FY26 Q1 SMS Newsletter

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UTILITIES CSP

The Utilities CSP meeting scheduled for 15 October 2025 was cancelled and will be rescheduled as soon as possible. Members of the group can expect to receive an email with updated meeting information as soon as it becomes available. Reach out to your Utilities point of contact with any questions.

E-SMS FIELD APP DEMONSTRATION

In October, The SMS team hosted DHA and their assessment contractor, GoldenWolf for an E-SMS Field App demonstration at the Construction Engineering Research Laboratory (CERL) in Champaign, IL. Led by Eric Mixon, a Computer Scientist with the SMS team, the visit focused on assessing whether the application met the Initial Operational Capability (IOC) requirements and provided an opportunity for usability testing.

Looking ahead, the E-SMS Field App team is focused on resolving the remaining bugs and workflow issues identified during the demonstration. Most of these issues are anticipated to be addressed by the end of the first quarter of FY 2026. Efforts are underway to ensure the app becomes available across various DoD app stores, including the DISA Store and DMUC, as well as public platforms like Apple and Google Play.

Additional demonstrations will be scheduled throughout FY 2026 to allow for broader participation.



A GoldenWolf inspector testing the image capture feature of the E-SMS Field Application

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INNOVATION CORNER

Imagine you're responsible for keeping a vast network of buildings and systems running smoothly – everything from barracks to missile testing facilities, across an entire portfolio of assets. Now imagine each one needs constant attention, with countless choices for repairs, upgrades, and preventative maintenance.

For years, leaders have faced this challenge. The traditional approach tends towards decisions like prioritizing the worst components or facilities. But this doesn't take into account effects such as how fast a component degrades, or how a potentially inexpensive repair today helps avoid a more costly fix tomorrow.

This is where Enterprise Sustainment Management System (E-SMS) comes in to support the Office of the Secretary of War (OSW). The condition modeling capability in E-SMS is used to not only understand the current snapshot of facility condition, but helps understand the future dynamics and the complex interplay between components, systems, and facility effectiveness.

Think of it like this: E-SMS provides a comprehensive "health report" for every facility. Our new approach analyzes this data, identifying the most critical needs and recommending the most cost-effective maintenance actions. We're leveraging cutting-edge optimization techniques and high-performance computing to scale this process. The team is currently investigating approaches like genetic algorithms, reinforcement learning, and linear programs to develop solutions that ensure leaders have the insights they need to make the best choices for their organizations.

CIVILIAN SERVICE ACHIEVEMENT

SMS team members were awarded the Civilian Service Achievement medal for their contributions toward attaining a Authority to Operate (ATO) designation for the Enterprise Sustainment Management System (E-SMS) Web Application.

Achieving an ATO designation is a major undertaking and a crucial component within the National Institute of Standards and Technology (NIST) Risk Management Framework. The ATO designation signifies the system meets rigorous security, risk, compliance, and operational standards.



Genetic algorithms (GAs) are inspired by the process of natural selection. In this context, repair actions are treated as "genes." The algorithm evolves populations of repair plans by combining and randomly mutating these genes. The performance of each repair plan—analogous to an organism's fitness in its environment—is evaluated against a defined objective. Over many simulated "generations," the algorithm converges

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toward the most "fit" repair plan, which represents the best maintenance strategy. Genetic algorithms are highly flexible and can accommodate complex objective functions and constraints.

In contrast, reinforcement learning (RL) focuses on maximizing a cumulative reward. Given a particular state—such as the condition of a facility—each possible action produces a future, discounted reward value. Through repeated simulations, the algorithm learns a *policy* that identifies the optimal decision for any given state. This approach is particularly useful when the underlying degradation model is probabilistic.

Finally, the outputs of such simulations can be used as inputs to a linear programming (LP) model. As the name suggests, both the objective function and the constraints must be expressed as linear equations. When problems can be formulated in this way, LP solvers are exceptionally efficient and can find optimal solutions very quickly, making them well-suited for optimizing large portfolios of assets.

Stay tuned for future updates as we continue to develop this game-changing technology – a future where data drives smarter decisions, stronger facilities, and ultimately, a more ready and resilient force.

GATHERING WATERFRONT REQUIREMENTS IN KWAJALEIN

Enterprise SMS (E-SMS) is bringing all real property infrastructure under the umbrella of a single SMS application, allowing stakeholders to view and project the entirety of their portfolio across domains. It will support all established SMS domains such as Buildings, Rail, and Pavement, but it will also introduce several new real property domains such as Fuels, Utilities, Water Control, and Waterfront.



SMS Research Engineers Ryan Smith (left) and Joel Groves (right).

The E-SMS Field app as an extension of the web application, provides a standardized assessment tool with built in quality assurance and quality control measures. When developing a field tool, the most critical insights often do not come from a conference room. Recently, two SMS engineers, Ryan Smith (Research Civil Engineer) and Joel Groves (Research Engineer), traveled to

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the remote Kwajalein Atoll in the Marshall Islands to gather foundational requirements for the new Waterfront domain.



Part of the inspection team testing equipment and dive procedures.

Kwajalein presents a unique and demanding environment, making it an advantageous location for this effort. “The island is remote, which adds logistical obstacles to assessments. It’s difficult to get personnel and equipment to the island.” Smith explained “The effects of corrosion… that’s another reason it was a good site. Severe corrosion can be seen throughout the island.” The corrosive environment, combined with the fact that much of the critical infrastructure is submerged, presents unique challenges for assessors throughout the Waterfront assessment workflow. Understanding and designing for these challenges is essential for developing a practical field inspection tool.

This was the first field outing dedicated to gathering requirements for the Waterfront domain, an effort that has been in development for several years. “This is the first time we’ve gathered requirements from an assessors perspective,” Smith stated. “The workflow requirements we gathered in Kwajalein will help us further refine the methodology and suite of tools available in E-SMS.”

This lack of a standardized system is the core problem Smith and Groves are working to solve. For decades, vital inspection data has been trapped in static formats. “They're spending weeks… collecting all this information, doing an assessment, and then the output is a PDF document,” Groves observed. “It's kind of the same everywhere… There's no central database.”

The goal of E-SMS is to create that central database, but for the tool to be successful, people have to want to use it. That’s where understanding the existing workflows and pain points come in. “That's why we go out on site with these guys, right? That's really the crux of it,” Groves emphasized. “We have to be on site to really like feel that dilemma… we can sit and brainstorm all day long on these calls. And it could just be a total waste of time if we're not out in the field with them.”

The insights gathered by Smith and Groves are helping to shape the future of the Waterfront domain, informing everything from inventory guides to the user stories that steer E-SMS development. Understanding the problem at its source ensures the SMS team is not just building another tool but creating a truly transformative solution.

Attachments

- Q1 FY26.pdf [1.73 MB]