



2010  
**Aviation Week**

Program Excellence Award Submission



**Boeing Broadband Satellite Communications Network**  
US National Senior Leader Mission Essential Service

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

## I. Program Overview

Organization Name/Program Name:	Boeing/Boeing Broadband SatCom Network
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Customer: Organization/Name/ Position/Contact information	USAF, AMC/Don Tucker/Contracts Officer/FA4452-10-C-0002
Program Category	System level Production/Sustainment program
<p><b>Program Background:</b> What is this program all about? (No more than one page). Describe:</p> <ul style="list-style-type: none"> <li>➤ The overarching need for this program</li> <li>➤ History of the program</li> <li>➤ The product that is created by this program</li> <li>➤ Scope of work – original &amp; updated</li> <li>➤ Expected deliverables</li> <li>➤ Current status of the program</li> </ul>	<p><u><i>Overarching Need:</i></u> Due to the real-time nature of terrorist attacks, U.S. national senior leaders recognize the National Command Authority requires an “office in the sky” capability that delivers the same secure communications, data and video networks that are available in their offices on the ground. BBSN is an important element of the Command, Control, and Communication infrastructure of the United States.</p> <p><u><i>Program History:</i></u> In October 2001, Boeing demonstrated the Connexion by Boeing service, which was the only system that provided the needed voice, data and video capability in an airborne environment. Due to the urgent need, the first system was integrated on Air Force One before Christmas of 2001. Subsequently, VC-25 aircraft, as well as C-32As, C-40Bs and E-4Bs – a total of 13 aircraft were modified to incorporate the Connexion system. In 2006 Connexion by Boeing was renamed Boeing Broadband SatCom Network (BBSN) and became a private U.S. Air Force network.</p> <p><u><i>Program Product/Service:</i></u> BBSN provides a mobile, Internet Protocol (IP)-based, broadband service that operates in CONUS and OCONUS at near 100% availability. The crew and principals on-board use IP-based applications such as VoIP, Secure Video Teleconferencing, television, email and more. The service interoperates with communications systems on-board the aircraft connecting the nation’s senior leaders to the U.S. government’s Global Information Grid.</p> <p><u><i>Expected Deliverables:</i></u> “Always on”, “Always improving” broadband communications service.</p> <p><u><i>Current Program Status:</i></u> In February 2010, BBSN received a five-year sole source follow-on contract from Air Mobility Command.</p>



# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

## I. VALUE CREATION = 20 POINTS

### **Value:**

What is the value, competitive positioning, advantage, and return created by this program to you:

- Customers – National interests, war fighter
- Company – Strength, bottom line, and shareholders
- Scientific/technical value (particularly for R&D programs)

Our customers, both DoD and national senior leaders, have told us that they are very pleased with the BBSN service. BBSN has kept pace with the customer's insatiable appetite to have more, better, and faster service

### **Excellence and Uniqueness:**

What makes this program unique? Why should this program be awarded the Program Excellence Award? In what ways is this a stellar program?



**Value:** BBSN provides the senior leadership of the United States with the ability to communicate directly with the war fighter while in a mobile office environment. BBSN is a cost-effective, managed service with single call trouble resolution. The BBSN technology also supports mobile broadband service to U.S. Army Stryker vehicles currently operating in Iraq. In addition to providing services to external customers, BBSN leveraged its network management expertise for other Boeing programs, such as SBInet, Stryker and Ground-based Mid-course Defense, enabling these programs to reduce their startup cost by having experienced BBSN personnel and processes assist them meet their customer's requirements.

**Excellence:** BBSN was the first global aeronautical mobile satellite communications network to provide data rates in excess of a megabit per second to and from an airplane at any altitude. Another unique network feature allows the Network Operations Center (NOC) to control the bandwidth independently to each airplane to meet real-time requirements. For example, the bandwidth on a VIP/SAM aircraft can be increased when the Principal is conducting a Secure Video Teleconference while flying anywhere in the global network. With proven operational software that allows seamless hand-offs between satellite transponder footprints, BBSN equipped airplanes can fly around the world, including over the Atlantic or Pacific Oceans and stay connected. The service is "always-on" and achieves greater than 99% availability. Sophisticated real-time situational awareness capability enables pilots to change course to maintain BBSN connectivity. These exceptional innovations are recognized by the BBSN customer in every CPAR evaluation category. The BBSN service is the "go to" communications system on-board the VIP/SAM aircraft.

