

DSPs' Guide To

DRONE-IN-A-BOX SYSTEMS



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Problems DSPs Face Around the World

Travel to distant locations frequently

Most project sites, such as mines, are often located in remote & uninhabited areas. Drone operators, therefore, need to make frequent trips back and forth to the project site to collect requisite data. As a result, businesses need to incur large travel costs.

Poor existing communication systems

Operators, project managers, data-analysis teams, clients frequently lack common communication channels for reviewing the status & progress of current projects, resulting in delays, inefficiencies, and waste of resources.

Conduct security patrols round-the-clock

Round-the-clock patrols are required for 24x7 site awareness. This not only increases dependence on pilot availability but also the need for them to be attentive & efficient at all times.

Operate in sub-optimal conditions

Drone operators are exposed to hazardous settings such as extreme weather, facilities with strict check-in procedures, and toxic environs (such as nuclear power plants), putting their health at risk.

Train pilots & security personnel

Replacing, training, and managing drone pilots is a demanding and costly process for any company. Furthermore, being a specialized skill, finding constant replacements and preparing them is time-consuming.



One Solution: Upgrade to Autonomy

To address the numerous challenges that drone operators face on a daily basis, the solution is undeniably to transition to autonomous operations.

There are three non-negotiable components to achieving full autonomy in drone operations. These are, a reliable drone, a docking station to charge/swap batteries, and an intelligent software to automate the entire operations workflow. This automation includes command and control of the drone fleet and docking stations, remote operations and data collection and processing.



Affordable Docking Station

+



Reliable Drone Hardware

+



Intelligent Edge & Cloud Software Platform

Despite the fact that a large number of businesses are using drones for industrial operations, adoption of autonomous systems is low. **Why?**

The explanation is straightforward. The majority of available systems are far too expensive, complex, and unreliable since they follow the Closed DiAB Approach.

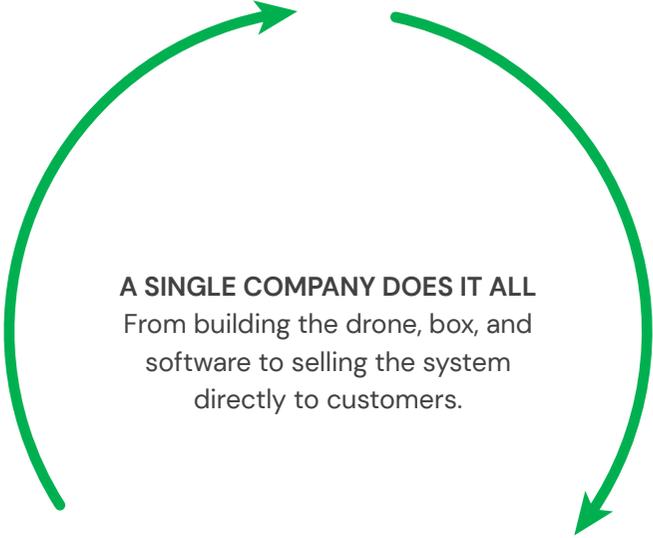
CLOSED DIAB APPROACH



But, what is the Closed DiaB Approach?

Spreading too Thin

The limited resources and efforts of a single organization are being used to design and build multiple complex components at the same time, resulting in a compromised system that is unable to offer the best-in-class drone, dock, or the automation software.



A SINGLE COMPANY DOES IT ALL
From building the drone, box, and software to selling the system directly to customers.

High Cost & Low Adoption

Since each component of the DiaB system is created & manufactured from the ground up, R&D and production costs are extremely high (compared to the drones that are already being mass produced). This leads to higher price points for the customers, resulting in low adoption.

Poor Reliability Due to Low Volumes

Most importantly, such systems have a low level of reliability because each component is made in small batches, resulting in insufficient flight-hours being logged. For example, these DiaB manufacturers produce only a few dozens of customized drones as compared to the millions of drones produced and sold by the leading drone manufacturers (resulting in far higher levels of reliability).

