# Maximizing Critical Operations: Drone Orchestration Software



Whitepaper

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Situational awareness refers to the ability to understand and predict what is happening in the immediate environment surrounding an operation and to use that understanding to make informed decisions. In industrial and government processes, situational awareness is crucial for maintaining safety, preventing accidents, collecting greater data associated with events occurring during execution, and ensuring the success of complex projects. This paper will explore the importance of situational awareness in industrial and government operations, provide examples of how companies can apply it in practice, and how drone technologies are positively disrupting its use, including innovative software for orchestrating and automating drone operations to enhance situational awareness and effectively harness and leverage the full potential of drones.

In industrial and government operations, drone technology, including orchestrating software, significantly enhances situational awareness. For example, drones, sensors, and monitoring software can detect potential hazards in industrial settings, such as gas leaks or fires, and allow for deploying and executing actions to prevent accidents or attend to them. In government operations, drones, surveillance cameras, and visual analytics can provide real-time situational awareness, allowing emergency responders and law enforcement to assess a situation and respond accordingly quickly.

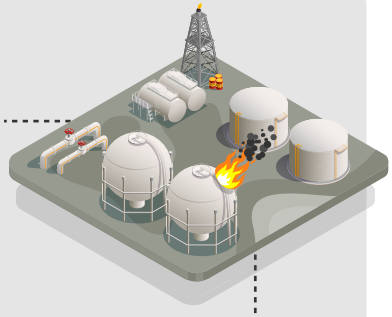
Furthermore, with better and more robust connectivity and the latest advancements in streaming and remote operations technologies, industries and governments have more effective and immediate access to locations from offsite monitoring and command centers. They can launch inexpensive and scalable drones to conduct operations that used to be complex, dangerous, laborious, time-consuming, expensive, or impossible when performed with humans and other legacy equipment.

In industrial operations, enhanced situational awareness is essential for ensuring the greater safety of operators, collaborating more effectively with other people, obtaining additional operational perspectives for the job at stake, and preventing accidents. Industrial operations are often complex and involve multiple stages and processes. Each step of the process presents unique challenges, hazards, and risks, and operators must be constantly informed, hopefully in real-time, to take appropriate precautions. For example, in a chemical plant, workers must be mindful of machinery, tools, and other elements involved in the chemicals they are handling to prevent leaks or explosions.

Similarly, operators and workers must be aware of heavy machinery, hazardous material location, and height risks on a construction site, among many other potentially dangerous events. Situational awareness enhanced with drones allows workers to anticipate, plan, and respond to these risks, significantly reducing accidents, injuries, deaths, or property loss. Drone technologies increasingly provide industrial operators with critical assistance and information never seen before in real-time.



Enhanced situational awareness is also essential in government operations, particularly public safety, including emergency response, disaster management, search and rescue, and law enforcement. For example, public safety organizations must activate emergency response teams to attend to disasters. Proper and effective designation and deployment of these teams to the most pressing problems is critical for the community.



**Drone technologies assist these teams and deployment planners in rapidly assessing damage and needs, prioritizing, designating, informing, and helping teams respond better to these events.**

Situational awareness, enhanced with drones, is critical for identifying and responding to threats and ongoing distress calls, such as natural weather-related disasters, terrorist attacks, and public health emergencies. Emergency responders must be able to quickly assess the situation and make informed decisions about allocating resources and responding to the crisis. In law enforcement, this enhanced situational awareness is essential for identifying threats and preventing crime more efficiently. Police officers must be able to assess their surroundings quickly, identify potential risks, such as suspicious individuals or vehicles, and take appropriate action to prevent harm while reducing injury risks or even police officers' and citizens' deaths.

**Enhanced situational awareness requires proper training, communication, and assisting technologies such as drones. Operators need the training to recognize potential risks and respond appropriately to threats or unforeseen situations.**

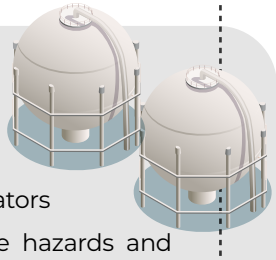
**Integrating with other operational platforms, Drone software provides effective mutual communication paramount to sharing information and coordinating a response, especially when real-time data is critical.**



## Industries that benefit most from Enhanced Situational Awareness

Industries that involve high-risk activities and require complex operations are more exposed to problems if there is poor situational awareness. Here are some examples of industries that are particularly vulnerable to problems if situational awareness is lacking and can significantly benefit from a situational awareness strategy enhanced with drones:

