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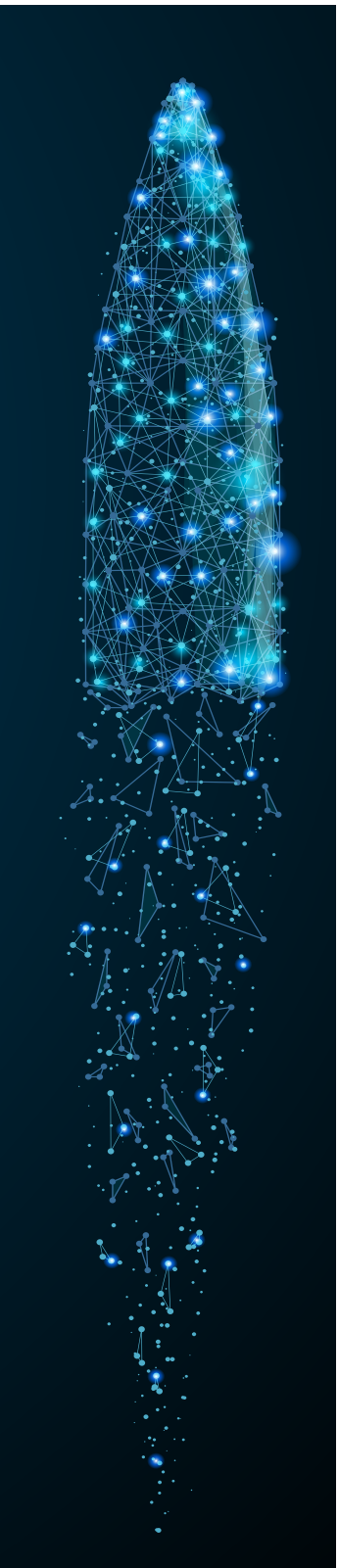
Byting the Bullet

Now is the time for smart military bases

Deloitte Center *for* Government Insights

About the Authors



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About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting-edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.

Military installations are the backbone of the US Department of Defense

While smart technologies are slowly being put to use on military bases, there are significant security, operational, and economic benefits yet to be realized. The smart military base is the key to tomorrow's fighting force.

When the Pentagon directed all military installations to increase their threat level in May of 2015, the danger came from an unlikely source: social media. That's where violent extremist groups were posting identifying information of American military personnel and encouraging terrorists to attack them. Base commanders and their staffs quickly leapt into action — holding countless meetings, deploying patrols and physical barriers, checking infrastructure backup plans, and implementing a range of rigorous security measures to protect the bases from attack. Once the exhaustive checklists were finally completed, installations around the country were better prepared to keep military members, their families, and civilians safe.

But in times of crisis, seconds matter. The same connectivity that allows violent extremists to make personal threats with the click of a button could also enable quicker, stronger, and more comprehensive security responses on the nation's military installations.

Put simply, a military base that employs smart technologies is better positioned to carry out its mission.

Of course, the promises of innovative technologies can sometimes be oversold or just plain wrong. Certainly the inventors of Betamax cassettes thought they were onto something big. And famed Italian electrical engineer Marconi's 1912 declaration that "the coming of the wireless era will make war impossible, because it will make war ridiculous" was clearly off the mark.

The reality, however, is that smart technologies are proven, and the advantages they have for military installations are too significant to ignore. It's time to make the leap from 1960s style military base infrastructure straight into the potential of the Information Age installation.

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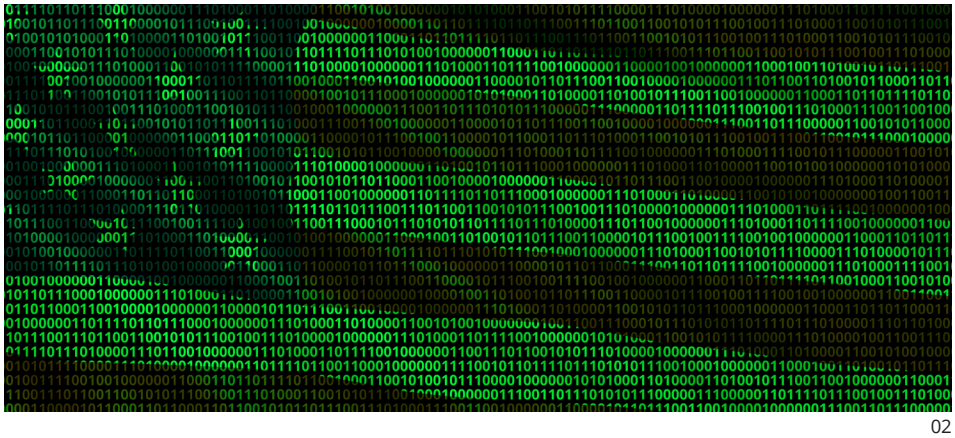