To end this vicious cycle, OPEN DiaB SYSTEMS TO THE RESCUE!

What is the Open DiaB Movement?

Through partnerships with global dock manufacturers and designing DiaB systems around off-the-shelf drones, the open DiaB movement has facilitated the access to dependable, scalable, and affordable drone systems. These systems can now be mass produced, making them a viable choice for many market players! So, instead of 200k USD, users can now buy a DiaB system for roughly 20k USD, which is much more compact, simple, reliable & robust.

In a nutshell, FlytBase advocates for an Open DiaB approach to help propel the adoption of Drone Autonomy by:

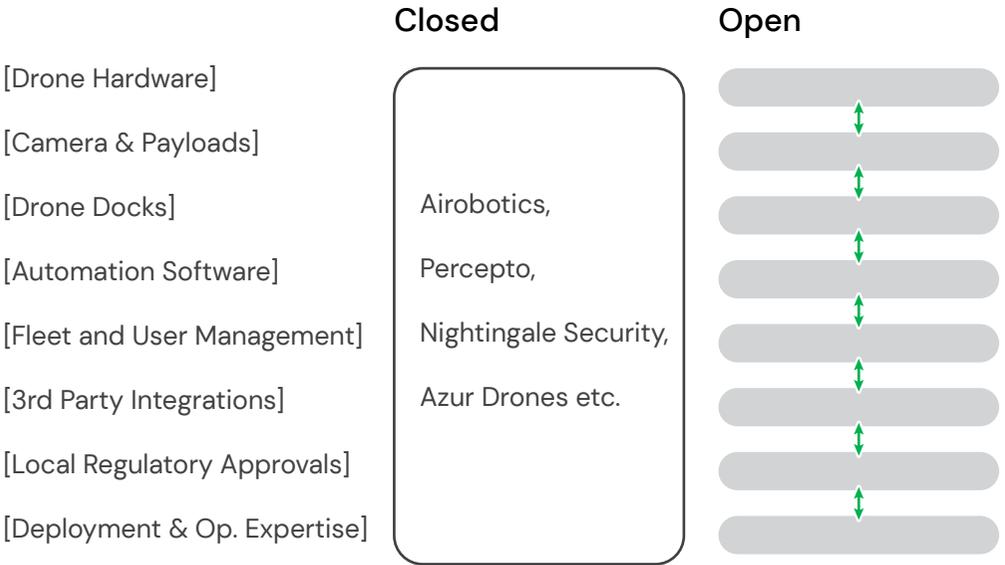
- ✓ Using off-the shelf reliable drones that can:
 - Allow for the selection of drone models based on the use-case
 - Easily replaceable and/or serviceable
 - Be deployed at scale
 - And ofcourse, affordable
- ✓ Ensuring reliability & scalability by letting each player focus on their specialization

“Open-DiaB ecosystem allows compatibility with multiple drones, multiple boxes and multiple software applications. This makes it easy for various domain experts to play a role in shaping this industry, without having to re-invent the entire stack, all by themselves.”