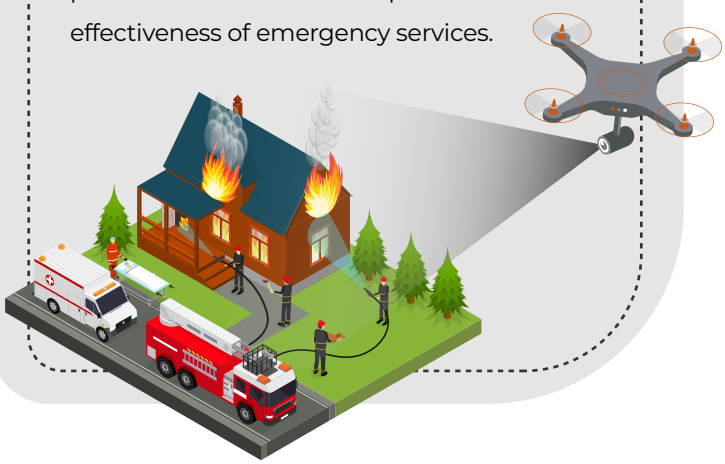
### Oil and Gas



Operations in the oil and gas industry are complex and dangerous. They require operators to know and understand the hazards and risks of working with flammable and toxic materials and heavy machinery. Enhanced situational awareness can prevent oil spills, gas leaks, explosions, thefts, and other accidents with catastrophic consequences. Drones offer additional visualization, data, and assistance unavailable in the past to survey, inspect, surveil, and monitor operations in real-time. With drone software, operators enhance their workflows to collaborate with expert teams offsite in real-time and even launch autonomous operations for hard-to-access or toxic sites.

### Emergency Services

Firefighters, police officers, and paramedics rely on situational awareness to respond to emergencies quickly and effectively. Drones have become an essential instrument to rapidly gain access to unique visualization and inspection of emergency areas. Situational awareness enhanced with drones reduces delayed response times, inadequate resource allocation, and other problems that compromise the effectiveness of emergency services.



### Mining

Mining operations are conducted in hazardous, toxic, dangerous, and harsh environments, including underground and open-pit mines and handling heavy equipment and materials. This industry is highly regulated and requires close monitoring and surveillance of every mine operation, often in real time. Enhanced situational awareness can prevent accidents, failures, and other hazards while providing enriched data and visualization required for properly complying with regulations and laws.



## Construction

Like mining, construction sites involve heavy machinery, working at heights, and other hazards that require operators to closely monitor their surroundings to prevent accidents involving falls, equipment, and other problems. Constructors are leveraging situational awareness enhanced with drones for other uses impossible to implement before. Drones are used to plan for better materials accommodation, machinery surveillance, rapid inspection, site progress analysis, workers' location, customer site visualization in real-time, and engineering time efficiencies.

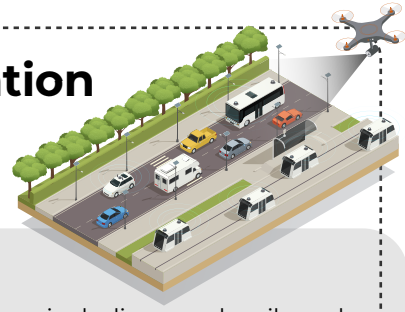


## Manufacturing

Workers must operate heavy machinery, handle hazardous materials, and work in high-pressure environments. Situational awareness enhanced with drones helps prevent accidents, equipment failure, and other problems that can seriously affect production. Moreover, manufacturing companies are extending the enhanced situational awareness benefits to real-time surveillance and monitoring, material delivery and management, and indoor and outdoor inventory assessment.

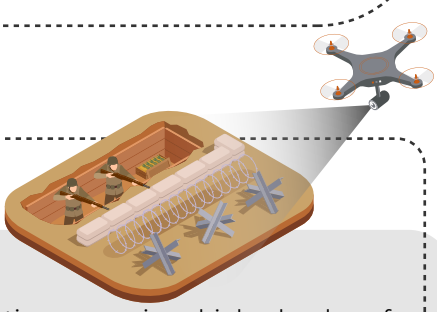


## Transportation



Industrial transportation, including road, rail, and maritime transport, requires enhanced situational awareness to constantly monitor equipment and infrastructure, assess and prevent risks and accidents, and surveil cargo and facilities. Drones have become a scalable and efficient technology to prevent accidents, collisions, and other incidents that can cause injuries, equipment damage, and transportation network disruptions.

## Military



Defense organizations require high levels of situational awareness to operate effectively and respond to potential threats. Military personnel must be aware of their surroundings, the capabilities and limitations of their equipment, and the possible actions of their adversaries. A lack of situational awareness can lead to military failures, loss of life, and other consequences.

Any industry that involves high-risk activities and complex operations and requires real-time assistance, monitoring, or surveillance during execution benefits from enhanced situational awareness to prevent accidents, injuries, deaths, loss of property, or operational disruption. In the process, companies can benefit from additional information and perspectives around a determined operation to make better and faster decisions.

## The critical role of drone management software in enhancing situational awareness

Drone Management software improves situational awareness by providing real-time data, insights, visualization, and remote operations, facilitating communication and collaboration, and helping automate decision-making processes. Furthermore, these systems keep a historical record of these events for easy access, tracking, and review.

**There are several functionalities derived from using such platforms when running drone programs:**



### Visualization

Understand and interpret an ongoing situation through enhanced data visualization and visual intelligence, allowing users to identify patterns and trends relevant to the event quickly. For example, drone sensor streaming, overlayed with charts, graphs, heat maps, and other visual intelligence representations, provides a clear and concise picture of the current situation.