Smart bases are happening

Smart technologies at work on military installations

3-D printing
To provide quicker, cost-effective parts

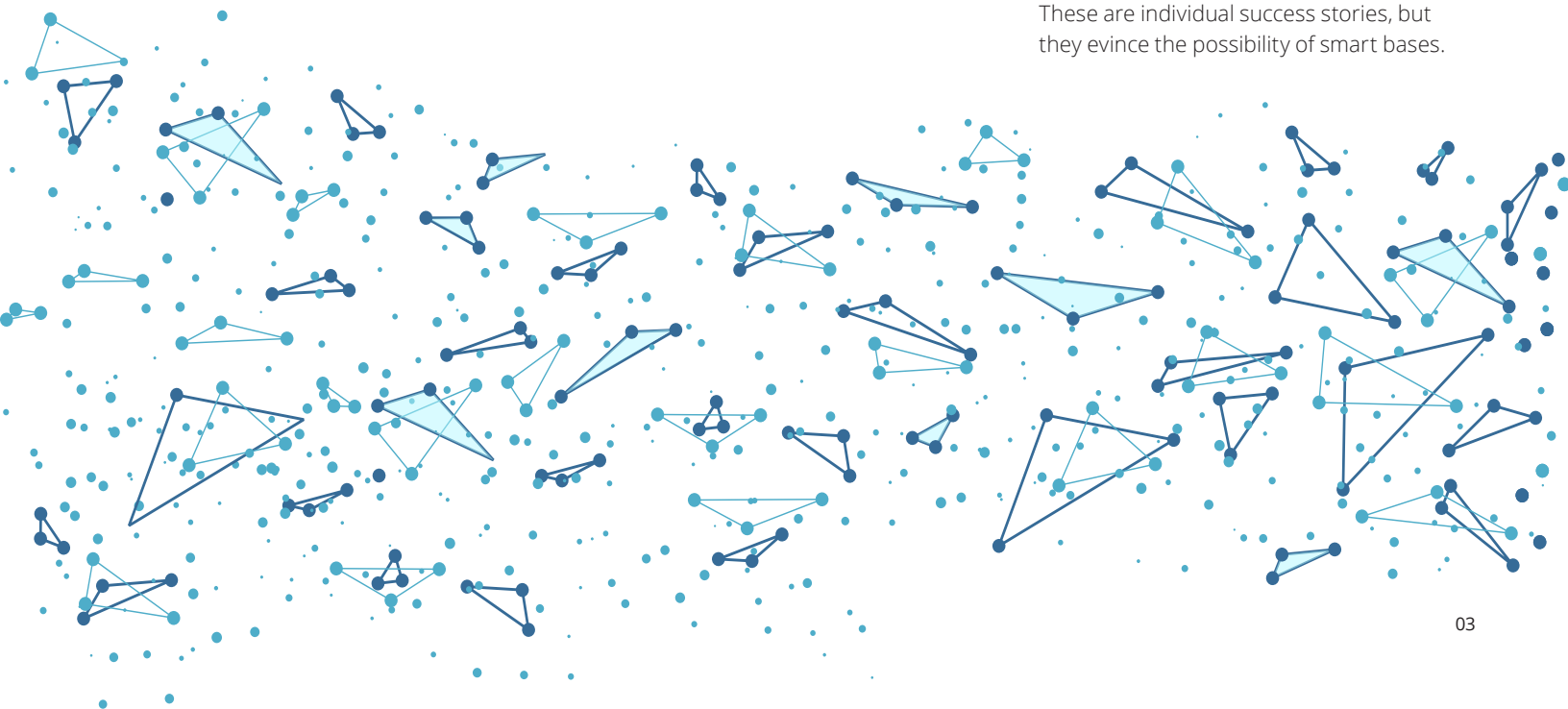
Smart energy solar plants
Allow operations independent of the local power grid

Driverless vehicles
Transport wounded soldiers across base to rehab appointments

This is more than just conjecture. Smart technologies are at work today improving the full range of activities that occur on military installations. For example, the Navy's Print the Fleet smart manufacturing project uses 3-D printing to provide quicker and cost-effective parts that can be produced at nearby installations or on-board ships.

Fort Stewart and Naval Submarine Base Kings Bay recently opened smart energy solar plants that allow operations independent of the local power grid, a critical capability since they are primary deployment hubs for armored forces and the undersea component of the nuclear triad, respectively.