Nitin Gupta, CEO & Founder, FlytBase



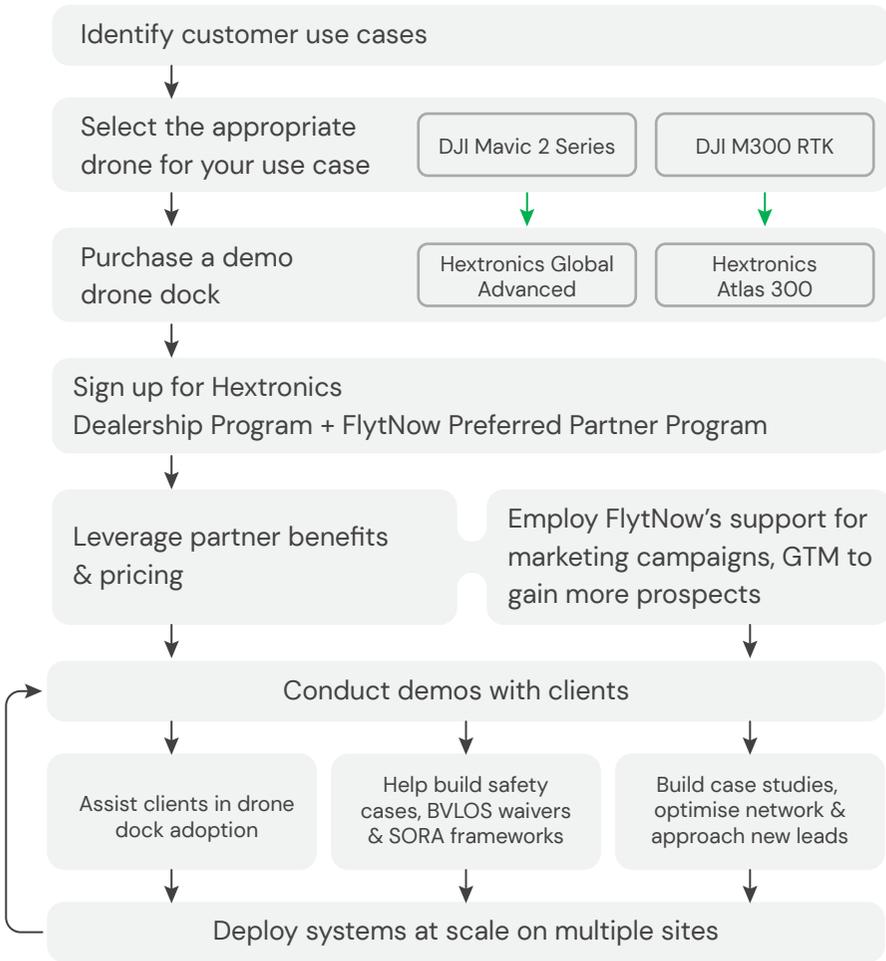
Closed v/s Open Approach to Drone Autonomy



Collaborative Go-To-Market (GTM) Approach

While proponents of Closed DiaB approach sell directly to end-users (utility companies, public safety departments, and others), eliminating the need for DSPs, the Open DiaB Movement encourages strong collaboration with DSPs to leverage their operational and technical expertise in working with local regulators, building integrated solutions, and conducting deployments. Most importantly, DSPs have a much better understanding of end-user requirements. They've spent time nurturing these end-user relationships and are now able to provide not just the onboarding experience but the overall customer experience resulting in a win-win situation for all key stakeholders.

Journey of a DSP with DiaB Technology



DSPs Leading by Example

The following DSPs have integrated DiaB systems, in collaboration with Hextronics and FlytNow, into their daily workflows to deliver a diverse range of services, use cases, and applications across many industries, deploying drones on a never-before-seen scale!

- Aerodyne, Malaysia
- SKT Aero, Ghana
- Firnas Aero, Saudi Arabia
- Adesco, Greece
- Omaha Security, USA
- APTIM, USA





Aerodyne, Malaysia

Aerodyne is a DT3 enterprise solutions provider that uses drone data and AI-powered analytics to address difficult industrial challenges, digitally transform, operate more efficiently, and boost productivity.

Border control & security

Aerodyne has been boosting national security by deploying drone docks at crime hotspots along the country's border. By leveraging Hextronics battery swapping drone station & FlytNow's software to automate routine patrols, Aerodyne has been using the live HD video feed & images captured for:

- Live situational awareness
- Reducing response time
- Monitoring events as they unfold

"What we have in our pipeline is to work on thousands on kilometers of network of connected drone nests that we not only can control remotely, but also autonomously."