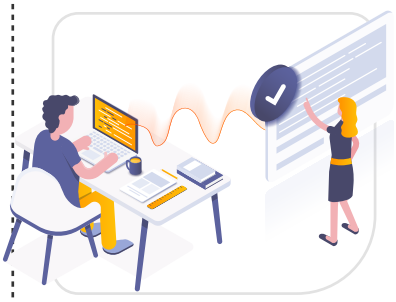
### Real-time monitoring

Monitor various drones, sensors, and other devices, such as mobiles, cameras, GPS trackers, and weather sensors, in real time. This capability provides users with up-to-date information about their surroundings and any potential risks or threats that may be present.



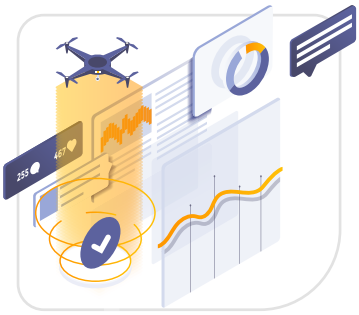
### Predictive analytics

Use predictive analytics to anticipate potential threats and identify patterns in data that may indicate a potential problem. For example, analyze weather patterns and predict the likelihood of a storm, allowing organizations to take appropriate precautions in advance. With advances in Artificial Intelligence, drone software is becoming more competent in providing real-time information to operators, allowing them to prioritize asset deployment and team distribution.



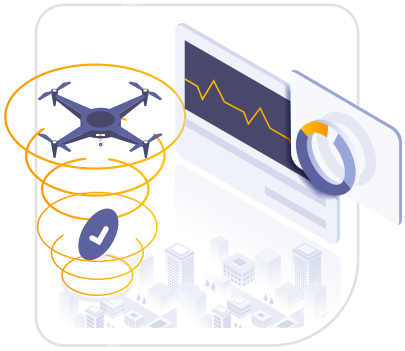
## Communication and collaboration

Facilitate communication and cooperation between stakeholders involved in a process where enhanced situations awareness is present. This collaboration can include sharing data and insights, coordinating responses to potential threats, and ensuring all stakeholders can access the information they need to make informed decisions.



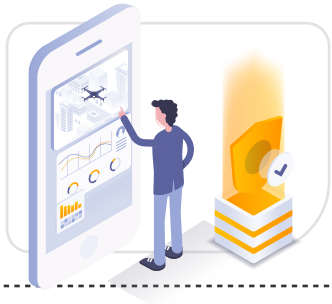
## Automation

Execute tasks with little or no human intervention or help to automate decision-making processes based on predefined rules and algorithms. For example, automatically trigger an alert if a particular sensor detects an anomaly, adjust a device's settings based on changing environmental conditions, and dispatch a drone to assess the situation and activate specific protocols as required.



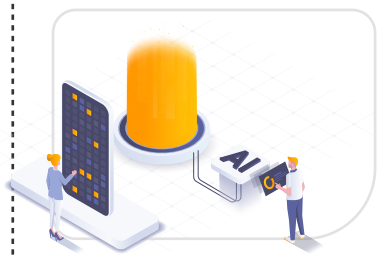
## Tele-control and Tele-pilot

Enable tele-controlling or tele-piloting drones and sensors from remote locations (offsite) and collaborating with personnel in different places. With advances in real-time streaming and connectivity, companies can operate drones in distant locations, sometimes from drone stations (nests), command centers, or monitoring centers, or simply from the convenience and mobility of a browser or an app (from PC and mobile devices).



## Mobile access

In conjunction with internet connectivity, provide mobile access to data and insights, allowing users to access critical information anywhere at any time. This mobility can benefit operators or decision-makers on the go or remotely.




## Artificial Intelligence (AI)

Analyzes large amounts of data, identifying trends and patterns that, otherwise, would be difficult for humans to detect. This capability can help identify real-time threats and risks that traditional monitoring methods may overlook.

# Maximizing Critical Operations:
Drone Orchestration Software

VOTIX
Drone Orchestration and Automation



## Integration

Integrate with other systems and devices, such as cameras, drones, and sensors, in addition to corporate back-office platforms and other industry-specific solutions, to provide a comprehensive understanding of the situation. This integration can help users to identify potential threats and respond more quickly and effectively while keeping a detailed record of how every event is managed and assisted.



## Augmented Reality (AR)

Provides users with real-time visualizations of their surroundings overlayed by a live streaming video, allowing them to understand the operational area and potential hazards better, stay informed and oriented during execution, and respond accordingly quickly. This enhanced visualization can be handy in Public Safety and industries such as construction and manufacturing, where operators are involved in complex and hazardous situations.

Drone management software enhances situational awareness by providing real-time data and insights, facilitating communication and collaboration, enabling offsite remote operations, helping to automate decision-making processes and mobile access to data and insights, integrating with other systems and devices, using Artificial Intelligence and Augmented Reality to identify potential threats and risks. Moreover, organizations can improve their ability to anticipate and respond to potential risks and dangers, enhancing the safety and well-being of their workers and the public.

## VOTIX is the software platform you need to build, enhance and scale your Drone Operations.

**Contact VOTIX for a trial and "Go Beyond"!**

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