Smart mobility initiatives on Fort Bragg include experimentation with driverless vehicles to transport wounded soldiers across base to rehab appointments. Smart construction on Buckley Air Force Base saved nearly $40 million in environmental impacts and construction costs for a new taxiway and combat arms training facility. These are individual success stories, but they evince the possibility of smart bases.



What is a smart military base?

In essence, a smart base is the integration of technological and process innovations that improve the performance, efficiency, and convenience of the managed assets and services on a military installation. In other words, whereas the bases described above have employed smart technologies and practices for energy, mobility, and construction initiatives, a smart base integrates all of these things (and more) to provide a comprehensive set of solutions for the challenges associated with operating installations.

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Smart technology doesn't just refer to the ability to network sensors and put the collected information to better use, but also the processes that help us make better decisions. So whether connecting wireless devices to monitor perimeter security or identifying new urban planning methods for mixed use areas on-base, there is a role for it. In most cases, it is not just about installing the newest gadgets, but also the integration of all existing technologies and processes into a coherent framework. Technology is surely the skeleton of a smart base, but it is the operational integration which forms the nervous system.

This concept is not new. In fact, smart military bases are the logical extension of existing smart cities in places like Columbus, Ohio; San Antonio, Texas; and Denver, Colorado. While new visions of urban planning, focused on environmental and social livability, have been common since the dawn of the Industrial Revolution, within the past ten years the focus has shifted in large part to technologies, such as sensors, big data capabilities, and smartphone apps that allow for the creation of smart cities. These smart cities are leveraging the Internet of Things — the connection of everyday objects to the internet that creates smart devices capable of exchanging information — to harness massive amounts of real-time data about traffic, crime, weather, energy consumption, and more to improve governance and quality of life.

Today, the lessons of the past ten years are enabling the smart cities to merge top-down technology implementations and bottom-up problem and solution identification in order to manage their resources efficiently, provide effective public and private services, and create an engaged and satisfied citizenry.

Creating smart cities is not just about focusing exclusively on hardware, but putting the people, their preferences and their choices in the center of the decision making process. Data science and technology are essentially enablers which help track the digital footprints created by devices such as mobile phones, sensors, and wearable self-tracking devices. The city of Boston, for example, shares information with the navigation app Waze to make real-time adjustments to traffic signals and reduce congestion. Another example is mobile surveillance cameras in parks around the city of Albuquerque. Police officers can access the cameras from their mobile devices to view live images and remotely control the cameras.

Potential benefits of the smart base

Cost efficiencies

If cities can become smart, why can't military bases? There is clearly a need. The Department of Defense is responsible for "several hundred thousand individual buildings and structures located at more than 5,000 different locations or sites" and utilizes more than 30 million acres of land. The Government Accountability Office reports that the DoD spends an estimated $3 to $4 billion each year maintaining facilities that are not needed. There seems to be tremendous efficiencies to be realized. For example, the Army has realized nearly $150 million in cost avoidance through its smart energy program alone. And in an uncertain budgetary environment, now may be the time for the DoD to make a deliberate and sustained investment in creating a new generation of fiscally-responsible, smart bases to meet the myriad of global and domestic challenges currently facing its vast infrastructure.

Accommodating a surge

The applicability of smart technologies to military bases are only bridled by imagination. Let's say an aircraft carrier pulls into a naval base. In the span of a couple hours, the base population swells by more than 6,000 people. A smart military base can accommodate this with relative ease. It could have a microgrid as an independent power source that can quickly come online to meet increased energy demands at lower costs. It can manage traffic patterns and security protocols to relieve base congestion on roads and common areas. It can use digital manufacturing to print parts needed for ship repairs. It can expand its emergency notifications to include the smartphones of ship personnel. Sensors in garbage cans and on the shelves of post exchanges could help waste management personnel manage collections and automate commissary inventory requests. Whether a base sees a small increase in visitors due to a ceremonial event or a population surge from an airshow or visiting aircraft carrier, a smart military base can scale to the base's needs.

Improved routine base activities

Investing in facial recognition software and license plate recognition software can improve perimeter security by automating aspects of it to speed up entry to bases for those authorized and focus screening attention on those that represent a risk. By establishing smart classrooms, students — from elementary school through War College — can benefit from blended, distance, and adaptive learning techniques that can help maintain continuity of education across multiple moves and expose all students to educational opportunities around the globe from wherever they are. By establishing smart health centers, patients can have access to telehealth and can consult with specialists that they would ordinarily have to travel thousands of miles to see.

While smart technologies are slowly being put to use on military bases, there are significant security, operational, and economic benefits yet to be realized.

