

Installation—neXt

Learning from the Trojans

by Col A. Ché Bolden

The city of Troy, as depicted in Homer's *Iliad*, is the archetype fortress—a stronghold buffered against the threat of man and nature, resilient in the face of all manner of assault, and capable of generating and sustaining the full combat power of the Trojan army. In Homer's epic, the Trojan War lasted for a decade because of the city's ability to counter repeated assaults while withstanding siege. Whether the Trojan War is legend or history, it is an illustrative tale of the value of a resilient citadel. Today, Marines give little thought to the operational resilience or lethality of our installations, or the role they play in power projection. However, the evolution of the operating environment gives rise to a reality grounded by the fact that the homeland is no longer a sanctuary, and we may need to fight from "home station." The relative security previously experienced by the "Supporting Establishment" is eroded by the long-range precision fires, omnipresent cyber-attacks, and the increased potential from the insider threat. Our Marine Corps is spending a significant amount of Service capital to build a next-generation MAGTF to fight and win our Nations battles during "away games." It is time we begin to design, build, and operate the complementary next-generation installation to dominate the "home game."

The Evolution of Troy

Marine Corps Order 5400.54, Marine Corps Installations Command Roles and Responsibilities, dated 19 April 2013, states:

As the single authority for all Marine Corps installations matters, Marine Corps Installations Command (MCICOM)/Facilities and Services Division (LF) exercises command and control

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of regional installation commands, establishes policy, exercises oversight, and prioritizes resources in order to optimize installation support to the Operating Forces, tenant commands, Marines, and family members.

Thus, Commander, Marine Corps Installations Command (MCICOM)/Assistant Deputy Commandant, Installations and Logistics (Facilities) (ADC, LF) has the ultimate responsibility to ensure our installations are resourced to execute their primary mission—to generate and sustain combat power.



*Figure 1. MCICOM logo.
(Provided by the author.)*

In November 2016, the Commandant signed the "Infrastructure Reset Strategy," which provided guidance to prioritize facility capital investment and "right size" our infrastructure footprint after years of deferred sustainment in

favor of readiness for the Operating Forces. While well-conceived, this strategy—even if fully resourced and implemented—will only restore our installations to the original designs laid out by existing master plans. These master plans and guiding strategies were conceived and decided upon years and, in some cases, decades ago. To meet the needs of the next-generation MAGTF, our Service must embrace the idea of the next-generation installation.

In July 2017, MCICOM established the G-7 Modernization and Development Directorate to act as the total force integrator for the installations enterprise and realize the vision of the next-generation installation. The directorate is tasked to ensure the long-term viability for Marine Corps installations and training areas that support the warfighter by serving as the locus for capability acceleration and integration, strategic engagement and mission sustainment, and in-depth data analytics. Foundational to the task is the development and implementation of a complete operating concept that ensures our installations are integrated into Service, joint, and national concepts.

A New Operating Concept for Installations

Over the course of the last eighteen months, MCICOM led the development of "Installation—neXt (IX)," an operating concept for the next-generation installation. In alignment with Office of the Secretary of Defense guidance, the National Defense Strategy, and as the *Marine Operating Concept* (Washington, DC: HQMC, September 2016), the next-generation installation concept is driven by the threat and buoyed by the drive to modernize. Following three complementary lines of effort (technology, organizational ad-

aptation, and process) and across eight interdependent lines of operation (protection, resilience, operational reach, C2, mobility, maintenance, training and range support, and community), IX is driving Marine Corps installations into the future as resilient and lethal sources of combat power.

Protection

COMMICOM's number one priority is to protect life and property aboard Marine Corps installations. To achieve this objective, we must equip installation commanders with the tools to obtain and maintain awareness of who has access to their base or station, monitor what happens aboard the installation, and respond across a wide spectrum of mission areas. Current master plans have not evolved much since the days of Troy, and installations continue to use natural and manmade obstacles to limit or constrain access to a few controlled points. Maintaining awareness across the physical boundary is resource intensive and cost prohibitive. As such, IX will utilize the emerging concept of the "digital fortress." This will leverage networked robotics and autonomous systems—enabled computer vision, machine learning, and a common user interface—to push awareness to the tactical edge, giving greater mobility to installation personnel.

Resilience

In order to generate and sustain combat power, Marine Corps installations must be able to take a punch, stay standing, and counterpunch. The risk of man-made hazards and threats from potential attack or catastrophe must be mitigated through resilient design. Recent events, like the 2017 EF-3 wedge tornado in Albany, GA, or Category 4 Hurricane Florence, have forced us to contemplate our situation and highlighted our resiliency deficit resulting from deferred maintenance and sustainment. Natural disasters exact a high price on facilities designed to antiquated or lower construction standards. We have established a fourteen-day supply threshold for future installations, as well as the ability to provide uninterrupted energy for that duration.

