

SAMI-AEC **HEMA** Surveillance System

Enabling Saudi Arabia to Uphold National Security, Ensure
Citizen Safety & Protect Natural Environments

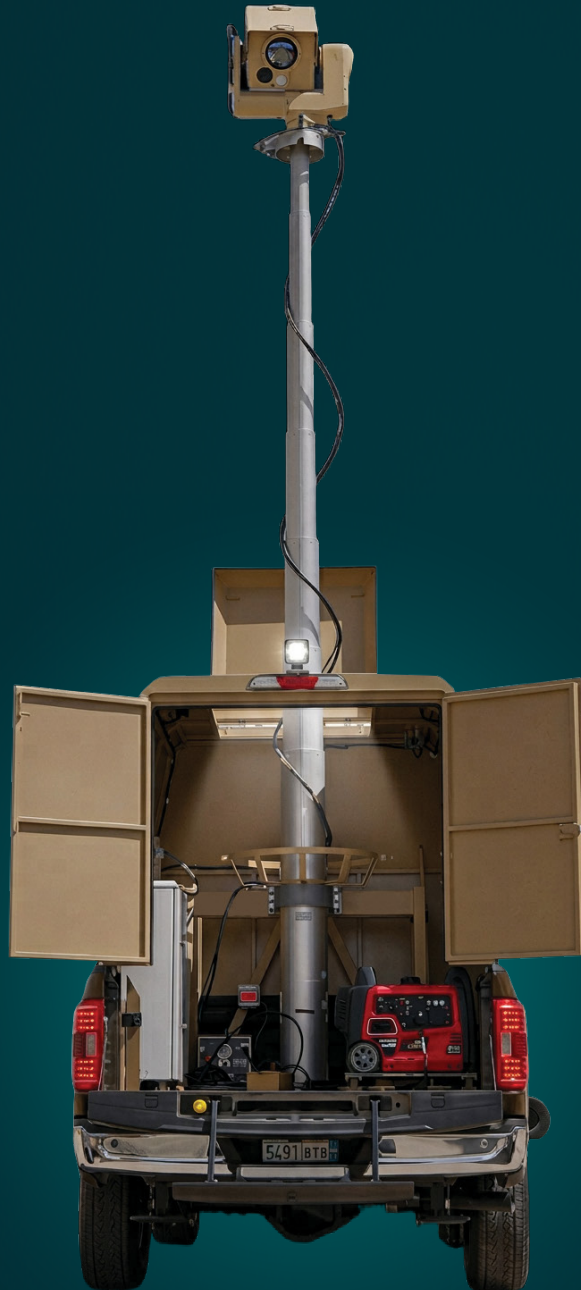


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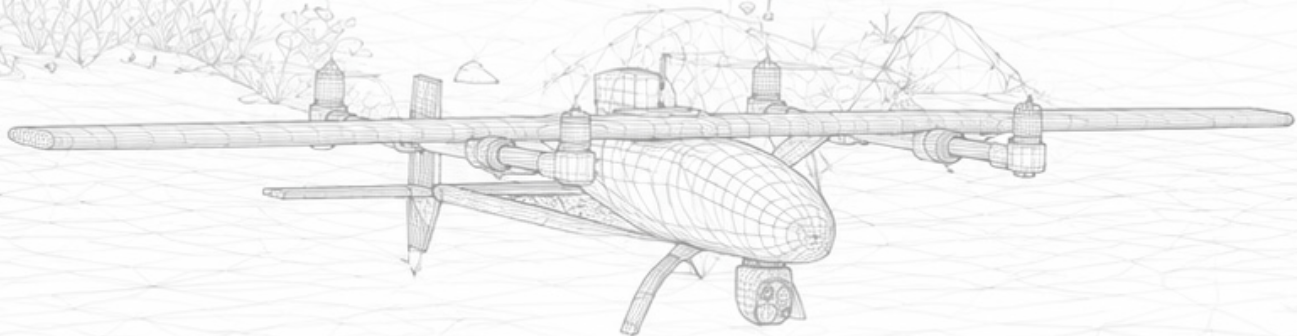


Executive Summary

Command and control (C2) systems critically uphold safety and security across a wide spectrum of applications. Whether deployed in law enforcement or military operations, command and control systems help to effectively detect potential threats and prevent the occurrence of serious incidents. Embedded with cutting-edge intelligence, surveillance, and reconnaissance (ISR) technologies, advanced C2 systems significantly improve situational awareness and threat detection, facilitating quick response to threats. These systems utilize multiple tools and share information regarding threats and suspicious activities, thus, promoting timely and well-informed decision-making and execution of countermeasures.