Kamarul A, Group CEO

Oil & Gas inspection

DiaB systems have been used by Aerodyne to monitor gas pipelines spanning 2000 kilometers. Visual inspections are now faster, better, and less expensive as a result of this. They've also made the entire process safer by installing smart sensors along the pipeline to raise alerts on the software and dispatching thermal drones to perform recovery operations. This has resulted in:

- 27% increase in uptime and reliability
- Savings of up to 30% on project equipment



SKT Aeroshutter, Ghana

SKT Aeroshutter (SKT) is one of Ghana's leading drone operators, having completed over 10,000 flights to date. They provide aerial data solutions in industries such as mining, construction, agriculture, and forestry for a variety of applications such as perimeter monitoring, emergency response, inspection services, and planned missions and patrols.

Powergrid Inspections & Security:

One key application for which SKT has been using drone docks is to monitor the power grid facility in order to detect faults and damages early on, as well as to conduct routine security patrols.

“The requirement for on-site pilots significantly reduces the value of drone technology. To get to the future of autonomous drone solutions, our clients must first overcome regulatory hurdles, which is why we worked with our close partners and the Ghana civil aviation authority to achieve BVLOS certification.”

Delali Dagodzo, Operations Director



Firnas Aero, Saudi Arabia

Firnas Aero, a leading provider of drone solutions in Saudi Arabia, provides DiaB solutions to clients to assist them in overcoming inspection and security challenges.

Construction Supervision:

Firnas Aero is augmenting the way sites are monitored for all constructions under NEOM, the world's first cognitive city in Saudi Arabia, by introducing DiaB technology. This contributes to their ambitious, futuristic, and technologically advanced "Vision 2030" goal of becoming the world's smartest city.



Perimeter Security:

Firnas Aero is assisting KAUST University in the use of drones for campus security and monitoring. It contributes to the safety of students on campus by shortening and speeding up the response time to any potential criminal activity.

Environmental Inspections:

Firnas Aero helped the Red Sea Development Company's environmental staff scan the beach for plastic bottles washed in by the tides. This helped the crew clean up the beach quickly and thoroughly.

"All of these three projects depend heavily on the use of a drone-in-a-box and the automation that comes with such a solution."

Tariq Nasraldeen, CEO & Founder

Adesco, Greece

ADESCO maintains its leadership as a provider of IoT / M2M security products and services, with a mission to provide services of exceptional quality and security that exceed client expectations. The company's mission is to produce innovative, high-quality products and services in order to attract new clients and maintain the trust of existing ones.

Security Patrols:

ADESCO is now working on integrating security operations with drones, specifically DiaB systems, in order to modernize security operations. They hope to improve existing video management systems (VMS) by establishing an entire ecosystem around them with their IoT communication systems, FlytNow software, and Hextronics drone docks. They plan to use this to streamline security operations and provide the best security solutions for clients who require real-time situational awareness.





Omaha Security Solutions, United States

Omaha Security Solutions is an Omaha, Nebraska-based smart home and business security system company that specializes in user-friendly and cost-effective smart home automation and corporate security systems. They provide access control systems, CCTV installation, and burglary alarm systems to people all over Omaha, Lincoln, and the surrounding areas.

Drone Surveying and Security

Omaha has been automating security & survey operations by pre-planning & scheduling missions in target areas. This has aided them in reducing pilot and staff training costs. All operations can now be managed & tracked straight from a command center.



APTIM, United States

APTIM is dedicated to accelerating the transition to a clean and efficient energy economy while also assuring long-term development and creating an inclusive and equal environment. They specialise in critical infrastructure, technical and data solutions, environmental services, programme management, resilience, and building sustainability & energy solutions etc.

Coastal Engineering

With the use of survey mapping and aerial inspections, deployment of DiaB systems helps maintain track of progress in multiple regions at the same time. Through seafloor and beach mapping, they assist them better understand places that should be avoided in order to prevent harming natural resource-rich zones. They also assist in the collection and interpretation of data from difficult-to-reach regions, like the sea floor, in order to better understand its elevations, constraints, and composition.



Marine Geology

Drones are used to put sensors in the water to monitor the magnetic field of the seafloor in order to determine if any materials present on the sand floor could harm any of the several extraction processes that APTIM undertakes.