## III. ORGANIZATIONAL PROCESSES/BEST PRACTICES: (HOW DO YOU DO THINGS) = 30 POINTS

### **Strategic:**

Describe how you developed your program strategy and competitive advantage in support of your company strategy, how

The BBSN strategy which we call "guiding principles" was developed from the key corporate strategy of "execute flawlessly and extend the core business". These principles are:

- Keep the Customer connected
- Meet contractual obligations

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

<p>you monitor progress toward achieving this strategy</p>	<ul style="list-style-type: none"> <li>• Improve the service</li> <li>• Deliver financial performance</li> </ul> <p>BBSN keeps the “customer connected” by monitoring real time system performance using the network management platform and provides the customer performance visibility via the portal. Performance to our “contractual obligations” is reported to the customer via a monthly fleet summary report. BBSN meets quarterly with the customer to discuss “system performance” and “service improvements”. We measure our “financial performance” by conducting monthly financial reviews. The recent award of a 5 year sole source contract, the Exceptional ratings in the most recent Contractor Performance Assessment Rating (CPAR) and the fact BBSN has met all financial performance targets is proof the strategy is working.</p>
<p><b>Strategic:</b> Requirements Management – How do you define, revise and control your requirements?</p>	<p>BBSN manages requirements in three areas: the Managed Network Service, the Hardware &amp; Software integrated on the airplanes and International Regulatory Compliance. As a Managed Service, we stay competitive by constantly delivering service improvements ahead of customer requirements. We hold informal conversations with our customer where they make their needs known; we assess technical and business feasibility and implement the change in days or weeks, depending on the complexity. The hardware and software requirements used in the BBSN system are maintained using procedures approved to maintain FAA Supplemental Type Certificates. Boeing’s international regulatory experts maintain a comprehensive database containing BBSN’s operating licenses for more than 188 countries.</p>
<p><b>Strategic:</b> Systems Engineering – Describe your systems engineering planning and management processes.</p>	<p>BBSN follows Boeing’s system engineering best practices for anomaly resolution and service improvements such as optimizing system performance and improving system capacity. A recent performance optimization activity increased peak performance to 2.5+Mbps from the initial 512 Kbps. System Engineers reviewed system specifications and determined only software changes were required to make this performance improvement. Requirements documents were generated; including “use cases” for the software development team. Developed software was tested in the system integration facility using actual satellite data links on the production network and a simulated aircraft. After successful testing, the software was deployed to the fleet.</p>

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

**Strategic:**  
Opportunity Management -  
 Describe how your program identifies opportunity and manages this opportunity.

BBSN uses a disciplined approach for opportunity management which is integrated with our risk management process. BBSN, as a service based business, is always focused on opportunities to enhance the customer experience or reduce costs. These opportunities are evaluated jointly with our customer using our system engineering process and those with the greatest customer value are implemented. By listening to the customer, BBSN deploys service improvements that exceed expectations. Engineers recently identified a service improvement opportunity that would significantly reduce transponder operating costs. By making a software change, the system was modified to use partial transponders in many locations around the world. This change saved approximately \$6M in annual operating costs.

“It has been a pleasure working with Boeing throughout this period of performance. They have worked hard to continuously improve their service and develop a strategy for the transformations planned in the future. Given the complexity of the requirement, Boeing has provided superior service for the USG.”