Advanced C2 systems equip decision-makers with real-time insights about potential threats, empowering them to take required actions in high-risk scenarios.

Effective deployment of command and control systems across defense and civilian areas can serve as a key enabler and facilitator of security in Saudi Arabia. With an ambition to equip Saudi Arabia with next-generation security capabilities, SAMI-AEC's HEMA Surveillance System combines best-in-class ISR and C2 technologies. It can enhance KSA's preparedness and response to potential threats across defense and civilian environments. By incorporating live asset locations capability, the SAMI-AEC HEMA Surveillance System demonstrates real-time status reports of violations and intrusions on maps, promoting greater security across different environments. This whitepaper sheds light on the operational concept of the SAMI-AEC HEMA Surveillance System and its various use cases across diverse environments.



01

Building Integrated **Security** & Surveillance Command Architecture



Command and control (C2) systems have emerged as an imperative tool in managing and coordinating responses to emergency situations such as civil unrest or terrorist attacks. C2 systems have now become fundamental to ensure proactive threat monitoring for users such as law enforcement authorities and national security forces. With the help of command and control, authorized personnel can actively respond to intrusions or disturbances in various settings. These systems help to improve near real-time communication, threat detection and identification, response coordination, situational awareness, and information management.

Moreover, command and control systems are embedded with intelligence, surveillance, and reconnaissance (ISR) technologies. Leveraging these technologies, advanced C2 systems ensure comprehensive protection, enabling users to collate and analyze information regarding potential threats. This way, users can effectively perform operational duties, including site security, preventive maintenance, and violation reporting.

C2 systems are increasingly being adopted by various entities to strengthen and coordinate their response to suspicious activities or abnormal events.

Cornerstones of Command and Control Systems



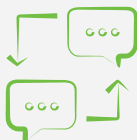
Target identification

Promotes identification and classification of targets



Intelligence gathering

Facilitates risk assessment and development of security response



Communication interception

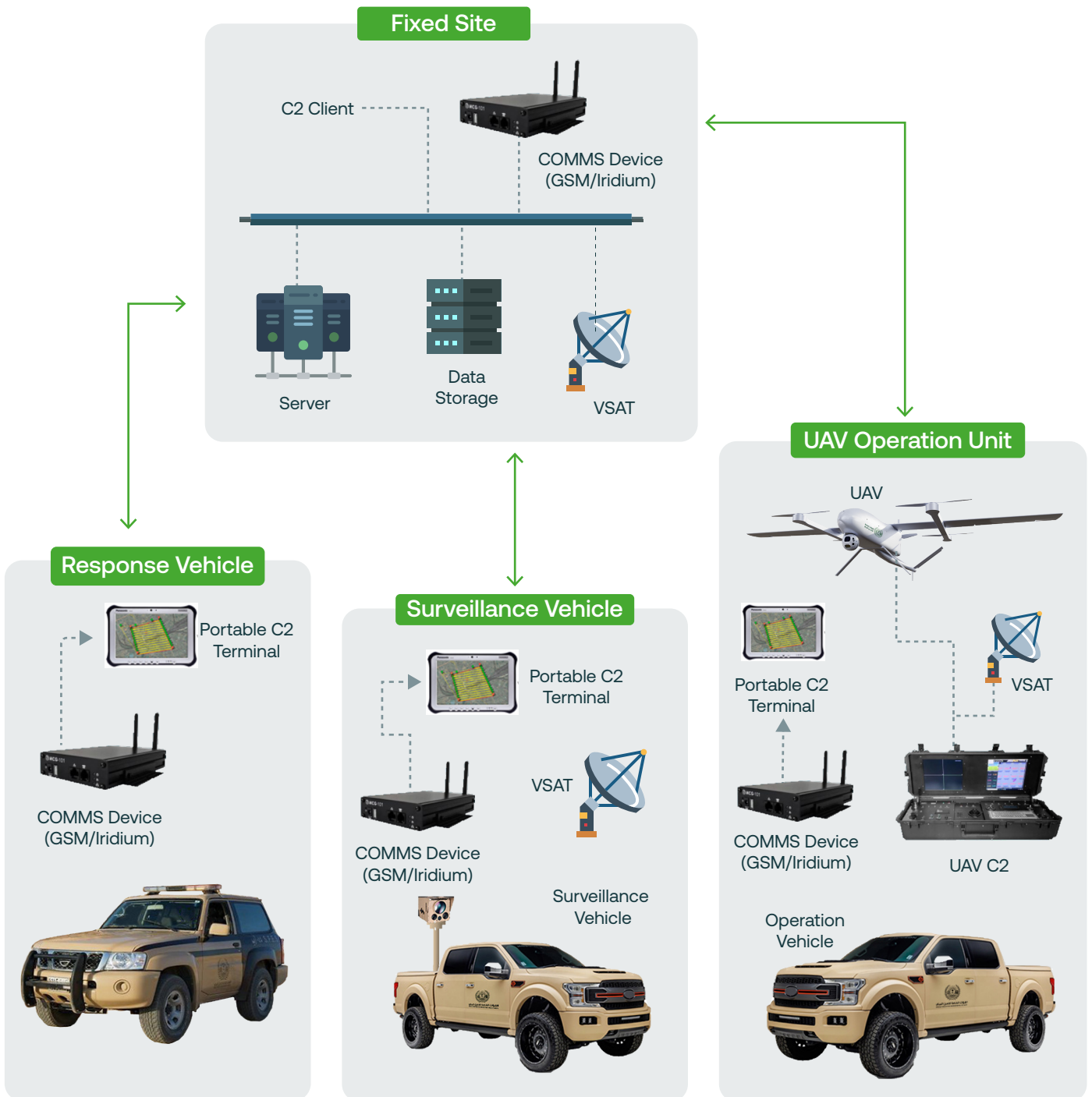
Maneuvers an interceptor toward the target



