

Enhanced Situational Awareness for all Environments.
Gates Defense Systems, LLC Proprietary
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Gates Defense Systems, LLC: Principal of Airbox Systems, LLC. and Global Partner Airbox Systems Ltd.
Introduced Technology: MOSAIC Situational Awareness Solution, by Airbox Systems.
Technology Readiness Level: TRL 9 (10,000+ operational users)
Past Performance: Contact for US and Global Private Sector and Government Past Performance

Overview

As the need for digital collaboration with teams pushes into environments previously uncharted with conventional situational awareness tools, Gates Defense Systems introduces an application designed to put the end user at the nexus of information flow, while offering a unique approach to digital signature management.

With the increase in 5G technology and expanding IoT infrastructure, organizations must have capabilities which excel in enhanced sensor data visualization, asset tracking, geospatial data layering, digital signature management, and collaborative information sharing - while taking into the account the need for open architecture designed systems for integration with both legacy and developing programs.

Our program provides a rapid fusion of operations data with full motion video (as well as a myriad of other data/ sensor feeds) into a single pane of glass, for use in a C2 environment or for a front-line operator, while considering the need to future-proof the underlying codebase for further integrations. Our solution is operating system agnostic (iOS, Android, Windows, Web-based), and operates on all communications platforms (cell, Wi-Fi, sat/com, UHF/VHF, etc.).

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Background Airbox Systems

This technology is the descendant of an operational gap recognized during some collaborative work between the British Special Forces (SAS) and a private sector company, who identified the need to create a simpler way of collaborating between air and ground operators during a mission. The result was a situational awareness application that functioned both as an Aviation Command and Navigation System (ACANS) on the flight deck, and a tool designed for ground operation Mission Optimization, Situational Awareness, Information, and Collaboration (MOSAIC). Both ACANS and MOSAIC serve dual purposes with unique air and ground mission planning and operational capability, but also allows the direct collaboration and visualization of ground and air assets on one “pane of glass”. This work expanded to ensure the user experience was always kept a priority, as most SA tools presented extremely complex processes on top of very high acquisition costs. The end solution provides a comprehensive platform for training, mission planning, operations, and after-action review while keeping the user interface friendly and effective. The functionality of MOSAIC and ACANS go beyond a simple common operational picture, allowing for information and intelligence to be shared and enriched across networks, putting the user in the middle of the information flow and not at the end of it. The bulk of this paper will focus on MOSAIC’s capability and applications; however, it should be noted that much of the functionality will be cross utilized in each application.

Capabilities

Integrated Geospatial Data Layering – MOSAIC’s core capability as a mapping tool provides the end user with an array of online and offline capable maps, charts, imagery, and overlays which support operations in dynamic environments where several agencies or partner forces may be in the operational picture. Being able to easily layer on and layer off satellite imagery alongside other mapping tools and overlays, creates a platform for effective data fusion and swift decision making.

Asset/Resource Tracking - Whether you are tracking air or ground assets, MOSAIC pulls all predetermined assets of interest into the common operational picture. The open architecture allows for the incorporation of external feeds/trackers, as well as the native application tracking information to be displayed in a “single pane of glass”. In addition, when considering partner nation participation, MOSAIC provides immediate Green Force tracking to support training, education, planning, and operational requirements.

Image & Document Sharing – Being able to embed, share and annotate imagery from multiple sources allows for not only for effective data fusion but also the dissemination of the intelligence. A key feature within MOSAIC is the extraction capability to pull in external imagery through text, email, or other file share – then embed the image with a geolocation for teams to pick up pre mission or during the operation. File sharing has a similar process to quickly drop intelligence at any geospatial location for the end user to digitally retrieve.

Full Motion Video Fusion – The common operational picture is greatly enhanced by incorporating live video feeds from devices, wearable cameras, drones, and CCTV while monitoring real-time asset locations during an operation. MOSAIC blends this visualization into on a “single pane of glass” allowing for multiple feeds to be present, and adjustable with a swipe of the finger.

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Digital Signature Reduction – Please contact directly to discuss.



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3rd Party Data Feeds (tracking, CCTV, PAI) – One of the unique features is the ability to “pipe-in” outside data feeds from external systems. MOSAIC hosts a wide range of features to make this possible and has excelled in the visualization of collected PAI including AIS vessel tracking, social media alerts, and drone data. Also, having the ability to embed steaming CCTV provides for enhancement to the common operational picture and general situational awareness of an operation.

