AN MSUA CONVERSATION WITH...

Susan Miller , President and Chief Executive Officer, Inmarsat Government Inc.

By Catherine Melquist, President, Mobile Satellite Users Association

Susan Miller is President and Chief Executive Officer of Inmarsat Government Inc., a wholly-owned subsidiary of Inmarsat plc, the world's leading provider of global mobile satellite communications to the United States government.

Ms. Miller is responsible for the overall strategy of expanding Inmarsat's leadership position across U.S. defense, intelligence, homeland security and civilian organizations.

Ms. Miller has more than 20 years of senior executive leadership experience across a wide range of satellite communication technologies that serve the U.S. government and commercial sectors. Prior to joining Inmarsat, she held leadership positions at MTN Satellite Communications, Spacenet Inc, Intelsat General Corporation, Ligado, Lockheed Martin and Hughes Aircraft Corporation.

Ms. Miller holds a Master of Science degree in Electrical Engineering from the University of Southern California and a Bachelor of Science degree in Electrical Engineering from the Rensselaer Polytechnic Institute.

MSUA

Susan, thank you for taking time for a Mobility News interview. At two different points in our careers, we've worked for the same company at the same time – beginning with COMSAT and later with MTN Government. Now that you've been leading Inmarsat Government for over five years, it's an ideal time to check in with you to learn how it's going and what your leadership goals are for the next couple of years. I also believe MN readers will be interested in hearing your perspective on satellite industry trends and market dynamics facing U.S. Government customers.

How is it going at Inmarsat Government and what is your next two to five-year leadership mission?

Susan Miller (SM)

Thank you, Catherine. It is nice to reconnect and update you on Inmarsat Government and my personal views of the ever-changing and dynamic satellite industry.

These are exciting times for Inmarsat Government, and the next two to five years will be no different as we continue to deliver innovative satellite communication (SATCOM) solutions to the market. We are the world leader in global, mobile satellite communications. Our customers trust us to provide seamless, reliable connectivity for mission-critical communications no matter the location — on land, at sea or in the air.

The government and industry must collaborate together so private industry complements existing government resources, enhancing the robustness of the architecture.

Inmarsat owns and operates the world's most proven global portfolio of satellite networks specifically designed for mobility. We hold a multi-layered, global spectrum portfolio that covers L-band, Ka-band and, in Europe only, S-band. These assets enable us to provide an unrivaled breadth and diversity of connectivity solutions.

Our team will continue to develop new and innovative technologies and solutions that maximize our satellite networks and deliver critical mobile connections demanded by our servicemen and women. To achieve this, we address the unique challenges that users in the air, on the ground and at sea face by providing access to an end-to-end, easy-to-use, feature-rich, "one-stop shop" solution.

We also design our systems and infrastructure to complement t he military's own system in a way that offers seamless interoperability between the two, backed by experienced and knowledgeable team members whose skill sets are aligned with the needs of our users. We take our responsibilities as a trusted partner seriously and to heart, and are driven to deliver the best possible value for our customers.

Clearly, Inmarsat's mobility-centric vision and strategy continue to help us reach these goals, and remain on target with the government's demand for mobile connectivity, anytime and anywhere in the world. Highly mobile government users must share information in real time, wherever

their mission takes them, and stay connected. Given that these users are always moving across the globe, there is a sense of urgency for high-performing, reliable and secure voice, data and video that "moves" with them. A dropped connection could jeopardize the mission.

Getting into some specifics, Inmarsat-5 F4 (I-5 F4, also known as GX-4), the fourth satellite in our renowned Global Xpress constellation, was launched in May 2017 and entered full commercial service in March 2019. The 4thGX satellite adds further capacity to the Global Xpress network. In addition to delivering additional capacity in regions of greatest demand, it provides in-orbit redundancy that further upgrades the reliability and resilience of Inmarsat's service offerings.