Situational awareness

Raises threat alerts, giving a complete view of monitored areas

SAMI-AEC HEMA Surveillance System Solution Architecture



Technology Stack

- EO/IR Integration
- Web-Based Applications
- VTOL UAVs
- SATCOM Connectivity

Key Capabilities

- System Design and Development
- System Integration
- C2 Development
- Concept of Operation Development
- SW Application Development
- Blue Force Tracking

02

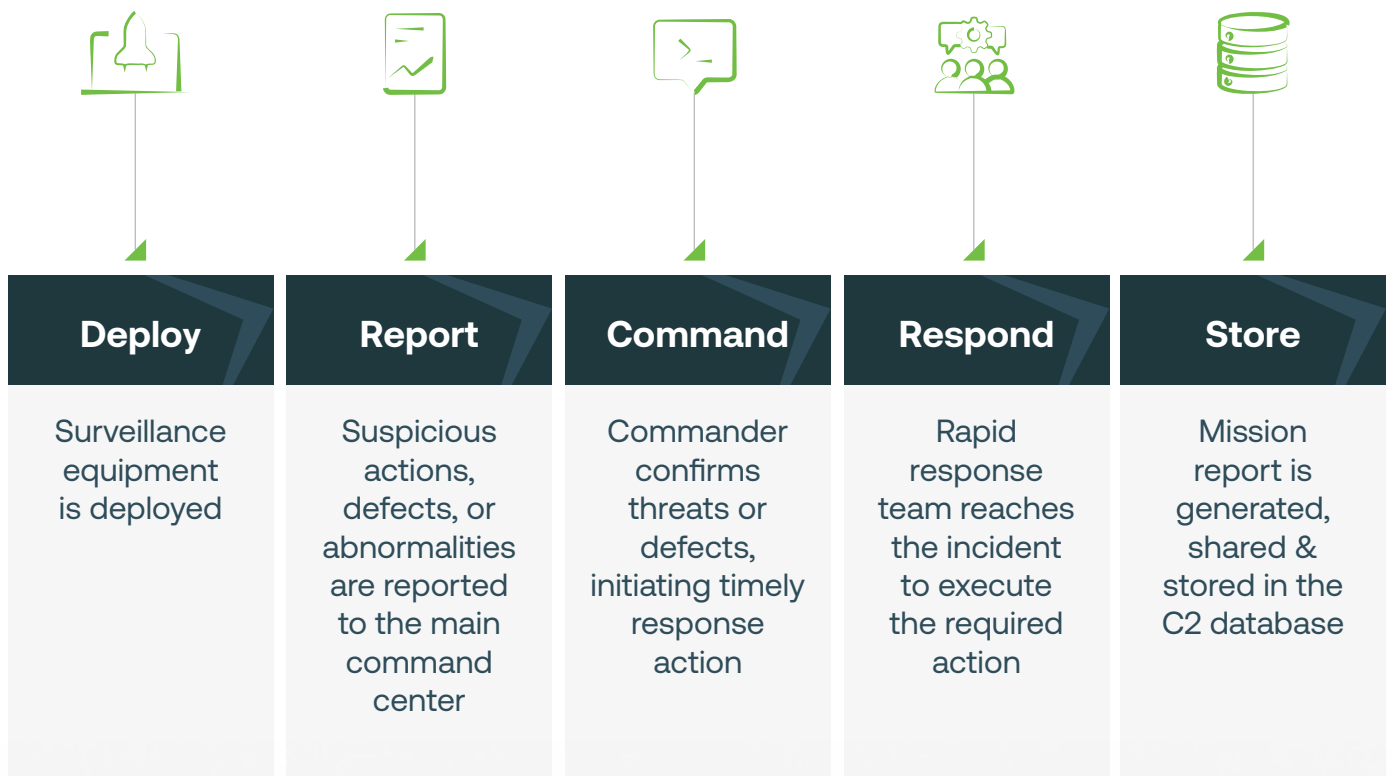
Redefining Event Monitoring and Response with SAMI-AEC HEMA **Surveillance** System



