, run it through radiation hardening and tell NASA they can buy it for x-amount of money," said Sanford. "This short-sighted approach fails to recognize the changing business processes within space agencies and typically sends a vendor outside its core competency. What's more, it completely ignores the long-term process necessary to successfully place technology in space."

Indeed, as space agencies look to leverage technology differently – not only in space but also within the business of space – changes in processes, policies and procedures cut right through

The Space Industry Needs Dedicated Partners, Vendors Need Not Apply

technologies already proven in the private sector will typify a new business model of public and private sector collaboration.

Most notably spearheading this paradigm shift within Cisco Systems, are the efforts of the Global Defense, Space & Security (GDSS) group. "It's far too expensive and time consuming for space agencies to conduct business as usual," said Rick Sanford, director of space initiatives within Cisco's GDSS group. "Vendors vying for space program opportunities need to not just realize what they bring to the table, but must understand the mission needs of the program. Equally important is understanding how one productively engages with the industry and space partners."

What drives the space industry should sound familiar to many, but is far removed from the marching orders of the past. Similar to what many businesses in the private sector have done or are doing, the space industry is beginning to recognize the need to use technology differently. The time and cost investments of launching a communications satellite, for example, with virtually every single element custom designed, engineered and produced

to the industry's culture. Only through experience, insight and a complete understanding of processes will vendors succeed. Doctrines, funding processes and politics are all elements the space industry deals with daily, and so too must vendors.

So what's the winning formula? Success today demands teamwork.

"Teamwork is defined by the positive contributions made by each partner," Sanford described. "At Cisco, we realized we had a tremendous amount of technological expertise that squarely addressed the mission needs of the space industry. What differentiates us from others in our industry is our understanding of the underlying criteria of what it means to be a team player to the space industry, our recognition and acceptance of our strengths and weaknesses, and our willingness to invest time, money, technology and expertise to help move critical programs forward."

Despite the paradigm shift, what it means to be a partner to the space industry has many elements that will never change.

Procedures, processes and long-term projects drive the industry. Only companies with proven technology leadership and dedication to the long-term mission goals of the space industry can become successful partners.
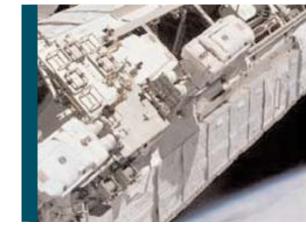
The leadership team within Cisco's GDSS group has a unique understanding of the processes inherent to the industry, bringing more than 150 combined years of experience in the military, government and space industries. More than 130 engineers within GDSS are exclusively dedicated to creating solutions that address the needs of their partners. And GDSS is an important segment of Cisco, which to Sanford is the group's defining benefit:

"Space is a long-term investment, and there are no cutting corners. To be a partner means being an established company

procedures and technologies necessary to make this a reality.

"Leveraging standardized terrestrial hardware and software technologies in next generation space systems has a myriad of benefits, and everyone from satellite manufacturers to Capital Hill needed to embrace these benefits," said Sanford. "And utilizing a commercial off the shelf (COTS) router would multiply the benefits. Cisco IP Communications solutions help maximize existing IP network capabilities to deliver converged voice, video and data applications regardless of location."

Fine in theory, but testing a COTS router onboard an actual satellite is a risky and expensive proposition. What Cisco proposed and is carrying out could very well represent a new business model for the satellite industry.

with the wherewithal to carry innovative ideas to fruition. Cisco has a successful 20-year track record of delivering innovative products, and the company has made the commitment to do the same in the public sector. In its most basic terms, the space industry can't afford an investment in a company's technology, if that company may not be around in five or ten years."

The staying power of Cisco is indisputable: FY03 assets totaling more than 37 billion dollars and R&D investments of 3.1 billion dollars in FY03. And the commitment to integrating into space programs and supporting their mission goals is equally impressive.

A great example of successful teamwork is Cisco's ongoing engagement with the NASA Glenn Research Center (GRC), Space Communications Project (SCP) and Technology for Space Internet Services (TSIS) programs. Since the Satellite Industry Task Force (SITF) identified the upside potential of utilizing standardized Internet Protocols (IP) onboard satellites in the mid 1990's, Cisco has focused on advancing the policies,

"We put our money where our mouth is," explained Sanford. "Cisco demonstrated its commitment to the industry as a long-term partner by pulling together the resources to test our COTS router in space."

Cisco funded the experimental test flight for its Cisco 3251 Mobile Access Router running standards-based IP via Cisco IOS® Software onboard the UK-DMC (Disaster Monitoring Constellation) satellite. Cisco teamed with Surrey Satellite Technology LTD, NASA GRC and the US Navy Department of Research to get its Mobile Access Router integrated as a secondary payload and in orbit in under 18 months.

"Virtually every element of this program is groundbreaking in terms of a public/private sector partnership," said Sanford. "But what's even more incredible is how focused resources were able to shave years off putting a satellite in orbit – one of the most complex processes in the world. And as for the Cisco 3251 Mobile Access Router," concluded Sanford, "it's performed perfectly in every phase of its testing suite over the last two months."