Collaborative Task Orders and Checklists – With MOSAIC, the users sit at the nexus of information flow, allowing for rapid assignment or reassignment of tasks. A quick access slide tab on the main screen provides for effective tracking of tasks and alerting the team when these are complete.

Secure Messaging – On board the app is an integrated communications platform which offers the ability to send encrypted messages to anyone on the team or at command. This feature offers point to point communication with an individual member of the team as well as group messaging, alerts, and promotion of mission critical information.

Annotation Tools – MOSAIC hosts a suite of mission planning and annotation tools designed to provide both front line users and commanders a platform for annotating operational information in real time across the team, no matter where they are geographically located. Features include: Geofencing, free hand multicolored drawing tools, adjustable static shapes, routing functions, crowd estimator, and a bank of map points-of-interest icons that can be placed on a map with the touch of a finger.

Sensor Alerts and Visualization – Similar to the onboard capability to incorporate third party tracking information, the open architecture of MOSAIC allows for sensor integration as well. These alerts can be linked to geospatial tags and populate with predetermined thresholds or marked as a point of interest on a map for mission planning and real time monitoring.

UAV and ROV Integration and Controls – As UAV and ROV operations continue to grow in the battlespace, so should the need to track, manage, and visualize the data from their sensors. MOSAIC is a proven application having developed specific API's that incorporate data, and in some cases flight controls, on the main user interface screen. This unique integration can help create a wholistic view of the battlespace and offer a platform for drone operations.

Use Case Briefs:

Mission Planning and Operations: From mission planning, operations management, site sensitive exploitation, to after action review, MOSAIC has past performance in supporting successful outcomes as it relates to full spectrum mission management and real time mission awareness. Having a tool that can integrate global teams to support joint operational requirements, and using the same tool for situational awareness during the mission, reduces the drag on both training and budgets. Underpin those capabilities with the latest encryption standards, and the result is a full suite of functionality that is secure, easy to train, and maintains an enriched user experience.

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Training: Situational awareness to be effective on the battlefield must be understood, appreciated, and standards applied. MOSAIC is a system that will enable SOF and SOF supporting units to gain proficiency and appreciation during day-to-day training. It provides the graphically depicted and live feed that enables training managers and developers to truly “See” the activities as the play-out and capture results for future training evolutions. MOSAIC also sets positive conditions for evaluating training events such as Airborne & Maritime, Close Quarters Battle, Foreign Internal Defense activities, Personal Recovery, Friendly Forces Link-ups (in various operational domains) and more while maintaining the same level of operator obfuscation and command & control signature management. force.

Partner Nation Coordination: Based on operational posture with a Partner Nation the MOSAIC can be tailored to provide minimum or maximum capabilities for both party’s operational needs. MOSAIC provides the ability to operate on multiple instances within a secure cloud environment, it is ideal for coordinating with partner forces during missions or operational exercises. From application deployment on a device, to having a fully trained operator on MOSAIC for basic use, can be as little as 45 min. Being able quickly cascade the application across partner forces serves as a rapid mission integration tool, to bring all necessary assets into the common operational picture. Further, when working in smaller teams of external support forces, MOSAIC serves as a quick multipurpose tool for asset tracking, situational awareness, comms, and of course a robust operational picture.

Conclusion

There is a significant capability gap presented with conventional situational awareness tools while confronting the shift in current AOR’s and the new threat surfaces they present. The need to maintain positive situational awareness during a mission remains however, despite the increase in technical threats that persist in these new operational environments. Further, there is a forecast for increased partner nation collaboration and multi-agency response toward global incidents. Having a system that can easily & quickly cascade to a predetermined number of users will greatly impact the speed of decision making and awareness. While conventional systems struggle to efficiently get all parties in to one operational picture, and have lengthy training cycles to become proficient, Airbox Systems excels in this environment with low drag deployment, training, costs, and data usage.

While Airbox Systems does not replace many of the capabilities and integrations offered by conventional SA systems, it should be considered as an enhancement to ones “digital toolkit” as provides the fastest and leanest approach to team collaboration in complex environments with the deployment of a simple app.

Further, unlike other commercial off-the-shelf (COTS) C2 or SA systems, Airbox Systems allows the customer to fully own and control their data – providing the assurance that mission critical data remains with the intended organization, and not to be further commercialized or exploited. Our solution effectively answers next generation needs for situational awareness on multiple fronts. Please contact us for a full capability demonstration.

Please contact Gates Defense Systems directly for government only White Paper and full scope capabilities briefing.

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