SAMI-AEC's HEMA Surveillance System is a user-intuitive, command and control solution that offers advanced situational awareness and comprehensive surveillance capabilities across operations that require real-time communication and rapid emergency response. The solution offers extensive operational capabilities such as threat detection & identification, live asset location, and target tracking & location indication, enabling users to execute timely action for a wide range of abnormal events.

A Proactive Approach to Site Surveillance & Rapid Response

Operational Framework of SAMI-AEC HEMA Surveillance System



03

Enabling Tactical Early Warning for Faster Threat **Detection** through **SAMI-AEC HEMA**





Sending and receiving threat reports from the sensors along with coordinates & images



Automated process flow between field surveillance team, commanders, response team



Geolocation & live status reports for all field systems, vehicles



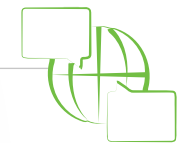
Blue force tracking



Optional audio communication support with the main base through VoIP network



Threat response actions & evaluation tools



Troops management toolset



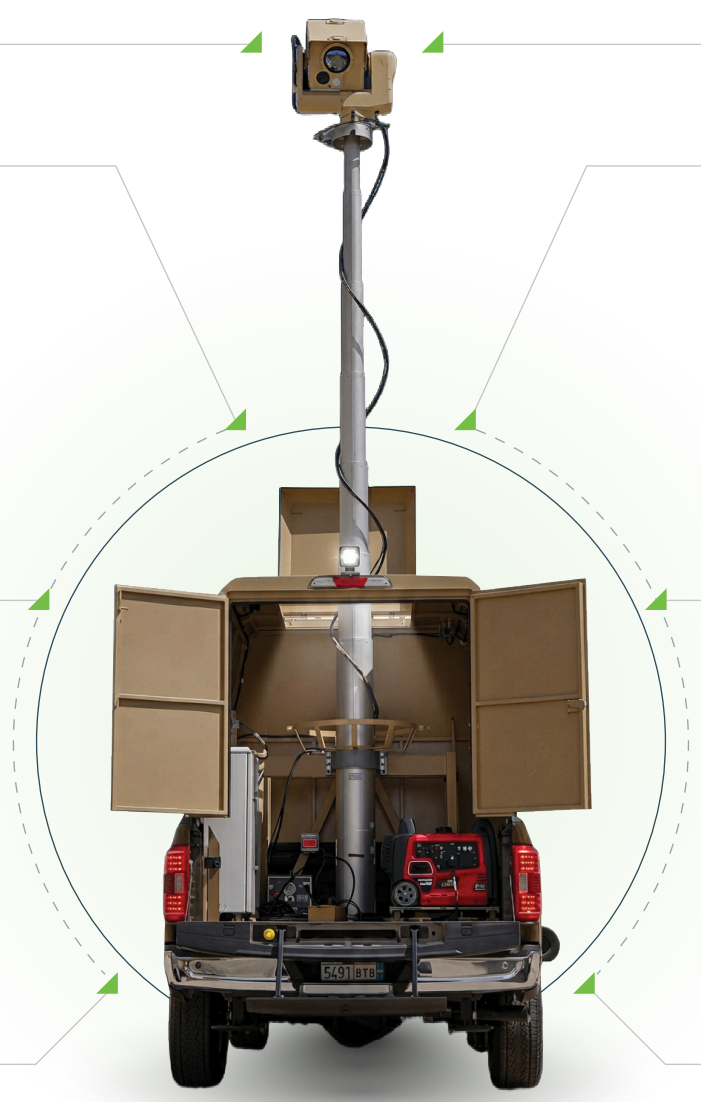
Integration with different communication media (HF/VHF/UHF GSM Microwave/SATCOM)



Data analysis for all received reports



HEMA Client platform can display data as reports & statistics



04

Harnessing Avant-Garde Technologies to **Strengthen** Surveillance across Critical Areas



SAMI-AEC HEMA Surveillance System deploys state-of-the-art early warning, reconnaissance, and surveillance capabilities to ensure the holistic security of critical infrastructure and public areas. The solution facilitates proactive threat detection, violation reporting, preventive maintenance, and execution of countermeasures in response to threats. Moreover, it promotes automated task assignment, transmission and retrieval of all threat reports with their coordinates and images, and the determination of important surveillance zones, enabling authorized personnel to keep track of and respond to suspicious activities.