An additional Global Xpress satellite (GX-5), is on schedule for launch in the last quarter of this year. It will be a Very High Throughput Satellite (V-HTS) providing capacity across the Middle East, Europe and the Indian subcontinent. The payload will seamlessly join Inmarsat's existing Global Xpress high-speed global wideband network. By combining the latest satellite technology and a focus on areas of high demand to drive high-capacity utilization, we will offer a very low cost per bit delivered.

Furthermore, in 2020 and 2021, Inmarsat plans to launch the first two satellites in its sixth generation (Inmarsat-6) constellation. These satellites, currently under construction, are the most powerful and flexible L-band mobile communication satellites ever created by Inmarsat. Together with advanced ground infrastructure technology, they will support enhanced user devices and services for the coming 5G era. Both spacecraft will also carry Ka-band payloads (GX-6a and GX-6b), adding further capacity to the Global Xpress network.

Plus, Inmarsat's new infrastructure roadmap is already progressing.

In addition to what we are doing at Inmarsat, I am equally encouraged by the achievements and ideas set forth by government and industry leaders. With so many inspiring initiatives and current events taking place in our industry and the U.S. government, the criticality of space resilience and the necessary support of commercial SATCOM (COMSATCOM) have never been more important.

I cannot think of a better time to speak with you about our business and technology innovation to further increase Inmarsat's U.S. government market presence. The future of satellite technology is exciting. It is a place where science and technology come together to solve real-world problems, and no one is better positioned to meet those challenges, and turn them into opportunities than Inmarsat.

MSUA

When you think back on your past five years at Inmarsat Government, what do you regard as your biggest triumph(s)?

SM

What makes me most proud, my biggest triumph, is the criticality of the missions we support every day by delivering trusted satellite communication capabilities to our brave military servicemen and women, first responders, those charged with delivering vital services to the public, and the civilians who support them.

Furthermore, to take a broad view as we celebrate Inmarsat's 40 years in operation, I think of our overall, highly successful track record of delivering solutions that ensure our government and military users have access to resilient, robust and secure satellite communications wherever they are, at a moment's notice. We remain committed to government users. We understand their unique requirements and invest ahead of the need to deliver innovative, next-generation capabilities and end-to-end managed network solutions that enable them to achieve their missions.

I am proud to be part of a team that has delivered significant technological innovations in mobile satellite communications, sustaining our leadership through substantial investments in L-band and Ka-band capabilities — for satellites, services and terminals. This is all supported by a powerful network of technology and manufacturing partners that develop best-in-class solutions and foster competition.

MSUA

During this same time, what have been some of your most notable learning points -- either as a satellite industry executive or service provider to the U.S. Government market?

SM

In all of our experiences, we must never forget that government users want results. To successfully support their missions, they must have access to resilient, robust and secure SATCOM wherever they are, across the full spectrum of engagement. Given the world of uncertainties, access to high-throughput, always-on communications for mobility operations remains a top objective of the U.S. government and allied nations. All of which must also have a focus on agility, cost-effectiveness and enhanced combat readiness.

At the same time, the military's own satellite infrastructure is under pressure from increased demand and users cannot always access it as necessary. Many government programs began before some of the modern concepts of operations were envisioned, such as unmanned Airborne Intelligence, Surveillance and Reconnaissance (AISR), and cannot flexibly meet all requirements with often competing demand for military SATCOM (MILSATCOM) access for mission-specific surges in some geographies.

In my experience, the bottom line is that these users want results in the form of maximum capability, flexibility and resiliency. SATCOM capability needs to go where they go, with smaller, easier-to-use equipment, and multi-band terminals to ensure it stays up and running no matter how challenging the situational or geographic conditions. Users do not care who "owns" SATCOM. Bottom line, they want results, in the form of superior capability. We must never forget this. If we do, then would be doing a great disservice to the users and the criticality of their missions.

MSUA

I know your academic background is in electrical engineering, did you always know you wanted to work in space-based business? What influenced you to pursue this course?

