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Leveraging 5G as a Federal Innovation Enabler

As the DOD works with industry to adopt 5G networks, prototyping & sandboxing 5G capabilities can bolster adoption & innovation.

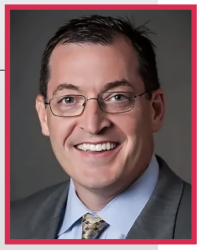
Featured Experts:

- **William McHenry**
  COL USMCR (ret.), Senior Engagement Advisor to the Director, DIU

- **Salvador D'Itri**
  Chairman, National Spectrum Consortium

- **Dr. Deepak Das**
  VP, Solution Architecture, Federated Wireless

- **Chad Jones**
  Gloal Government Lead, KPMG



The Department of Defense is eager to build 5G capabilities to create secure private networks accessible in any battlespace, anywhere the department is deployed. These capabilities can also help with real-time data collection from all sources and devices – like drones, satellites, weapons systems, sensors and more. Ultimately, 5G can help propel the DOD and its partners to establish a Common Operational Picture when troops are in the field.

Thought leaders from government and industry spoke at a recent **FedInsider webinar** to discuss how they're working together to build out these capabilities and leverage 5G's potential in military operations.

The State of 5G in the DOD

Salvador D'Itri, chairman of the National Spectrum Consortium, said the DOD is at the forefront of leading 5G efforts, noting the department has invested $600 million in 5G thus far. "Clearly, they are in a leadership position in looking at how 5G impacts the enterprise," D'Itri said. The DOD is shifting from carrier-based service to focusing on the enterprise. "I think DOD has really, unlike others, sort of taken that and really run with that experience," he added.

Chad Jones, global government lead at KPMG, is leading the company's 5G smart warehouse work for the Marine Corps base in Albany, Georgia. For over two years, Jones and his team have taken a metric-driven approach to design the smart warehouse for readiness.

"We want to make sure we have capability readiness for the Marine Corps and soldiers when they deploy or to a training site," Jones said. They based this approach on cost, speed and quality. "How can we install these components and applications, and test the 5G signal to reduce the overall cost of mission readiness?" he asked.

Speed is one of the most important metrics in the process, Jones noted, as gear must get from dock to storage to issue and back into the hands of the warfighter quickly and safely.

"Complexity and risk reduction were important in taking the manual, cumbersome and human-laden processes out of storing inventory gear," Jones said. So, they traded a clipboard-pen-and-paper operation for interoperability.

Now, autonomous and stationary robots, a warehouse management system and proper communication via a messaging broker tie all components together, so handlers or supply techs operate the warehouse on a single tablet. Even the conveyor system is connected to 5G to ensure the warehouse moves seamlessly, and data is gathered and analyzed with the help of an enhanced data center and the Microsoft tech stack.

Looking ahead, Jones said the goal is to make the entire inventory process autonomous with the use of 5G technology. "It is creating that mission readiness around all those applications empowered by 5G," he said.

5G as an Enabler

Investing in 5G capabilities lays the foundation for immediate and future technology advancements. The technology is open, enabling the developer community to build applications more easily. "The same applications that can be developed for the DOD can be developed globally and contributed to the same sort of economies of scale,"

said Deepak Das, vice president of solution architecture at Federated Wireless.

Not only does 5G allow the DOD to create networks for specific use cases, but it also facilitates convergence and conductivity between public and private cloud environments. "5G really sets the tone for openness and convergence that I think will be there forever," Das said.

5G is also a security enabler. With the influx of connected devices dragging data to the edge, privacy and security are key. Private 5G networks are also connected directly to edge computing.

"In a zero trust 5G network, in the Marine Corps, zero trust basically protects every resource whether an application or device is a gateway, server or a piece of software running on a stack. Every piece of software and every hardware application is a resource," Das said. "Anyone who wants access to those resources must be authenticated, and the communication with that entity, with that resource, has to be secure."

If required, that communication will also be encrypted. Ultimately, 5G supports zero trust aspects, and 5G networks always rely on identity-based access.

Prototyping 5G for the Future

The Defense Innovation Unit helps bring commercial and rapidly evolving technology to the government. It does so by taking a problem statement, rapidly prototyping solutions and scaling those solutions against the DOD, according to retired Marine Corps Reserves Col. William McHenry, who is the senior engagement advisor to the director at Defense Innovation Unit.

For example, the DIU partnered with the California National Guard and firefighters so they could set up a network under duress and maintain communications with frontline teams. Now, that technology is being used in Ukraine.

"We were rapidly able to take that commercially available technology, and through the California National Guard's historic relationship with Ukrainians, get that to them in the first couple months of the conflict," McHenry said. "It was a game changer for them." This speaks to the scalability of this capability. McHenry said this can be used for secure bring-your-own-device connectivity for service members while they're in the field.

The same can be said for OpenRAN environments, or open radio access networks. D'Itri said prototyping is critical in the spectrum world, as it helps make better policy decisions. "If you are allocated spectrum and today you can run a network that supports one million users, it is in your best interest to build a network that could support five million users," D'Itri said.

"If you are the military, you are always looking for ways to increase lethality and also to share how to build better spectrum management tools," D'Itri said. That's because many tools currently in the domain are antiquated, and spectrum sharing can boost innovation.

"Companies, particularly innovators in our group, come into a sandbox and get access to spectrum so they can innovate," D'Itri said. "All are welcome, and the DOD can participate too."

Prototyping, sandboxing and collaborating are key to 5G success and innovation. "What the government is doing is amazing. It has allowed this capability to be engineered in a prototype environment, and now both replication and expansion are taking place," Jones said. And that amazing innovation, according to Jones, will fuel even more advancements as 5G continues to roll out across the DOD and elsewhere, ultimately making for a very bright future or this remarkable technology.

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