**Integrated Solution to Improve Reconstruction Resilience Posture**

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**Introduction**

The Yavoriv International Centre for Peacekeeping and Security is a 150 sq mi facility in Western Ukraine that was heavily damaged by Russian forces in March of 2022. For over 3 decades, the Centre was used as a training facility for soldiers from the United States, Britain, Canada, Poland, Latvia, and other Western allies. As an integral strategic hub for the peacekeeping mission in the EU, the Centre’s resilience to withstand further attacks or disruption and maintain readiness is a key focus area during the Planning phase of Reconstruction.

Our solution answers the question: how can we improve our resilience posture through pre- and post-mitigation strategies?

**Solution**

**Common Data Management**

The Applied Technology for Lightning Analysis and Studies (ATLAS) consolidates data points in a manner to facilitate tabular, imagery and geospatial analytics required to evaluate installations. Data points are collected at every installation capability to include airspace, ranges, and training assets; encroachment and environmental factors; airfield and runway specifications; utility conditions; developable land; and base operating support (maintenance and medical facilities, fuel and energy storage, logistics depots) to model an accurate site picture of installation functions and services. The tool then performs an expedited and automated analysis ingesting all key data points selected to provide the total facility and land allocation capacity and capabilities, relevant to mission requirements.

**Integration with Operations, Logistics, Chain Management**

Our maturity approach, or Digital Twin, builds upon the results of the ATLAS program to create a virtual representation of the proposed environment to provide you with a smart, secure, and data driven integrated picture of your entire installation and information landscape. The output of ingested data is a replication of the functions and services for the objects, facilities, processes, or systems that are directly connected (twinned) to their counterparts (i.e., physical/conceptual) through data and information feeds. The data fusion processes for a Digital Twin captures the interactions among relationships between the system’s functions and services, modeling even the subtle, system-level gaps. This allows decision-makers to digitally simulate planning decisions or “what if” scenarios of dynamic functions and services, identifying risks prior to execution. As the Digital Twin moves across the maturity spectrum, it increases fidelity of data, confidence in accuracy of model simulations, and range of possible scenario planning. This enables better insights that drive value through improved operational performance, decreased risk, and more informed decision making. Not only does this enable a holistic approach to collaborative planning, but it increases the speed of recovery times during or after a disaster or attack.

The solution develops and tests technologies such as anomaly detection algorithms, sensors, and tactics, techniques, and procedures (TTP) using real-time contextual data to improve capability development and rapid deployment of emerging technologies to meet the challenges of a rapidly evolving threat landscape. This integrated solution reduces reconstruction timelines during the construction phase and allows stakeholders to remain informed with a real-time response to prioritized flows of critical information as a form of pre-and post-mitigation strategies before, during, and after an event. This allows the decision makers to meet the challenges of hazard identification and provide effective force protection by using real-world data to create a common operating picture through a system of improved resilience.

**Scalable data models, Interactive Dashboards and Predictive Analytics**

ATALS functions as a Scenario Manager module, driving simulations to stress test the systems. ATLAS leverages probabilistic AI, to collate structured data subsets from the centralized data for the Digital Twin’s connected functions and services to ingest and carry out the what-if analysis. ATLAS controls simulation-optimization cycles of experimental scenarios by monitoring performance metrics, to meet objectives and support data analytics and/or predictive analytics minimizing risk or optimizing mission effectiveness.

The ATLAS scenario module, correlates patterns of available information flowing into both connected and simulation models, then comparing simulation outputs, can be used to support: (1) forecasting the system behavior, and (2) deploying strategies to alter current Physical System conditions, to maximize mission effectiveness. ATLAS’s control module, analyzes the model performances to verify if the actionable insight is still applicable to the real-world installation’s functions and services, and predictions are within the mission objectives for resiliency.