

Air Force Installation & Mission Support Center



Installation of the Future

Views expressed are my own and do not necessarily represent the views of the DoD or the Air or Space Force.

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23 October 2024

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Overview



- SECAF Guidance
- Installation of the Future
- Resilience
- Innovation
- Digital
- Questions



SECAF Guidance



Honorable Heather Wilson
Former Secretary of the Air Force

Build the base we need, not the base we had – rebuild Tyndall AFB as the model 21st Century Installation

Plan for three (3) F-35 squadrons by 2023

Build “The Air Force Installation of the Future”

Meet current, anticipated, and future mission requirements

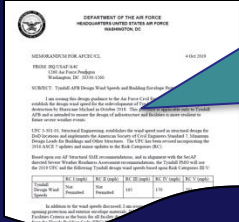
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Tyndall Installation of the Future (lotF)

Resilient

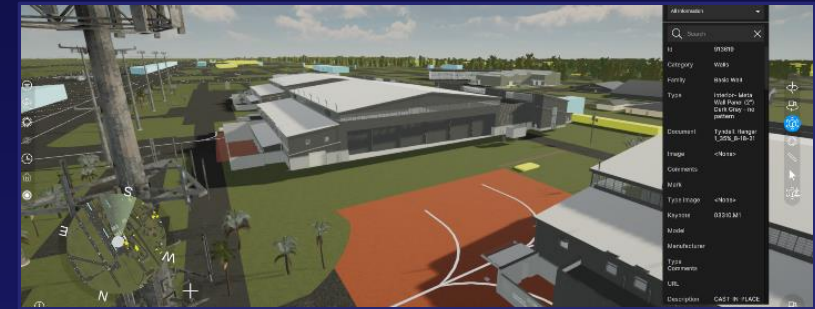
“This guidance...is intended to ensure the design of infrastructure and facilities is more resilient to future severe weather events.”



Innovative



Digital



Gunshot Detection & Real-Time Occupancy

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Resilient: Installation Facility Standards



1 Designs include increased **energy resilience, smart facility controls, and regionally appropriate designs.**

2 **Durable and low maintenance materials** are used.

3 **Updated design flood elevations** require all facilities to be sited and designed at higher points above sea level.

4 Building envelope materials meet **Florida High Velocity Hurricane Zone standards.**

5 Facility shape supports **updated wind load and structural standards.**



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Resilient: Nature-Based Coastal Resilience (Pilot Projects)



Living Shoreline (REPI)



Coastal Dune Restoration (USFWS)



Submerged Shoreline (REPI)



Oyster Reef (REPI)



Reefense (DARPA)



Seagrass Enhancement (RESTORE)

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Innovative: Civil Engineering



NecoPave

Automatic asphalt fill and repair machine for use on existing roadways; increasing the efficiency of pavement repairs



Easy Aerial

Tethered drone system enhancing situational awareness for decision makers from airfield lighting to monitoring installation infrastructure

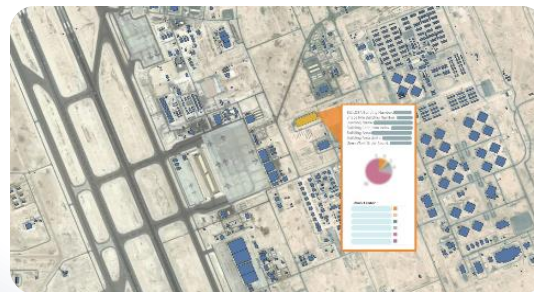


Sensytec

Sensor that monitors temperature and electrical resistivity for assessment of concrete structural damage and soil contamination



Renu Autonomous Mowers



JARVIS Facility Data Integrator

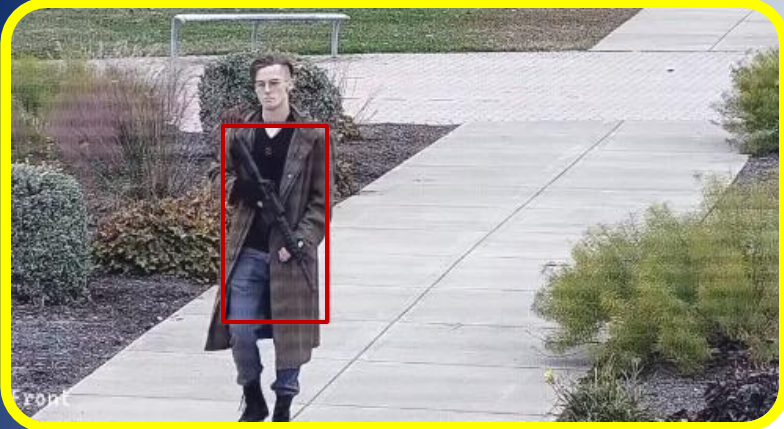


Spector AR Training

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Innovative: Security Forces



ZeroEyes DeepZero
Firearm detection software that integrates with existing security cameras



