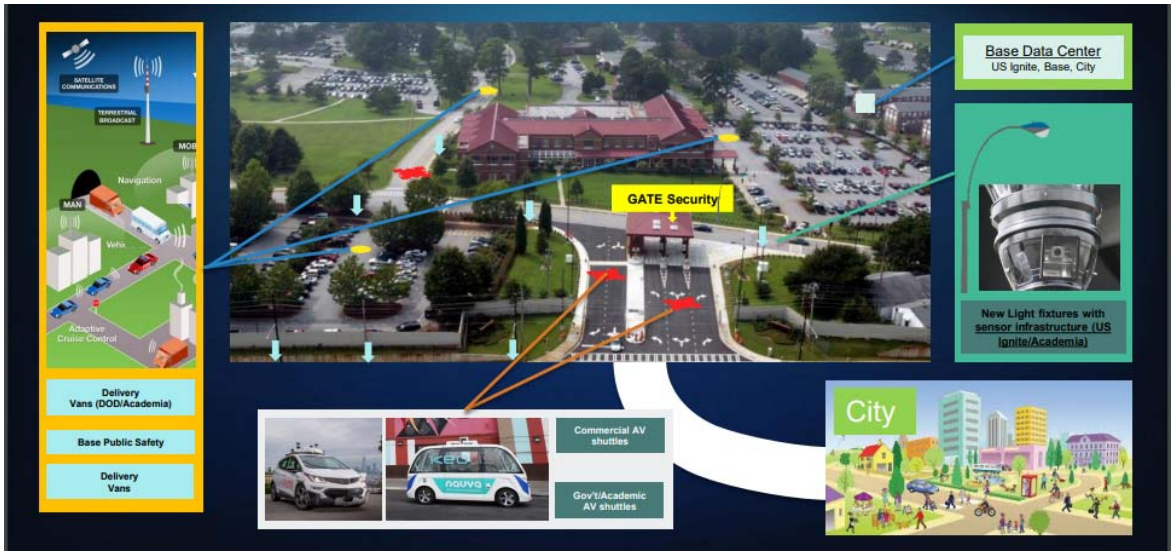
Smart Base Technologies: Building the Military Base of the Future

Recommendation: *Develop secure next generation wireless technologies to support national security, enhance military base resiliency and operational efficiency, and improve quality of life for service members through investments in* ***"smart base"*** *testbeds at Department of Defense (DOD) bases and installations.*



Challenges for DOD Bases

DOD bases and installations, like their neighboring communities, are grappling today with a diverse set of complex problems that significantly impact their people:

- Public safety
- Natural and manmade disasters
- Increasing congestion in housing, transportation, and other areas
- Aging infrastructure
- Challenges with viable connectivity
- Air pollution
- Access to affordable and reliable mobility
- Increasing demands for limited energy
- Increasing operational costs
- Cybersecurity risks to infrastructure

Technology has continued to revolutionize and embed itself further into our daily lives and "smart communities" have grown and quickly adopted smart technologies in order to more effectively and efficiently provide services to their residents. However, military bases have lagged behind, despite experiencing many of the same challenges faced by communities nationwide. This delay in adoption is primarily attributed to the lack of infrastructure and optimization for connected devices and data analytics compounded by budget constraints and limited manpower.

Smart Bases: A 21st Century Opportunity for the Military

As the private sector continues to race ahead in smart technologies, DOD is in a unique position to leverage these new developments to address urgent operational needs, achieve greater efficiencies, and enable better outcomes for service members, all while advancing U.S. leadership in developing fifth (5G) next generation (NextG) wireless technologies. US Ignite has begun working with military bases to rethink how they can leverage the investments of state and local entities into existing base design and become **"smart bases"** – like their nearby smart communities, but with a clear focus on security, efficiency, effectiveness, and scalability.

Meanwhile, ensuring U.S. leadership in developing 5G and NextG wireless technologies has become a pressing concern for DOD and the U.S. as a whole. China and other nations have made significant investments in developing and deploying 5G, posing significant risks to U.S. national security. This necessitates the use of testbeds in order to ensure that DOD maintains its advantage in developing resilient, 5G-enabled information and communications capabilities and is able to operate in untrusted and contested networking environments. Deploying testbeds at DOD installations will allow bases to be on the leading edge in developing 5G and NextG technologies to support military operations.

Smart bases have already been piloted at Maxwell Air Force Base since 2017 and Fort Carson, launched by US Ignite, in 2019. These pilots have focused on using smart technologies to improve energy and utility systems, transportation, infrastructure, and base communication with personnel. However, further testing is necessary to accelerate the development and deployment of these revolutionary new technologies.

Proposed Actions for DOD

In order to ensure U.S. leadership in 5G- and NextG- enabled technologies, and to improve the efficiency and operations of military bases, **DOD, in partnership with US Ignite, can take the following four steps:**

1) Accelerate the launch of smart technology testbeds. Pilot projects may include smart transportation (such as electric vehicles or autonomous drone delivery) and digital security.
2) Form and manage strategic partnerships with a wide range of stakeholders including academia and industry leaders.
3) Identify and assess relevant emerging smart technologies on base that will improve base operations and support the community's needs.
4) Evaluate these smart technologies on base and for use in other critical sectors such as public safety, sustainability, and resilience.

Goals and Results

At select military installations, US Ignite proposes to bring together the local base, nearby cities and communities, and academic, industry, and nonprofit partners to design, build, and use a smart technology research platform that will provide a set of cutting-edge tools and best practices. Smart base testing and pilot projects will enhance research & development in NextG wireless technologies, a critical research & development priority for DOD, as well as smart transportation and digital security.

Economic Impact

DOD bases nationwide incur high costs, including $1 billion annually for transportation alone. US Ignite's testbed program will develop solutions, using smart technologies, to create a more efficient base that can mitigate these costs. This will allow DOD to focus its resources on other urgent priorities in the current challenging budget environment such as modernizing, equipping, and training the force.

In addition, smart technology testbeds will create jobs, startups, and commercial investment in the surrounding region, providing vital opportunities for and enhancing the economic competitiveness of communities around military bases that often have sparse access to venture capital funding. High-tech, high-growth startups have spun out of smart transportation projects in a large number of communities. As part of these efforts, US Ignite will track these firms and their employment of dozens of workers in hundreds of high-skill, high-paying jobs, building on local, state, and regional efforts.