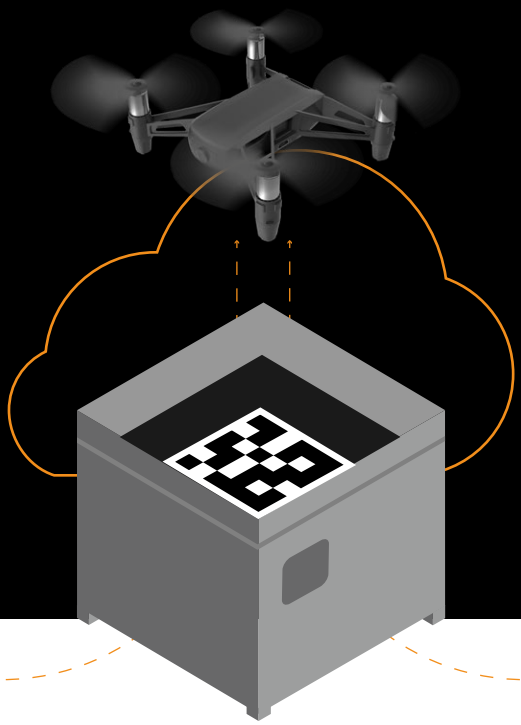


DRONE ORCHESTRATION

Solving the Drone Automation Paradox

By: Dawn Zoldi

Complex drone operations with high levels of automation have enabled a range of market use cases. While many companies continue to operate within visual line of sight (VLOS) or employ extended line of sight (ELOS), **repeatable and scalable operations** will require beyond visual line of sight (BVLOS) operations, using fully autonomous drone-in-a-box (DIB) solutions. Yet all of these operations present some of the same challenges, from operator overload to a lack of integration with critical internal and external systems. **Supplementing highly automated drone platforms with a cloud-based software as a service (SaaS) to orchestrate all aspects of the operational ecosystem can unleash the full potential of drones.**



DULL, DIRTY, DANGEROUS

Drone operations have largely replaced the costly services previously provided by airplanes, helicopters and ground vehicles, and the humans required to operate them. For example, the cost for an average in-house energy sector inspection with a helicopter ranges from $9,000 to $30,000 dollars. A similar inspection **using a drone costs about a tenth of that.**



However, businesses also must measure costs in terms beyond mere dollars and cents. They need to also account for the risk to their people. Manual operations and those involving heavy ground vehicles greatly increase the likelihood of potentially serious work-related accidents.

In fact, according to the U.S. Department of Labor's most recent fatal occupational statistics (2021), transportation incidents remain the most frequent type of fatal event in workplaces, accounting for **37.3 percent of all work-related fatalities.**

These tragic accidents occurred most frequently in transportation and material moving occupations and construction and extraction occupations. Building and grounds cleaning and maintenance operations and farming, fishing and forestry occupations also ranked high on the list.

Drones remove people from having to operate in these dangerous locations and environments. Because drones improve not just safety, but also the efficiency and quality of data collection and analysis across numerous market sectors, companies now routinely use them for inspections, monitoring, mapping, surveying, spraying, seeding, filming, photography, transporting, delivering, security operations and more.

But even highly automated drone operations, such as DIB platforms, the autonomous uncrewed aircraft systems (UAS) that launch and recover back to landing boxes to recharge, still face a range of challenges. These must be overcome to fully unlock drones' capabilities.

ALL THE MOVING PARTS

Advanced drone operations, regardless of the equipment or procedures used, have many discrete components and procedures. Some cut across all operations, such as the likely need for airspace approvals through low altitude authorization and notification capability (LAANC), mission planning, command and control and end-to-end data management.



At the same time, requirements also differ because they depend on specific job needs. For example, some customers may require real-time information, as the drone operation occurs. A one or more stakeholders, from engineers to business C-Suite decision makers, might want to remotely dial into a site or location, using advanced streaming capabilities.

Missions may also require the use of several different drone types, sensors or other supporting hardware. Drone mapping operations, for instance, require specialized equipment and interfaces. These include, on the front end, a mapping-specific drone, ground control points (GCPs) which may be digital, GPS receivers and data collectors, geodetic datums, local coordinate system, real time kinematics (RTK) or post processed kinematics (PPK).



On the back end, whether a mapping mission, an industrial inspection or other drone operation, the type of data analysis, product creation (e.g., 3D renderings) and desired reports will also vary, based on customer needs.

While several companies provide products and services along the continuum of processes that support these complex drone operations, **no one company has orchestrated all of the moving parts ... until now.**

MANAGE, STREAM, FLY



VOTIX, a Miami, Florida-based robotics company founded by highly successful entrepreneurs with decades of experience in the drone, IT and cyber security industries, has disrupted the drone industry through its **"drone orchestration"** software. This revolutionary SaaS platform orchestrates the entire drone ecosystem, connecting all the moving parts of a complex drone operation, **making it easy to operate and feasible to automate.**

After four years of development, over 2000 drone flight hours and 5000 successful missions, **VOTIX** launched this year. **Its mission: solve the challenges of automating drone operational workflows from end-to-end.** To do this, the company has divided its platform into three independent, but fully integrated, **products: MANAGE, STREAM and FLY.**

MANAGE

VOTIX MANAGE, a fully featured cloud-based software, allows businesses to manage drone projects, fleet, missions, approvals, logs, reporting, media, productivity and analytics and view automated workflows through easy-to-use dashboards and reports.