Ghost Robotics Q-UGV
Mobile sensing platform for patrolling remote locations and perimeter surveillance of austere environments



Valitus
Modular LED streetlight with five 4K cameras originally purchased to detect unauthorized flight line access



ARES AVERT
Modeling/Simulation Tool



Anduril WISP
Detect/Track Objects in Air



DFT-AF Force Protection Kit
Perimeter Surveillance

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Innovative: Additional Mission Partners



TRAXyL

Rapid, low-cost optical fiber deployment; allows the ability to place connection on the flight line without trenching



MVACIS

Mobile X-Ray Inspection Platform to enhance security checkpoint operations in remote locations



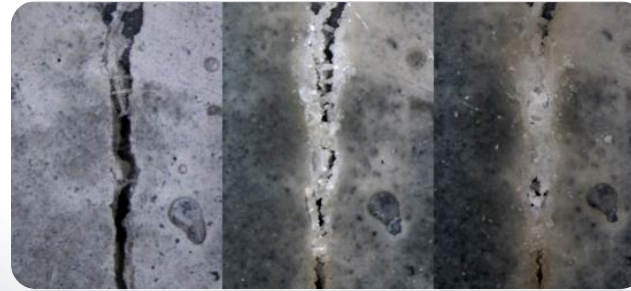
Oreyon

Truck mounted FOD and pavement detection equipment that captures FOD and pavement deformation locations on the airfield



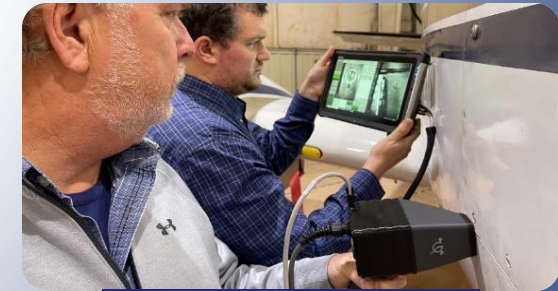
Evitodo

Ground Collision Avoidance



Enzymatic

Self-Healing Concrete



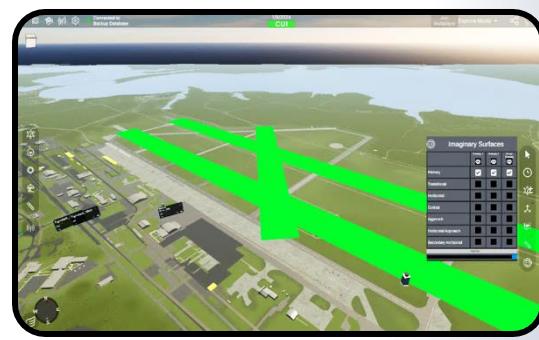
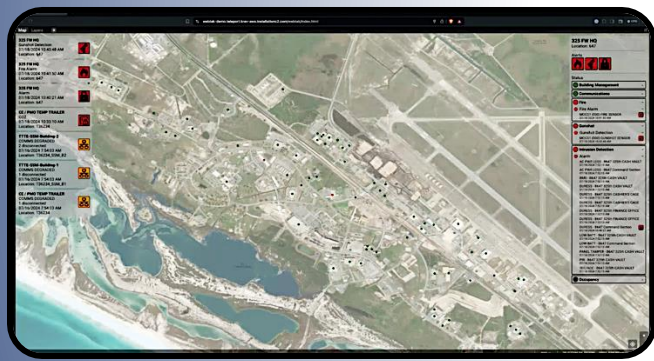
Grey Gecko

Scanning tool

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Digital



Installation Resilience Operations Command & Control (IROC)
 Cloud-connected C2 data fusion framework that enables rapid deployment of new Operational Technology (OT) systems, sensors, and secures legacy equipment

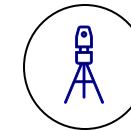
Digital Twin (DT)
 3D modeling platform visualizing installation engineering data and performing multiple scenario simulations, enabling data-driven decision making

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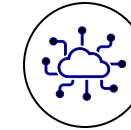
“Near life-like virtual representation of the physical world”

- Accelerate **data-driven** decision-making with **intuitive visualization**
- Empower organizations through **modeling and simulation** capabilities



DIGITIZE

- Reality capture of assets through multiple sensor and scanning platforms.



CENTRALIZE

- Connect and explore diverse, interrelated datasets, from SMS to BIM to geospatial.



DEMOCRATIZE

- Intuitive platform makes data available to both technical and non-technical users across the Air Force enterprise.



UTILIZE

- Flexible, scalable model enables countless use cases across many installation and mission stakeholders.