Beach Restoration

DiaB systems have assisted APTIM in precisely estimating the quantity of building materials (eg: sand, gravel etc.) necessary, as well as keeping track of equipment that is frequently lost and difficult to track manually. Instead of having to travel back and forth between the office and the site and incurring expensive travel costs, they can physically evaluate the quality and kind of sand on site in almost no time with their high definition cameras.

Smart Battery Swapping Drone Docks

Hextronics Global Advanced

The Hextronics Global Advanced is a smart, lightweight, and affordable battery swapping drone dock with a rugged, waterproof design (IP66) that is ideal for a variety of outdoor environments and applications. It can operate in temperatures ranging from -20 to +50 °C (-4 to +122 °F). Compatible with the off-the-shelf drones such as the DJI Mavic 2 Enterprise Series, the Global Advanced is built for scale. Furthermore, it can charge up to 6 DJI batteries simultaneously & swap them in less than 90 seconds to ensure minimal downtime, capable of 24/7 operations.

Hextronics ATLAS 300

Compatible with the DJI M300 RTK, the Hextronics Atlas 300 is a rugged docking station with an advanced battery swapping mechanism that:

- Houses 8 unaltered batteries with a lifespan of 2000+ cycles
- Has a downtime of less than 4 minutes
- Is air-conditioned, weatherproof, and climate controlled, allowing operations in extreme environments
- Can passively fold the rotors to support a compact design
- Accommodate a variety of payloads, including LIDAR, thermal and mapping cameras, parachutes, and other sensors



Hextruck – Mobilizing Aerial Autonomy

HexTruck is one of the first kits to allow drone stations to be tightly integrated with a pickup truck, allowing for automated mobile deployments. It is compatible with both the Global Advanced and Atlas 300.

The HexTruck comes equipped with:

- A customizable truck-bed mount & retractable cover, to secure the dock firmly to the truck and shield it from dust, rain, and tampering
- The DC/AC inverter and isolated battery pack enable efficient mobile operations while preventing the truck's main battery from draining
- Extended antennas for reliable WiFi and GPS connections



Flight Automation & Management Software: FlytNow Auto

FlytNow Auto is an intuitive web based software solution that automates routine & repeatable missions using drone docks. It supports a wide range of hybrid & distributed fleet of drones and docks – different makes and models located in different regions for various commercial applications.



Expedited Incident Response

- Send drones to specified GPS coordinates on-demand
- Set advanced geofences to demarcate no-fly zones
- Broadcast audio messages over the drone speaker
- Enhance nighttime visibility via onboard spotlights
- Configure multiple failsafes to improve drone safety

Real-Time Situational Awareness

- Stream HD video feed at ultra-low latency
- Integrate thermal camera for enhanced visibility
- View live footage from multiple cameras
- Record and archive captured video data
- Securely share live feed with guest users

Precision Landing

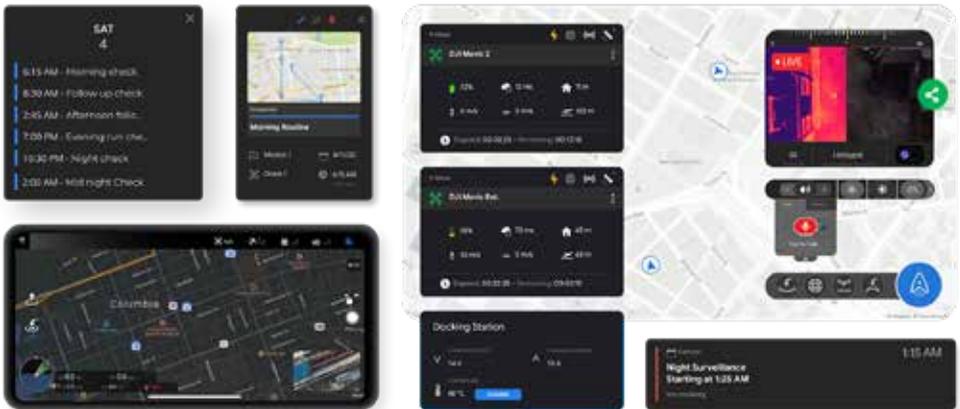
- Offers best-in-class reliability for autonomous precision landing
- Perform landings during the day and night
- Eliminate the use of additional hardware