No one-size-fits-all solution

"Fortunately, the end state for any smart military base is entirely tailorable to the installation."

Ted Johnson
Deloitte

There is no one-size-fits-all, however, when it comes to smart technology use on bases. Large training bases like Fort Hood and smaller bases in urban centers like Joint Base Myer-Henderson Hall will not need the same set of solutions. Fortunately, the end state for any smart military base is entirely tailorable to the installation. And the very nature of smart technology permits flexibility, scale, and adaptiveness to a base's primary mission, whether flight operations, education, or ship berthing and maintenance. And yet, some functions, like energy efficiency in buildings and perimeter security, are universal.

Further, the smart base is not necessarily a suite of capabilities that are bought en masse and then parachuted into an installation. Instead, it can be acquired in increments and phased in over a period of time to accommodate fiscal constraints, vulnerability testing, and a smooth transition to improved operations. This approach lends itself to wargaming and strategic review so as to obtain a sound understanding of its benefits and areas for improvement before implementation. There is already a burgeoning research and development effort underway to identify additional opportunities and best practices.

Here is where a pilot project would be of especial value, and the seaside town of Santander in Spain is instructive.

The European Union piloted smart city technologies in Santander and installed 12,500 sensors throughout the city to measure available parking spaces, traffic conditions, crowd sizes, trash levels, air pollution levels, soil moisture levels, and more. Santander was able to cut energy costs by as much as 25 percent and garbage pickup costs by 20 percent, for example. Additionally, by opening up its data to citizen programmers, apps have organically been created to let people know about surfing conditions, find parking spaces, and provide tourists with information about points of interest around the city.

This same pilot approach can work for the development of smart bases, which are uniquely well-positioned to overcome traditional implementation obstacles to smart technologies. While cities often suffer from overlapping and competing jurisdiction between city, county, and state governments, or diffused leadership authority, military bases have streamlined legal environments and strong commanders. Whether applying a single smart technology across an array of military bases or equipping a single US military base with various integrated smart solutions, small investments now to prove the smart base concept should pay off down the road. By establishing smart infrastructure and collecting data, we lay the foundation for improvements that could pay significant dividends in the out years. Plus, as it has for generations, the military has the opportunity to serve as an important incubator for some of these emerging technologies that can be reintroduced to the civilian market after being refined in the military to make for a safer nation.

Overcoming the barriers: security and financing

Smart military bases, of course, are not without challenges. Two of the biggest are security and financing.

Security. For those responsible for protecting military bases and families, the immediate concern is whether smart technologies are themselves secure. It's no secret that smart devices have been infected by viruses and used in massive denial of service incidents. So introducing large numbers of wireless sensors and connecting them to the most vital parts of a military installation seems to be fraught with risk.

And for all the advantages of convenience and efficiency these devices provide, the importance of security will always be priority number one. The good news: easily-corrected security vulnerabilities — such as changing default passwords and encrypted data streams — can significantly reduce the risk of smart devices being hacked. But more needs to be done. Smart technologies must undergo rigorous test and evaluation processes before they are deployed on military installations. Too often, security takes a backseat to cost savings and ease of use. Not so for a military base; security must be a forethought. A smart military base hardened against cyber attacks is the only acceptable solution.

Financing. The prospect of large initial costs represents another barrier to the prospect of smart bases. Shifting some of the cost from the government to commercial partners could bring the smart military base closer to reality. In this regard, public-private partnerships and performance-based revenue models can act as catalysts in promoting investments in smart military bases.

As an example, consider the case of New York City's project LinkNYC, which plans to replace phone booths with 7,500 digital kiosks providing free high speed Wi-Fi for everyone. The $200m project is being financed and funded by a consortium comprised of Qualcomm, Civiq, and Intersection. Under this model, the city provides concessions to allow the consortium to install the kiosks (at no cost to taxpayers) and collect ad revenue, which is shared with the city. The ad revenue will is expected to be used to cover the costs of installation, equipment maintenance, and digital advertising operations.

The incentives for businesses to partner with the Department of Defense are clear: the military isn't going out of business anytime soon. Operating costs of military installations are a safe and durable revenue stream for those companies that invest in making them smarter and safer.
The Trump administration's strategy calls for unprecedented infrastructure investment, utilizing government funding and public-private partnerships, and an increased focus on national security and defense readiness. Military installations should be high on the priority list. The smart military base can provide the security, resiliency, workability, and livability required to meet today's threats and serve its personnel and their families.

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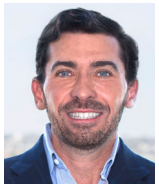

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