STATUS

- 77 existing facilities; 116 new facilities
- FY24 priorities: Authority to Operate (ATO); Expand CE support use cases



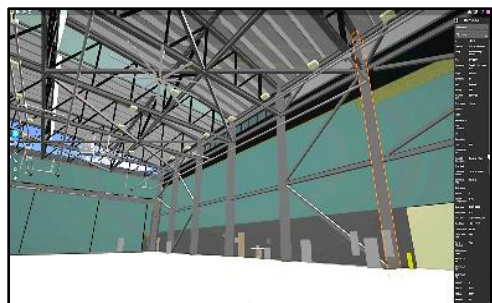
Digital Twin Use Cases



Master Planning



Library of 3D BIM and Integrated Data

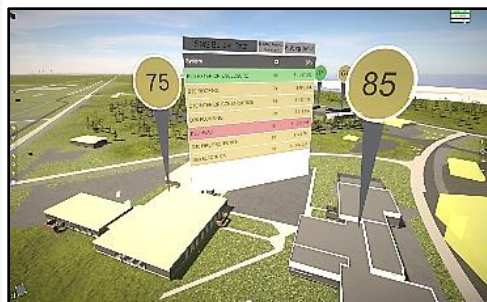


Asset Data Visualization

Visualize and iterate designs faster to reduce re-work and garner buy-in prior to implementation.



Operations & Maintenance



AI-Driven Condition Analysis



Augmented Reality Vision

Leverage remote sensing and IoT to improve visibility, accuracy, & speed in monitoring.



Base Defense



Active Shooter Modeling and Analysis

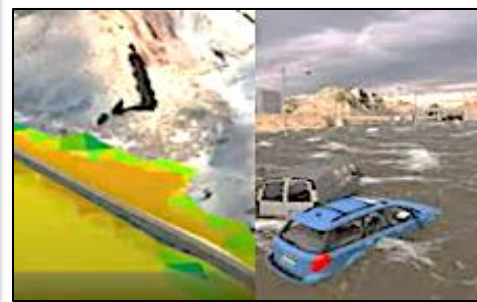


Active Shooter Response Training in VR

Assess, train, and respond to security threats in virtual representations of physical world.



Resilience



Storm Surge Modeling



Facility Sensor Monitoring

Simulate scenarios and their impact on resilience, stakeholders and operational effectiveness.



Construction Logistics



Construction Progress Modeling



Tyndall Traffic Simulation Modeling

Monitor and Optimize Construction Logistics through full-motion video, artificial intelligence and simulation

FOUNDATION FOR DIGITAL TRANSFORMATION



Installation Resilience Operations Command & Control (IROC)



Definition:

IROC is a control architecture connecting previously isolated Operational Technology (OT) data, providing decision makers with real-time, secure information to make timely and informed decisions, thereby improving overall resilience

Overview:

- IROC addresses evolving threats, optimizes mission operations by delivering real-time, secure data for better decision-making and increased efficiency
- Seamlessly secures cross-functional management of multiple systems (i.e., security, lighting, HVAC) into one platform



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Installation Resilience Operations Command & Control (IROC)



Foundation of IROC:

- Unlock formerly siloed data to increase Situational Awareness and Resilience
- Integrating and deploying commercial best practices, standards, and technology
- Secure control systems (or OT) with Zero Trust principles and Continuous Monitoring

Installation Resilience Operations C2:

- Enables Installation Command and Control (C2) with data fusion
- Virtual cloud-native common data platform built on Zero Trust principles
- Enables rapid deployment of new OT systems and sensors with cybersecurity framework
- Unlimited government license/purpose rights

Goals:

- Centralize RMF Execution/ATO development
- Protect OT systems with Zero Trust principles (EO 14028)
- Improve emergency and routine ops: Unlock siloed data
- Connect existing COPs to real-time data (TAK)
- Authorize information sharing between systems with data standardization through the data lake
- Increase resiliency: Enable predictive maintenance

1. Executive Order 14028: *Improving the Nation's Cybersecurity* (May 12, 2021)



IROC: Improving Situational Awareness



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Tyndall IROC Deployment



- **Current Deployment:**
 - Deployed in 125 buildings (Tyndall AFB)
 - Systems: EMCS, FA/MNS, IDS, Gunshot Detection
- **Pending Deployments:**
 - Additional Systems: AMRS, ALCS, VBDS, Intermesh
 - Local analytics and visualizations for self-service monitoring
 - Data integration into BLADE/ADVANA for broader awareness
- **Future Deployments:**
 - Video Management System
 - Fuel level monitoring



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Innovate, Accelerate, Thrive – The Air Force at 75



Forecasted IROC Benefits

■ Right Data: Operational Effectiveness

- Enhances data-driven decisions, enables effective installation operations & management
- Integrates multiple systems to single Common Operating Picture, streamlining capabilities
- Leverage AI/ML for key data insights optimizing resource allocation, leading to cost savings



■ Right Time: Enhanced Resilience

- Quickly adapts to disruptions, whether from natural disasters or system failures
- Provides a robust framework to ensure critical operations are never compromised
- Enables the base to maintain operational readiness even under adverse conditions



■ Right People: Cost Savings

- Minimizes costly repairs and downtime by identifying early through predictive maintenance
- Reduces energy consumption and maintenance costs through efficient operations
- Provides long-term savings —extend life of infrastructure and equipment



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Fly-Fight-Win



Questions?



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