SM

I was originally a fine arts scholarship student who loved math and switched to a double-degree engineering program after a year in college. I never looked back! I have worked in satellite technology my entire career, including the Ronald Reagan administration's Strategic Defense Initiative.

For me, the passion comes from using science and technology to solve real problems. As a design engineer, there is nothing more exciting. I still feel that wonder – even after more than 25 years of doing this – and I am really eager to see what the next phase of innovation and development will bring.

MSUA

Clearly the U.S. government has increased its focus on space-based communications, security, and warfare. In your view, how should the satellite industry amplify its partnership capabilities to meet the evolving needs and interests of U.S. government customers?

SM

Via its policies and statements, the U.S. government is recognizing the criticality of space resilience and the importance of consistent, consolidated and strategic leadership in space through the support of commercial SATCOM. The National Defense Strategy shifts focus onto highly mobile mission sets to support advancements in intelligence, surveillance and reconnaissance (ISR), demanding resilient SATCOM, inclusive of COMSATCOM.

The government and industry must collaborate together so private industry complements existing government resources, enhancing the robustness of the architecture. With a strong business case supported by clear demand signals, industry can innovate more rapidly, and ahead of the need, than the government. As a result, we improve protection, resiliency and global portability, along with efficiencies and cost effectiveness.

As a commercial satellite provider, Inmarsat is making a high standard of performance possible by investing in solutions with government users in mind, thereby, complementing military satellite resources cost-effectively.

We in the industry are excited about recent space-related actions and see a promise of a sea change in the way the U.S. government acquires critical satellite communication capabilities. Expectations are high, and we are ready and able to deliver the needed capabilities now.

MSUA

As the leader of Inmarsat Government, I can imagine there are a lot of business and market issues competing for your attention. What does your daily dashboard of priority topics look like? And, what area of the business do you find to be personally most compelling?

SM

I will address the last question first because it is a great source of pride for me: Our team at Inmarsat Government, frankly, amazes me every day. About 35 percent of these dedicated professionals have served in the military. They understand the unique needs of servicemen and women and are totally dedicated to supporting them. By combining the expertise of our industry partners, who have been at the forefront of satellite communications-related technology and innovation for nearly four decades, as well as input from our U.S. government customers, we continue to develop next-generation commercial services and technologies built for users in all domains. We all feel pride in being a partner to the military and government and take that responsibility seriously.

Now, as for my daily dashboard: as the President and CEO of Inmarsat Government, I am determined to advance our overall strategy of expanding Inmarsat's leadership position across U.S. defense, homeland security, public safety and civilian agencies. This requires technology innovation and problem solving. One quick example is our LAISR — L-band Airborne ISR service – meeting the unique needs of airborne ISR government customers. LAISR is a high-data rate, end-to-end airborne communication solution, via Inmarsat's redundant, worldwide space and ground networks, through micro-antennas as small as 5 inches, and is managed 24/7 by a U.S.-based, security-cleared operations and engineering team. LAISR is about leadership, dedication and innovation – qualities that raise our standing within the U.S. government.

Then, I turn my attention to our satellite solutions for first responders. They are making a significant impact and saving lives. Inmarsat Government is very proud to be part of the core team AT&T selected to help deliver the FirstNet communication platform, providing resilient, secure SATCOM capabilities for our country's first responders.

MSUA

We're expecting significant areas of new satellite-based mobility innovation -- from new LEO constellations and next-gen ground systems to precision-driven data analytics and industrial automation. What changes do you believe the U.S. Government customers are most eager to put to use?

SM

Actually, to put innovation to use for U.S. government customers we must first think of change in the form of overcoming a perceived obstacle with terminals.