--Recent BBSN CPAR

**Operational:**  
Planning, Monitoring, and Controlling -  
 Describe your planning and resource allocation processes. How do you monitor and review your program's progress and make corrections to keep the program on track

Prior to the beginning of each year, BBSN establishes an annual operating plan that includes labor, expenses and capital expenditures. BBSN maintains a battle rhythm of daily, weekly, quarterly, and annual meetings during which the program operating plan is monitored and controlled. A recent example of the team's ability to make a significant course correction was BBSN's rapid response to a potential natural disaster involving the BBSN data center. In order to guarantee uninterrupted service, BBSN immediately reallocated resources and built a geographical diverse data center. The team installed the new data center in December 2009, stayed on plan, met all fiscal and operational performance requirements for the year and improved network reliability.

**Operational:**  
Supply Chain Management --  
 What processes, tools and relationship-building methods have you used to develop, refine and improve supply chain and stakeholder integration? This is one of the most imperative needs of our industry – please provide specific details and data that assisted you in gauging the effectiveness.

BBSN supply chain management is integrated with the Boeing supply chain system. BBSN capitalizes on Boeing's supply system economies but maintain a close partnership with its critical suppliers. BBSN manages its Supply Chain using pre-negotiated contracts with multiple option years. Once these contracts are in place, BBSN manages the service delivery with service quality ratings, SLA metrics, and working closely with the service providers. BBSN monitors key suppliers using a trending, stoplight summary of service quality metrics (cost, schedule, technical, quality and management). These metrics gauge supplier performance and ensure each supplier is evaluated and measured consistently. Over the last 12 months, all our suppliers have maintained satisfactory or better ratings. This year BBSN nominated one supplier for Boeing's Supplier of the Year award for outstanding responsiveness and consistently exceeding quality metrics. Boeing also evaluates BBSN's ability to manage the supply chain. Over the last nine quarters, BBSN maintained 100% audit

23 - Key Supplier Status

BBSN KEY SUPPLIERS STOPLIGHT SUMMARY		Page 1 of 1	
Supplier	Category	Rating	Notes
Boeing Supplier	Quality	Green	
Boeing Supplier	Schedule	Green	
Boeing Supplier	Cost	Green	
Boeing Supplier	Technical	Green	
Boeing Supplier	Management	Green	
Boeing Supplier	Quality	Green	
Boeing Supplier	Schedule	Green	
Boeing Supplier	Cost	Green	
Boeing Supplier	Technical	Green	
Boeing Supplier	Management	Green	
Boeing Supplier	Quality	Green	
Boeing Supplier	Schedule	Green	
Boeing Supplier	Cost	Green	
Boeing Supplier	Technical	Green	
Boeing Supplier	Management	Green	

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

	<p>compliance with system integrity of purchase contracts. This ensures BBSN meets our supplier commitments.</p> <p><i>Relationship Building:</i> BBSN partners with our suppliers in meeting customer commitments. BBSN engages our suppliers early and often as we roll-out a new capability to ensure everyone is ready to assist in the effort. Our suppliers recognize the criticality of the BBSN mission and pre-coordinate supplier maintenance activity with BBSN to ensure no impact to the customer.</p>
<p><b>Operational:</b> <u>System Integration, Testing &amp; Reviews</u> - Describe the activities and processes used to succeed in your system design, integration, and testing. How did you conduct system design and technical reviews?</p>	<p>BBSN follows Boeing’s system integration and testing processes with some enhancements. A design review board assesses all network changes for positive customer impact, architectural alignment and business value. After a positive assessment, the change proceeds through several spirals of rapid prototyping and technical peer review. After each spiral, if the cost, schedule, risk and business value remains favorable, the change enters the staging area for final test and verification that the design solution meets allocated functional, performance, and interface requirements. An important point about the staging area, BBSN does not use its customer as a “guinea pig”. Before being deployed in the operational network all hardware and software changes are thoroughly tested in this unique staging area which duplicates the operational network and emulates operational activities. BBSN’s recent development and deployment of a 3<sup>rd</sup> generation ground station successfully used this process and reduced ground station CAPEX and OPEX by 66%.</p>
<p><b>Operational:</b> <u>Risk Management</u> Describe the processes used to identify risk and avoid future/potential issues or risks.</p> 	<p>NOC operators monitor network performance 100% of the time and log all performance anomalies for further investigation. Engineers review performance anomalies bi-weekly, initially as “issues” in our Risk, Issue and Opportunity system. Minor issues are resolved while severe anomalies are identified as risks and mitigation plans developed. A product of the BBSN risk management process is described in the Operational monitoring and control section above. A major risk to the program (a natural disaster rendering our data center unusable) was mitigated and turned into a service improvement opportunity that increased network reliability.</p>
<p><b>Team Leadership:</b> <u>Team Spirit and Motivation</u> Describe how you created your team spirit and culture, and accomplished full team integration and team member motivation.</p>	<p><i>A Highly Motivated BBSN Team:</i> From the beginning, team leadership established a focus on the customer needs and a collaborative work environment. As a result, the team receives extremely positive customer feedback which produces a highly motivated team. BBSN personnel loaned to other Boeing programs return refreshed and motivated to bring the best of Boeing innovations to improve the BBSN service.</p>