It enables planning though a variety of features that allow business to plan, control and track data. **Features include:** mission creation, zone creation, geo fencing, customizable automated grids, zone and mission importing, mission approval workflows, real time LAANC approval, map paths and annotations, operations calendars, weather information, all integratable with other corporate systems.

The import functionality allows businesses to import and centralize flight logs, providing visibility into flights, fleet and performance. The mission request and approval workflow, bolsters accountability in terms of drone and operator productivity and mission accomplishment. Companies can also customize automated dashboard views and reports to segregate or correlate missions, zones, logs, media, pilots, drones, sensors and DIB stations.



In short, MANAGE creates powerful holistic insights and intelligence for drone operations to improve communication, compliance and overall mission success.

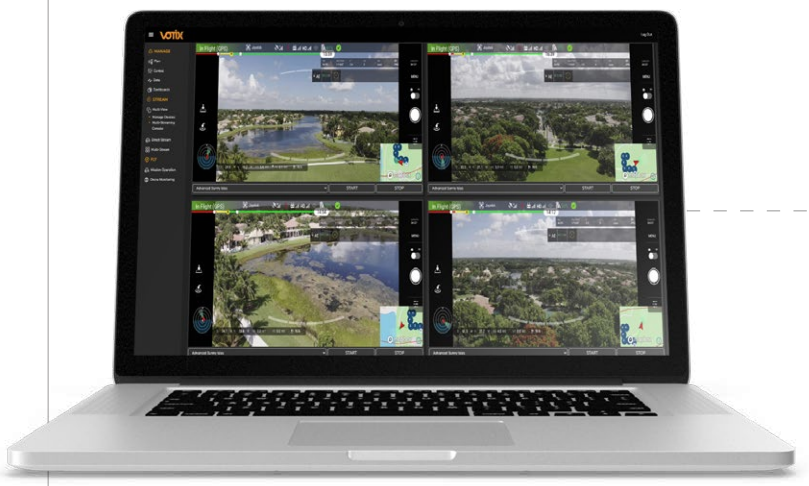
STREAM

VOTIX STREAM, a High-Definition (HD) ultra-low latency cloud-based service, enables live direct-streaming of drone video to multiple people in different locations and across different platforms, backed with strong encryption.

This service uses the VOTIX SHARE (VXS) mobile app to collect a drone's video signal to directly stream it to one or more persons. The stream can flow down from the drone to any browser. It can also stream simultaneously to multiple browsers or video sharing platforms (e.g., YouTube, Facebook, Twitter and Vimeo) using the VOTIX Video Management System (VMS).

The technology also permits businesses to import non-drone related video feed sources, such as IP cameras, CCTV, phones, body and dash cameras.

Organizations can configure all of these streams and feeds as open, PIN-based or otherwise authenticated.





STREAM enables operators to share their real-time flight videos, integrated with other video feeds, with anyone, anywhere in one place. This enables organizations, using a single console, to visually monitor and correlate videos from different angles and locations, for unparalleled situational awareness.

FLY

VOTIX FLY allows operators to safely and securely fly one to many drones, regardless of operator location, using internet-based command and control (C2) and ultra-low latency HD video streaming.

Designed to remain drone-agnostic, VOTIX FLY integrates with DIB, UAS traffic management (UTM) and collision avoidance systems, mapping software and others. It leverages visual-based artificial intelligence to enhance drone capabilities, including precision landing.



This service links drones to WiFi or cellular through the cloud, using VOTIX's proprietary VOTIX CONTROL (VXC) mobile app or through VOTIX GATEWAY (VXG), a small, baked-in or plug-on lightweight device with a built-in 4G LTE plus WiFi connectivity stack.



Go Beyond

VOTIX has already partnered with several of the top oil and gas companies in the country. Mining, power and other energy companies have installed the **VOTIX** suite, as have some local police departments. With **VOTIX** onboard, one company obtained FAA BVLOS waiver in just six business days after three years of previous unsuccessful attempts. It took only two days of testing to sufficiently demonstrate operational reliability to obtain this coveted regulatory approval.



Businesses can implement VOTIX's MANAGE, STREAM and FLY separately, on an individual basis, or as a combination of the full suite. When bundled together, all three products create an unparalleled automation platform, unlike anything else available.

To learn more about VOTIX, visit:

www.votix.com

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VOTIX

Drone Orchestration and Automation

Everything you need to **MANAGE, STREAM** and **FLY** your drones!