With the release of some of the conclusions from the Air Force's Analysis of Alternatives (AoA) for a follow-on wideband communications system to the Wideband Global SATCOM system (WGS) last year, that perceived obstacle was called out — that most military satellite terminals are not compatible with modern SATCOM technology, creating concerns about recapitalization costs. On the industry side, some of us do not view legacy terminals as an insurmountable challenge. Commercial technology innovation and flexible business models can resolve this perceived impediment by delivering modular terminals to replace vertically integrated systems.

Government and military leaders can leverage commercial satellite communication platforms to support critical missions through our end-to-end SATCOM as a Service business model that includes satellites, the ground network as well as terminals that are type approved to work on that network. With this, there would be a clear path toward "Terminal as a Service," which will result in continual technology refresh and modernization at an affordable rate.

MSUA

As a longtime partner of Access Intelligence, MSUA will be hosting a series of user panels at SATELLITE 2019 focused on satellite mobility in the 5G era. In one of the sessions, MSUA will host a discussion with wireless connectivity decision makers, specifically CIOs, CTOs, and Mayors from U.S. cities – both urban and rural -- about topics such as rural broadband, smart city/ IoT-based infrastructure, security, and emergency response communications. If you were moderating this panel, what questions would you pose to these potential satellite users?

SM

My thoughts would immediately turn to natural disasters, and the role SATCOM plays in supporting first responders during these unwanted and unpredictable events. Hurricane Maria, for example, had a catastrophic impact on Puerto Rico's communications network: Immediately following the storm, over 95 percent of Puerto Rico's wireless cell sites were out of service. Satellite-based communications have proven essential during and after such unfortunate events, when local terrestrial infrastructure and mobile phone networks are often overloaded, damaged or non-existent.

My main questions would be: How are you incorporating SATCOM into your disaster relief planning? Is SATCOM playing an essential role? How so?

MSUA

As you know, satellite companies and coalition groups have been diligently working to ensure satellite has an expanded role in the emerging new 5G standards and system architecture. Are U.S. Government customers talking about 5G and if so, is there an expanded communications role satellite can play with this market?

SM

With the ever-increasing need for seamless connectivity delivered holistically everywhere, the satellite communication industry will play an increasingly important role in providing 5G across the globe. We are already seeing advances in satellite technology moving in this direction. However, spectrum availability is required to meet this growing demand.

As for U.S. government customers, we must educate them on the important differentiating roles a satellite in a 5G world offers and the use cases where 5G services can best be supplied by satellite.

To fully implement 5G for the society of the future multiple industries will have to collaborate. Inmarsat is already playing an active role in this cross-industry collaboration. Our European Aviation Network (EAN) — the first of its kind worldwide — combines mobile satellite coverage with a complementary 4G LTE ground network, developed by Deutsche Telekom, to deliver the world's most advanced passenger Wi-Fi experience on flights throughout the European Union. And we are in a strong and unique position to leverage the existing network by introducing 5G technology, even further increasing the performance of our EAN solution.

MSUA

Do you envision growth in the take-up of hybrid wireless communications by government customers? Why or why not?

SM

I certainly do. Please allow me to use the public safety environment as an example: when a disaster strikes – such as a tornado, hurricane, earthquake or wildfire – it can disrupt the local wireless communication ecosystem of fiber optic cables, microwave backhaul systems and tower infrastructure. This is where hybrid networks with integral satellite communication capabilities prove essential. Satellite networks use redundant,

widely geographically diverse downlink sites to link from the satellite into the backbone voice and data networks. Thus, a localized emergency will not disrupt the satellite network.

MSUA

"User experience" has become a critical driver to business growth and success – spurring new modes of customer interaction, new product types and new models of businesses. How relevant is user experience in the satellite industry and do you see any of these trends taking shape in the U.S. government market today or in the relatively near future?

SM

User experience is critical and will always be critical. High operational and mission readiness is a top priority for government users. Failed connectivity can cause mission failure and the potential loss of lives. Hence, government users demand seamless access, reliability, information assurance and simplicity, along with the significantly reduced size, weight and power (SWaP) of equipment.