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

“The Boeing folks that work the BBSN program are an outstanding group of individuals who are always professional and have a high level of technical expertise. This has had an immeasurable impact on the teamwork that has been fostered to continue meeting our customer's high expectations and needs of the BBSN service.”

- Recent BBSN CPAR

BBSN teammates understand and believe that analyzing, planning, and decisive actions are better when done cooperatively. Team members believe their aggregate value is far greater than just the sum of the individuals. Continuous positive customer evaluations have built a positive emotional connection between great customer service and the BBSN team esprit de corps – “making a difference through meaningful work”. Additionally, our customer reinforces this BBSN pride by visiting the BBSN facility and sharing the positive feedback they receive directly from the Communication System Operators on the airplane. Every one is committed to the team’s goal to provide a great service to our customers.

**Team Leadership:**  
Lessons Learned and Knowledge Management  
Describe how you collect lessons learned and best practices, and how they are shared with your team and company to improve performance.

BBSN embraces diversity of thought as a strong program execution discriminator. This was shown by drawing upon engineering, regulatory and operational teammates which enabled the integration of program knowledge, best practices, and lessons learned from all backgrounds. BBSN maintains a daily log of service events that eliminates repeating past mistakes and captures those lessons learned that continually make the service better. As described in the section on “Risk”, all service outages are thoroughly reviewed and corrective action plans are implemented. The operations staff meets weekly to discuss lessons learned and the previous week’s significant events. Here they agree on service improvements and capture them in the organization’s methods and procedures, desktop instructions and issue escalation documentation. Additionally, the NOC operators share lessons learned from the Network Operations Support (NOS) team (responsible for network management platform) in the weekly design review board. Through the Customer Experience Service Management activity, we share our best customer experience ideas with the rest of Boeing and industry (see Best Practices).

**Team Leadership:**  
Leadership Development  
How do you develop team’s skills and build future leaders

Developing team member skills and future leaders is important to BBSN’s success. All BBSN team members prepare an annual development plan that combines formal training, career goals and special job assignments to form a personal roadmap to enable individuals to achieve their professional goals. Members of the BBSN team participate in the Boeing program management workshop and in certificate generating courses. Additionally, BBSN supports the Employee Involvement Program that enables individuals to lead work teams and the Mentoring Program, in which managers assist employees to implement their development plan.