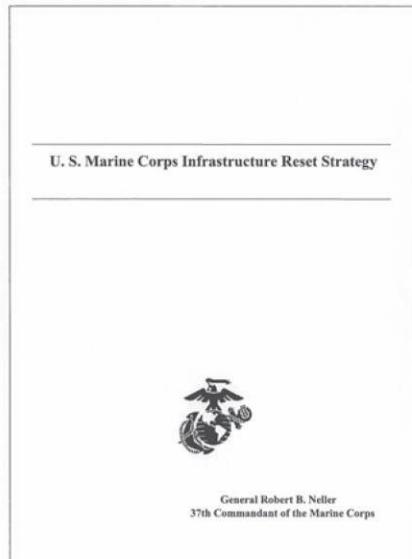


Figure 2. U.S. Marine Corps Infrastructure Reset Strategy.

Operational Reach

Emerging capabilities provided by the MEF information group; joint processing, exploitation, and dissemination cell; and medium altitude long endurance unmanned aerial system remote-split operations have enhanced the reach

aggressively develop and implement a comprehensive data strategy. The pillars of data collection and storage, data management and processing, and data analytics, are foundational to informed decision making and decisive action. The application advanced user interfaces that integrate artificial intelligence, computer vision, and machine learning will give installation commanders and their staffs "minority report" level situational awareness.

Mobility

On the surface, mobility transformation is easily achieved through the adoption of multi-modal conveyance systems, ride sharing technologies, and the steady integration of autonomous vehicles. These solutions will translate into greater efficiency and cost savings. Ultimately, the goal is to maximize individual autonomy by reducing our reliance on traditional work flow. Assured access, via multi-path authentication and geo-rectification, will allow us to streamline the movement of people and things around the installation. On-premise processing of information will enable further responsive decision

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of operational forces and blurred the old distinction of the "rear area." These capabilities require a significant reboot of the power grid, information technology infrastructure, and manning policies.

C2

As we add new capabilities aboard our installations and better integrate operations, every installation commander will need to ensure unity of command through unity of effort. Similar to the concept of smart cities, the idea of "digital twining" our installations will give our commanders the ability to monitor and direct actions across the installation in a responsive and agile manner. To create effective digital twins, we must

making and reduce the time required to accomplish essential tasks. Mobility is about amplifying—to the maximum extent allowable—awareness to the entirety of the installation community.

Maintenance

Historically, installation business is typically associated with facility asset management and sustainment. Installations are the Corps' second largest expenditure within the Marine Corps total obligation authority. The total plant replacement value across the installation enterprise is in excess of \$80 billion. Maintaining a portfolio of that magnitude is challenging with the traditional maintenance practices and existing

workforce. Coupled with the growing complexity of facilities-related control systems and the different mission assurance processes, it is imperative that we find enhanced, more efficient methods. Again, digital twinning will allow installation commanders the ability to make informed decisions in a timely fashion. This will facilitate predictive analytics (sense and respond), and allow for targeted inspections and more routine and preventive maintenance. The adoption of advanced manufacturing techniques and Internet capabilities of everyday devices—paired with virtual and augmented reality tools—will effectively grow a limited workforce by giving amateur or apprentice level personnel, master-level capabilities.

Training and Range Support

The F-35 Lightning, CH-53K King Stallion, MQ-9B Reaper, high powered microwave weapons, and commercial off-the-shelf UAS are all new platforms and capabilities are either currently, or soon to be, active in the Operating Forces. Our training areas and ranges are not equipped to support and lack the connectivity, depth, and interactive feedback to keep pace with these emerging technologies. The next-generation installation must find new and alternative methods to train and hone the lethality of the Operating Forces. Limited user evaluations, such as the tactical decision kit, and

developing concepts, such as an integrated mesh blue force network, give us a glimpse into innovative ways to support the warfighter through technology. Our installations are optimum tests for new and emerging capabilities and offer controlled and secure environments for testing and evaluation. Establishing proving grounds and test sites for emerging technologies will accelerate the validation and verification of rapid prototyped capabilities and concepts.

... our fight starts and finishes at home.

are some of the available tools to be implemented.

Way Forward

The analogy of ancient Troy as a resilient and lethal fortification only tells half the tale. Just like the Trojans, our fight starts and finishes at home. But remember—Troy fell. The Trojans failed to adjust to the evolution of their environment and became vulnerable in the simplest of ways. Gone are the days where forts, camps, and outposts were merely logistics resupply points, administrative garrisons for mobilizing forces, or listening posts on the frontier. Modern installations perform a variety of complex tasks in direct support of military operations. The basics of installation management are not cheap. Funding for sustainment must be consistent, but the task of modernization must be prioritized as well.

Where we previously enjoyed the shelter of the homeland, the evolving operating environment has eroded that sanctuary. Whether it be destructive acts of nature, the increasing threat from our near-peer adversaries, or the growing potential from asymmetric threats and the insider threat, our bases and stations are at greater risk of disruption or intrusion. This reality has increased our sense of urgency to harden our installations and infrastructure. Installation—neXt is looking to new and emerging technologies, organizational adaptations, and processes to create resilient installations to enable the next generation MAGTF. (See Figure 3.) With the development and completion of the IX operating concept, MCICOM will have a blueprint for the next generation installation and a roadmap to fulfill the singular goal of any Marine Corps installation—to generate and sustain combat power.



Figure 3. (Image provided by author.)

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