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**Q: Can you tell us about BBN Technologies and what it has to offer to government and military customers?**

**A:** BBN Technologies has a rich history of innovation. We've been solving complex challenges for our government customers for over 60 years. Known for pioneering the development of the ARPANET, the forerunner of the Internet, the first email, and the use of the @ sign, BBN continues to create advances in information security, speech and language processing, networking, distributed systems, geospatial semantic web, and sensing and control systems. Today, BBN is developing the protocols that will define the Internet of tomorrow; is saving lives in Iraq and Afghanistan with its Boomerang Shooter Detection System; operates the first quantum cryptography network operating across a major metropolitan area; has deployed the first real-time foreign broadcast monitoring system; and has demonstrated the benefits of the world's first stereoscopic digital mammography system in clinical trials.

**Q: Are there any trends you've recognized in the industry that will be critical to the success of BBN and the geospatial intelligence tradecraft?**

**A:** We are witnessing a Copernican revolution in software and systems engineering, a growing recognition that data— not applications— are at the center of the enterprise. This does not mean we should replace stovepipes with enterprise data warehouses. Rather, we should embrace stovepipes where they make sense and focus our attention more on data sharing to extend enterprise reach. To do this, one must understand the meaning and semantics of the data within the enterprise, geospatial or otherwise, so that constellations of applications can operate efficiently to satisfy mission objectives.

Moreover, not all geospatial enterprise data is contained in structured data sources like databases. Much of the data we deal with is less structured, and may take the form of natural language (audio, documents, web pages, etc), video, imagery, or even advanced geospatial intelligence such as we might refer to at MASINT (a theme of our last GEOINT Symposium). As part of this Copernican shift to data-centric enterprises, we are also observing a four-fold improvement in intelligence analysts' productivity. Whereas current methods suggest analysts spend approximately 80% of their time on data manipulation and 20% on actual analysis, advances in data sharing technology appear to be reversing these allocations.

Given the data intensive nature of geospatial intelligence, the ability to ask enterprise-wide questions that simply could not be asked before, across all forms of media and without regard to any proprietary protocols, is quite powerful.

**Q: Tell us about BBN's Quality of Service Enabled Dissemination (QED) prototype and how this uses geospatial technologies to help the warfighter.**

**A:** BBN Technologies is under contract with the USAF Air Force Research Laboratory to develop a system that will allow warfighters to access the information they need, when and where they need it, regardless of their connection device and the available bandwidth.

Called Quality of Service Enabled Dissemination, or QED, the prototype system will incorporate both quality of service and disruption tolerance capabilities to ensure that troops in tactical situations get timely delivery of the information they need. The quality of service (QoS) capability ensures that the system will be able to prioritize information delivery for applications, users, or data flows critical to operational effectiveness. For example, a tactical warfighter on a radio set or field telephone may not have the communication resources to receive dense geospatial data such as imagery with superimposed text information in real time. The QoS capability will ensure that the user receives adequate information to carry out his or her mission, such as selected compressed images or a lightweight text version of the same information.

Communications are critical to effective battlefield operations, but hostile and changing conditions, unreliable bandwidth and connectivity, and the variety of communication devices on the battlefield make it challenging for today's agile teams to get the information they need when they need it. For example, a convoy traveling through a hostile urban area may need both historical and real time information about their environment, such as past threats and up-to-the-minute maps and road condition information. A simple event such as a truck stalling on their planned route can require immediate re-planning and, consequently, require an immediate update to all situational awareness information. Today, such information is limited, and those relying on traditional links or devices may not receive adequate information quickly enough to adapt to the changing situation. This is especially true for geospatial requirements.

Using the prototype system from BBN Technologies, such a convoy team could first submit requests for information based on their mission and planned route. The system could deliver the available historical data about threats such as ambush and IED sites superimposed on real-time imagery of the route. If their planned course changed, the convoy troops would relay this information via the communications system, which would then deliver relevant information about the new route in formats that are compatible with the mission, role, device, and bandwidth of each user.

Additionally, BBN's prototype system will be disruption tolerant so that it continues to operate and advance message traffic despite temporary disruptions or intermittent communications. Finally, the system will be scalable to large numbers of users, operations, and resources.

**Q: What does BBN hope to do in the future to better serve members of the Intelligence Community?**

**A:** Given our deep roots in R&D, we expect to remain on the leading edge of technology, shaping the future in terms of what is possible. We hope to partner with our fellow USGIF member companies to identify and transition the most promising and mature technologies into the operational side of the intelligence community. The Boomerang Shooter Detection System is an example of BBN's strong track record of transitioning technology for our uniformed services. We can do the same with other technologies for the IC, particularly when teamed with the right partners.

**Q: How has your participation as a member in the Foundation benefited your company?**

**A:** BBN is a strong supporter of the USGIF, and we recently upgraded our membership level to Partner because we believe the Foundation offers tremendous value. As with any endeavor, we recognize that the benefits we derive are directly proportional to the extent to which we choose to contribute, so we choose to contribute on a regular and consistent basis. We are active in the

GEOINT planning committee, we co-chair the Emerging Technology Subcommittee (ETS), we attend the new GEOINteraction Tuesdays, we participate in interoperability demos, NGA Tech Days, and of course the GEOINT Symposium. As a result, BBN is now far more visible in the geospatial intelligence community to a much greater degree than we were before joining the Foundation. Most importantly, we are proud of our association with the Foundation in promoting the geospatial intelligence tradecraft, and its long-term benefits to our nation.