**Best (& Next) Practices:**  
Identify your program’s

BBSN implemented a Customer Experience Service Man-

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

specific Best Practices *that you believe are unique, and could be shared with others and become industry's Next Practices.*

Customer Satisfaction Index		BBSN														
Performance	IDS	2009 Criteria														
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May			
	BPAR															
	CPAR															
	FLEET READINESS		4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	AWARD FEE															
	PRGRM															
	Download Time CONUS		4.4	4.08	4.1	4.2	4.8	4.8	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	Download Time OCONUS		4.8	5.12	4.8	4.8	4.3	5.1	5.2	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	Global Service Availability CONUS		100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Global Service Availability OCONUS		100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Mean Time To Repair (MTTR)		20	0	0	0	0	0	0	0	0	0	0	0	0	0
	50%															
	Relationship															
	IDS															
	2009 Criteria															
	Program Manager Survey		95	95	95	95	95	95	95	95	95	95	95	95	95	95
	50%															
	Relationship Measure		4.8	4.83	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	2009 Criteria															
	ALL INDICATORS		4.7	4.76	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	IDS REQUIRED INDICATORS		4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	OTHER INDICATORS		4.8	4.85	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9

agement (CESM) program building on a body of work developed by Arizona State University's Center of Service Leadership program. BBSN manages the customer experience through constant customer involvement and communication. BBSN maintains a Customer Satisfaction Index (CSI) which is a measure of our customer's satisfaction with BBSN performance. Our Customer Experience Management (CEM) process tracks metrics including the customer provided CPAR, global service availability, Mean Time to Restore and our Program Manager Survey. Maintaining our CEM metrics focuses the team to maintain the high level of performance our customer has come to expect. Listening to the customer and providing this mission essential service in the most difficult circumstances sets BBSN apart from the competition and makes Boeing the supplier of choice for US national senior leader airborne communications.

## ADAPTING TO COMPLEXITY: (HOW DO YOU DEAL WITH YOUR PROGRAM'S UNIQUE COMPLEXITIES) = 20 POINTS

Identify the Program's **Market Uncertainty** level – How new is your product to your market and users, based on the definitions below. Then describe how you deal and address this specific uncertainty:

- **Derivative** – an improvement of an existing product/system.
- **Platform** – a new generation in an existing product line.
- **New to the Market** – a product or system adopted from another market.
- **Breakthrough** – new to the world product or system.



The BBSN service was a breakthrough because it provides a one-of-a-kind broadband global mobile communications solution. Boeing took a fixed ground position technology using satellites and developed the technology that enables global mobility in airplanes, ships and ground vehicles. Boeing invested significantly in developing the technology and holds over 200 patents. The four key areas where Boeing changed the mobile airborne satellite communication industry are:

- Changed ITU Radio Regulations to allow Ku band for aeronautical service
- Pioneered CDMA technology for satellites
- First to do global mobile internet routing and move entire classes of IP addresses between continents
- First to provide Ku coverage over oceans

Identify the Program's **Technological Uncertainty** using the definitions below. Then describe how you deal and address this uncertainty:

- **Low-tech**: application of mature, well-established technology
- **Medium Technology**: existing technology modified to meet new design requirements
- **High-Technology**: recently developed new technology
- **Super High-Technology**:

BBSN integrates across the technology spectrum and delivers a *High Technology* service with a near-term target to be the first in the industry deploying an integrated *Super High Technology* blended mobile satellite communication service. BBSN's high technology is its network management system (NMS) platform which correlates complex network events, enabling network situational awareness with actionable, predictive alarms and delivering 99+% availability in a challenging aero-mobile RF environment. Our *Super-High Technological* capability is to provide seamless communications among different satellites, disparate networks, waveforms and



# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

<p>non-existing technology that needs to be developed during the program.</p>	<p>frequency bands. This leap in technology is enabled by the BBSN innovations in NMS and network situational awareness and leverages the TeleManagement Forum (TMF) framework and ITIL standards. This improved network awareness allows BBSN to assess RF network congestion, systematically re-route IP traffic to the appropriate RF network conduit and ensure seamless hand-offs between RF links.</p>
<p>Identify the level of your <b>System Complexity</b> using the definitions below. Then explain how you are dealing with this level of complexity:</p> <ul style="list-style-type: none"> <li>- An <b>Assembly</b> performing a single function.</li> <li>- A <b>Sub-system</b> fitting within a larger system.</li> <li>- A <b>System</b> – a collection of subsystems performing multiple functions.</li> <li>- An <b>Array</b> – a “system of systems”; a widely dispersed collection of systems serving a common mission.</li> </ul>	<p>BBSN is a Service Array comprised of an airborne Ku-band satellite communications system and the BBSN managed network service. The latter includes five ground stations located throughout the world, 11 different satellite transponders connected by terrestrial Wide Area Network circuits, plus thousands of network devices. BBSN’s NMS remotely manages all aspects of the system including hardware and software performance. BBSN manages this complexity through a real time situational awareness portal. This portal aggregates actionable information in an “at-a-glance” format for a one view perspective of the entire operational network’s health. This at-a-glance view allows the BBSN NOC to quickly respond to and resolve network anomalies.</p>
<p>Identify the <b>Pace and Urgency</b> of your team’s effort using the definitions below. Then describe how you deal with the program’s pace requirements:</p> <ul style="list-style-type: none"> <li>- <b>Regular timing</b> – no specific time pressures.</li> <li>- <b>Fast/Competitive</b> – time to market is important for competitiveness.</li> <li>- <b>Time Critical</b> – there is an absolute and critical-to-success deadline.</li> <li>- <b>Blitz</b> – there is a crisis element driving the need for immediate response</li> </ul>	<p><i>Operating Tempo: From Fast to Blitz:</i></p> <p>The pace and urgency within the BBSN organization depends on the impact to customer service. The goal is to maintain regular time operations. In reality BBSN operates in the spectrum between <i>Fast/Competitive</i> to <i>Blitz</i>. When a US National Senior Leader is using our service, we freeze the network to any BBSN maintenance or improvement activity, leaving limited time for scheduled network maintenance: hence we always operate at a <u>Fast/Competitive</u> pace. Should customer communications be impacted, we begin crisis management and elevate to a <i>Blitz</i> operational tempo. If a service impacting event occurs but the customer is operating in a non-impacted geographical location, we declare a <i>time-critical</i> event and establish a correction deadline based on projected customer impact using time-distance calculations. Similarly, network situational awareness allows us to optimize the time when the BBSN sub-systems are not in use to perform system maintenance and deploy service enhancements. We remain competitive by providing our customer with quality service and operational enhancements faster than our competition. There are instances when the criticality of the situation is beyond our team’s capability. In these cases, we reach back into the larger Boeing for help to expeditiously resolve a potential customer impacting event.</p>
	<p>Although we highlight our situational awareness as a control-</p>

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

**Other Complexities & Uncertainties -**

Describe other complexities and unknown factors faced by this program and how you address them.

“Boeing continues to make improvements to the online portal, increasing situational awareness and historical record keeping of the service. ...Their efforts significantly increase the effectiveness of the mission planning and execution supporting U.S. senior leaders.”

- Recent BBSN CPAR

ling factor in managing operational pace, we can not predict customer intent. The USG customer does not share their mission plans so our communications service must always be ready. If a situation arises when we must address a sustainment issue, we request a maintenance window and provide our customer at least a week notice. A significant complexity which is unlike traditional communications networks is managed mobile nodes detaching from the BBSN network is considered a normal condition (a plane lands and turns off the system). It is normal for mobile nodes to connect and disconnect to/from the network automatically as aircraft arrive and depart. Using situational awareness tools developed by the BBSN team, we can quickly recognize whether the system was turned off or experienced a failure during flight which requires immediate attention. This adds to the complexity of the NMS necessary to recognize these variable conditions. Additionally, BBSN is planning to expand its global coverage to include new USG operational mission areas and seamlessly bridge different technologies and frequency bands (INMARSAT L Band, WGS and/or Commercial Ka Band, Commercial Ku Band) into an integrated network capability.

**V. METRICS (HOW DO YOU MEASURE PROGRAM'S PERFORMANCE) = 30 POINTS**

(Note: We are not looking for \$ results, but the relative percentage achieved. In particular indicate what specific metrics and data you are using that drive the program beyond standard measures of schedule, budget, and performance, and which have contributed to your program's focus and its success.)