We view this demand as a trend for the present and indefinite future, and with this in mind, we will continue to set the world's standard for mobile government COMSATCOM solutions that meet information assurance requirements. This is part of our history of commitment to our global mobility-centric strategy, which is distinguished in our market.

MSUA

What does the satellite industry need to do to enhance the user experience for U.S. Government customers?

SM

We are convinced that much of the experience depends upon the greater adoption of managed network services. Mobile users thrive through worldwide connectivity on demand, especially when a single operator is managing the services from start to finish. With this in place, users connect wherever they are, even in the most geographically difficult environments. With guaranteed service level agreements and committed information rates, the quality of the acquired service is assured.

As mentioned previously, we offer this as part of our SATCOM as a Service business model, which is addressing our government users' most essential challenges while achieving new levels of innovation. SATCOM as a Service is an end-to-end fully integrated capability that establishes mobile, high-throughput connectivity the way users seek it: easily, affordably and operationally available – anytime, anywhere.

I am confident we will reach a point in which this business model emerges as the norm. To get there, we on the commercial side must continue to invest in ongoing technology innovation as the foundation, granted by a trusted partnership between the government and industry and supported by relevant policies, structure and budget resources. With this, government and military users will have the reach, resilience and technology modernization to focus on and successfully execute their missions even through contested domains.

MSUA

What weren't you asked about that you would like to mention?

SM

Other than our LAISR technology, we didn't really get a chance to talk about Inmarsat Government's technology roadmap which is rich with an array of user-specific terminals that enable multiband support across different satellites and adaptability to support different modems.

For example, we are building small, high-throughput terminals that operate in both military and commercial Ka-band that allow our customers to roam from the WGS MILSATCOM world onto Inmarsat's Global Xpress network, seamlessly augmenting their mobility environment in all domains — land, sea and air. We are developing these cutting-edge devices to deliver multi-megabit data rates to and from very small airborne platforms as well as maritime and land mobile systems — and we offer this specialized technology, tailored to U.S. government customer requirements, as an end-to-end 24/7 managed service that meets their specific performance requirements.

We are solving the hard problems, from complete rotary wing solutions to unique terminals that support tough expeditionary missions. Inmarsat Government is excited to partner with our U.S. government customers to really deliver what they require.

MSUA

What is your personal favorite form of recreational mobility (boating, hiking, camping, horseback riding) when you're not at work focusing on satellite mobility? (By the way - Rebecca's answer was Glamour Camping or "Glamping.")

SM

I am an avid hiker and will travel to great extremes to experience the treasures our world has to offer. And while I would like to think I can move mountains, at least I have been known to climb them, and have even enjoyed a technical climb or two on my adventures. Little known fact is that whenever I really get off the grid, I usually have a satphone in my kit, and it always works so I am never really away from the safety net of satellite mobility.

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President of the Mobile Satellite Users Association, Catherine spearheads the group's mission to promote mobility market development and mobility innovation. With more than 25 corporate and small business members representing all levels of the satellite value chain as well as end-users, MSUA collaborates with conference organizers around the world to facilitate panels and keynote speakers that decipher mobility market dynamics including: growth opportunities, strategic partnership, barriers to progress, application aspirations, adjacent market influences and more.

Catherine Melquist is a strategic marketer with more than two decades of experience developing marketing and public relations strategies for global companies in the satellite and space-based market.

Catherine is the principal strategist at CAM & Company, a boutique marketing practice offering a cost-effective, ready-to-go alternative to resourcing an in-house marketing team or contracting with a traditional marketing firm. Ideal for start-ups, companies in transition, or established businesses looking to augment their staff, CAM & Co helps companies navigate the market to achieve brand awareness, strategic outreach and revenue success. CAM & Co employs a carefully selected network of professionals with satellite and aerospace expertise and shape-shifts them into teams to meet the unique needs of each client.