Major Components of SAMI-AEC HEMA Surveillance System



Ground Surveillance Vehicle

Detects potential ground-based threats and shares their location with operators. It is designed for two-person operation, short setup time, long-range EO/IR surveillance, day-and-night intruder detection, C2-based threat reporting, and Blue Force Tracking. This enables rapid deployment for mobile ground surveillance missions.



Communication Unit

Includes VSAT-on-the-move options for vehicular platforms, fixed VSAT terminals, VSAT hub operation, 4G/5G and SATCOM connectivity, and switching between cellular and satellite networks to maintain high availability. Rugged communication terminals support reliable connectivity during field movement.



VTOL UAV

Identifies potential threats from the air and shares their location with operators. It supports a simple operational concept, EO/IR surveillance, long endurance, target detection algorithms, target coordinate sharing, and C2 integration. This strengthens aerial reconnaissance and improves visibility across wide or hard-to-access areas.



Portable C2 Terminal

Supports mission response teams in the field. It enables mission assignment, target location indication, direct commander communication, mission status reporting, and cellular or satellite communication. This allows field units to remain connected with command teams during active surveillance and response operations.



C2 Commander Site

Provides command and control capabilities across the full operational troop. It supports situational awareness of operation sites, mission planning, team tracking, threat evaluation, response coordination, mission reporting, and Blue Force Tracking. This gives commanders a centralized operational view and enables faster, better-informed decisions.



AI-Powered Capabilities

Process data from multiple sensors and communication systems to generate real-time surveillance images. AI can analyze operational data, support strategic decision-making, classify friendly and non-friendly activities through video analysis, and improve decision-making efficiency across military and civilian domains.

05

Advancing Reconnaissance and Safety Across Civilian and **Defense** Missions



Using modern C2 and ISR capabilities, the SAMI-AEC HEMA Surveillance System can enhance civil compliance, environmental conservation, and national security across Saudi Arabia. By collecting and analyzing data from multiple sources, including EO/IR sensors, UAVs, and communication systems, the solution can help decision-makers to assess the situation in real-time. It can detect ground-or-air-based intrusions or suspicious events, raise alerts, keep track of threats, and help to initiate response in time.

Enabling Authorities to Activate Next-Level Security for Multiple Use Cases



National Security

- ▲ Survey country borders to prevent invasions
- ▲ Protect oil & gas or water pipelines from vandalism
- ▲ Guard military bases against ground/aerial intrusions



Wildlife Protection

- ▲ Preserve the natural environment of flora & fauna
- ▲ Mitigate hunting, overgrazing & lumbering activities
- ▲ Ensure sound ecological balance



Event Monitoring

- ▲ Check for overcrowding at events
- ▲ Prevent acts of disturbance or unrest
- ▲ Distinguish b/w illegal intruders & visitors



Civic Discipline

- ▲ Monitor traffic conditions in cities
- ▲ Survey highways or roadways against defects
- ▲ Capture illegal waste dumping outside cities

Conclusion

Saudi Arabia is recognizing the need to embed new-age technologies and tactics to better respond to potential threats. Leveraging command and control systems across defense and civilian domains is a revolutionary step in the direction of safeguarding national assets and borders. In defense environments, C2 strengthens the security of national borders and military bases against unauthorized intrusions, while enhancing readiness for complex situations and threat interception.

The SAMI-AEC HEMA Surveillance System can help to sustain overall national security by providing next-level monitoring across high-risk areas. Through the provision of robust reconnaissance and preventive maintenance capabilities, the SAMI-AEC HEMA Surveillance System can effectively bolster the Kingdom's resolve to provide a better life for its citizens. This command and control system promotes better assessment of threats and anomalies across monitored areas, empowering authorities to take necessary actions upon threat confirmation.

SAMI-AEC holds decade-long expertise in manufacturing advanced equipment for the digital, defense, energy, and security sectors. With the SAMI-AEC HEMA Surveillance System, the company is committed to enabling the Kingdom to guard its critical assets and national borders. Thus, with this user-intuitive C2 system, the company is continuing its drive of upholding Saudi Arabia's national integrity.



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