**Customer** - How do you measure the impact of your program on your customer and your customer's satisfaction? Include a description of your metrics, as well as numerical evidence.

Customer Satisfaction Index					
	2008 Score	2009 Score	2010 Score	2011 Score	2012 Score
Performance	4.3	4.3	4.3	4.3	4.3
Customer	4.3	4.3	4.3	4.3	4.3
Product	4.3	4.3	4.3	4.3	4.3
Process	4.3	4.3	4.3	4.3	4.3
Relationship	4.3	4.3	4.3	4.3	4.3
Indicators	4.3	4.3	4.3	4.3	4.3

BBSN continuously measures customer satisfaction. Most important of these measures is the USAF provided Contractor Performance Assessment Report (CPAR). Our customer grades performance in Quality of Product or Service, Schedule, Business Relations and Management of Key Personnel. In the most recent CPAR, BBSN received Exceptional ratings (highest available) in all categories. Every month during our Business Plan Review we provide our Customer Experience Service Management metrics including our Customer Satisfaction Index (CSI) described in the section on *Best Practices* to provide a measure of our Customer Satisfaction. The CSI is a combination of Customer Experience Management and our tailored service business approach to Program Management Best Practices.

**Performance** - How do you measure your program's performance in traditional terms such as schedule, budget, requirements, and business results?

BBSN views exceeding our contractually required service availability (“Always On” service) as the most important metric. This must be done within the program budget to return value to Boeing's shareholders. BBSN maintains detailed budgets and conducts monthly reviews of spending versus

# The Boeing Company / Boeing Broadband SatCom Network (BBSN)

Exceeded SLA availability metric - 40 straight months	budget and holds quarterly EAC (estimate at complete) reviews to ensure we're hitting our targets. BBSN has exceeded all contractual financial performance targets since the transition from a commercial to private government service.
<b>Preparing the Future</b> - How do you measure and assess the long-term contribution of your program to the corporation/organization?	BBSN develops a 10 year Long Range Business Plan (LRBP) every year to maintain a long-range focus. Each year we measure our progress against the previous year's LRBP. The LRBP represents the program's long term financial commitment to the corporation in terms of orders, sales and profit. BBSN has exceeded all LRBP objectives. By achieving plan objectives, we deliver superior performance to customers, reward shareholders, and maximize employee satisfaction. As evidence of our long-range technology focus, we are currently on the 3 <sup>rd</sup> generation of ground stations and have just initiated a campaign to refresh the mobile terminal hardware. Future plans include increasing coverage to the southern hemisphere and integrating INMARSAT L Band, WGS and/or Commercial Ka Band, Commercial Ku Band into a single network.
<b>Team</b> - How do you measure and assess the impact of your program on your team development and employee satisfaction?	<p>The BBSN Team consists of highly skilled personnel. They are sought after to assist in solving complex problems by other Boeing programs. The BBSN team has a customer focused make-it-happen culture in which responsiveness and innovation are keys to our success. BBSN's annual Boeing Employee Survey indicates our employee satisfaction far exceeds industry norm in the following areas:</p> <ul style="list-style-type: none"> <li>• Encouraged to find new and better ways to do things (81% positive)</li> <li>• I like the kind of work I do (94% positive)</li> <li>• My work gives me a feeling of personal accomplishment (91% positive)</li> <li>• I feel well informed on what is expected of my job (91% positive)</li> <li>• My work group has a clear understanding of our customer's needs ( 91% positive)</li> </ul>
<b>Unique Metrics</b> - Describe any unique metrics you are using to measure your program's progress and focus it for outstanding success	BBSN uses Mean Time to Restore (MTTR) to measure the effectiveness of our repair process. In a service business MTTR describes how long a NOC operator takes to recover from any network event that impacts service. Over the last 4 years, we have reduced our MTTR objective from 4 hours to our current MTTR performance of less than 10 minutes. This is an exceptional accomplishment which produced an all-time high for customer satisfaction. Another unique metric is the customer satisfaction index discussed in the "Customer" section above.