Build Greater Capacity with an Enterprise 5G Network

Summary of Roundtable, co-hosted by Oceus and ATARC in January 2023   **WHITE PAPER**

Enterprise 5G networks are crucial for data sharing capabilities and the rapid deployment of reliable, high bandwidth communications. Many Federal agencies are currently involved with modernizing government communications and network capabilities with 5G technology. The promises of 5G on technology integration, mission deployment, and other innovations are immense, but agencies must overcome several challenges to realize the full power of 5G.

In a recent roundtable discussion hosted in by ATARC in partnership with **Oceus**, topic experts from various Federal agencies came together to discuss strategies and plans to build greater capacity with 5G networks.

Planning for 5G and Beyond

Agencies came to the roundtable with varying levels of 5G technology experience and aspiration. For some, current modernization projects are being built to accommodate the future integration of 5G technology. Others are already thinking ahead to the possibilities of 6G technology and beyond. Regardless of where agencies might be in their modernization journey, all are doing so with one eye on the future and a growing need for advanced technology.

Digital files are increasing in size and complexity, with the addition of audio recordings, complicated data sets, and analysis. While some agencies can accommodate sending and receiving such complicated files, many others do not have the technology. More advanced agencies are becoming more aware of the technology gaps that exist within smaller or remote agencies with fewer technological resources. It is likely that integrating 5G technology will help bridge these gaps.

> Do we plan for 5G, or do we plan for the next generation? If we plan for 5G, we're being short sighted.
> *- Roundtable Participant -*

Other agencies are interested in the speed of deployment of 5G, and whether its lifetime is long enough to build projects and systems around the technology before it is replaced with a newer version. The speed of advancement is concerning especially to agencies with fewer resources to put towards modernization. This debate is happening concurrently alongside many smaller projects that are helping to maintain security and position the agency for full 5G or XG deployment.

Managing Rapid Change

Modernizing infrastructure and systems to accommodate enterprise 5G technology involves many moving parts that are often out of the control of Federal agencies. The first is the security of the supply chain and having confidence each component is secure. Agencies must also consider their infrastructure as a whole, including the many applications and devices that are connected to the network ecosystem.

Despite how prolific 5G technology is in the private sector, it's still considered an emerging technology in the public sector. As such, there remains a mindset that 5G technology is limited only to cell phones and communication. Many government agencies are working with private industry partners to explore the innovative technologies that are emerging from the use of 5G. Use cases range from IoT smart sensors embedded in roads to monitor traffic, to new medical procedures that are improving the field of medicine.

In a world where everything is powered by 5G technology and is in a constant state of change, security also must adapt to changing threat environments. Artificial intelligence (AI) and machine learning (ML) will become critical components of any

enterprise 5G network to ensure highest levels of security. Agencies at the roundtable consider zero trust as a main tenant of maintaining a secure 5G network.

> If we're not getting people with skills into the government, we can pretty much write off the work.
> – Roundtable Participant –

To realize the full potential of 5G, agencies must adopt better systems to manage and operate the magnitude of complexities that come along with a fully connected world. Currently, the infrastructure of many Federal buildings are in and of themselves RF shields, which block all signals coming in and out. While there are workarounds and solutions to accommodate 5G networks in such environments, many agencies will need to invest in new infrastructure before full 5G deployment.

The 5G Challenges Ahead

Although not a direct technological obstacle, the entire Federal government faces the challenge of recruiting talent equipped to manage these new technologies. Unfortunately, many agencies do not have the skills required to plan for technology's near future. The government needs a younger workforce that is trained in emerging technology, in addition to considerable resources for small and local agencies with few IT staff and support.

Another challenge is educating customers base that is content with current technology. They see wi-fi as a good enough solution, but experts caution that while wi-fi is good enough for today, it may not be for tomorrow. Until the next generation application avails itself, most customers will not jump on new opportunities to modernize. But ultimately, customers will not have a choice.

Just as carriers turned off 3G and turned on the 4G network, so too will they turn off 4G in favor of 5G or another technology. The question is when, not if. The government should be paying close attention to where 5G technology is headed, and to make steps to accommodate these inevitable changes. Many agencies represented at the roundtable are eager to acquire new technologies and speed up modernization, but are hindered by cumbersome procurement rules and too few resources.

Despite the complicated challenges involved with deploying enterprise 5G networks, the Federal government remains committed to the future of 5G communication, operations, and innovation.

Enterprise 5G Use Cases
Office of the Under Secretary of Defense (OUSD)
Research and Engineering (R&E)

5G Augmented Reality (AR) for Medical Training & Telemedicine
5G-enabled Augmented Reality brings medical providers near real-time data and the ability to make split-second decisions critical in healthcare environments. It enables a secure, resilient and fully integrated platform to extend operational medical expertise forward to the "Operational Edge." The JBSA 5G in Telemedicine prototypes leverage the large bandwidth and low latency of 5G technology to enable the real-time use of emerging technologies (i.e., augmented reality, machine learning, advanced data analytics) to provide enhanced medical care and training anywhere it is needed, at anytime.

Augmented Reality (AR)/ Virtual Reality (VR) for High Fidelity Training
A scalable, resilient, and secure 5G network Testbed is providing realistic Augmented Reality/Virtual Reality (AR/VR) training in a field environment. The configurable, expeditionary, 5G supported AR/VR training systems improve training realism and enhance Mission Planning with unprecedented visual and 3D model-based tools.

5G Smart Warehousing
The 5G-enabled Smart Warehouse is focused on transshipment between shore facilities and naval units. The technology is cost-effectively increasing the efficiency and fidelity of warfighter logistics operations; including the improved access controls, preemptive identification, analytical reporting, warehouse modeling for use-case scenarios, sorting, storage, tamper-detection, transporting, maintenance, and repair of equipment, parts, and tools.

Robust Distributed Command & Control (5G-Next G Range)
The Testbed is using 5G and Future generation communication technologies to aid in Air, Space, and Cyberspace lethality while enhancing command and control (C2) survivability.

Learn more about **Oceus** – industry leader in private 5G solutions.