Plan & Schedule Automated Patrols

- Manage a hybrid fleet of drones
- Execute multiple waypoint missions
- Configure individual waypoint actions
- Schedule routine missions on calendar view
- Retrieve and view previous mission logs

Docking Station Control & Telemetry

- Trigger open/close & charging actions remotely
- View charging status or perform battery swapping
- Integrate stationary cameras to monitor the drone hangar
- View live data relayed from the onboard weather station
- Leverage weather data to perform pre-flight checks



FlytNow Appstore: Build your Own App

The FlytNow AppStore is designed to expand the software's capabilities and accommodate various applications by empowering domain experts to create value for the applications' end users. Domain experts will be able to integrate their custom application into the underlying DiAB autonomy stack & leverage the power of the FlytNow platform.

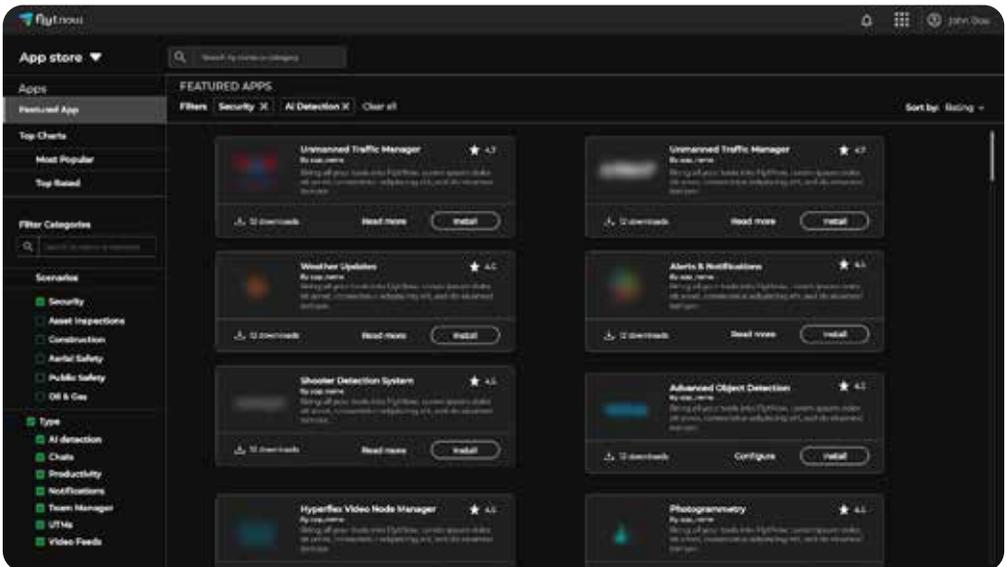


FlytNow offer all developers:

- Web SDK
- Developer Docs
- Test Environments

App Creators get to:

- Leverage FlytNow Platform
- Increase Reach
- Monetize their Apps



FlytNow Preferred Partner Program

With over several thousands of active users, FlytNow has become the go-to software platform for fully automated drone operations. To empower drone solution providers with GTM & marketing leverage, FlytBase invites global businesses to join the FlytNow Preferred Partner Program. With a focus on creating value for our partners and their customers, FlytNow Preferred Partners get access to the following benefits:

- Demo FlytNow kits & licenses
- Remote training
- Priority support & documentation
- Co-marketing
- Logo on mutual websites
- Access to FlytNow marketing collateral

“Thanks to FlytBase & Hextronics, we have deployed several use cases for environmental inspections, construction monitoring, regular surveillance and much more, smoothly and effortlessly. FlytNow has proven itself to be a reliable and scalable drone solution from the very beginning, which has been critical to the success of these projects. Having experienced a successful and rewarding journey through this collaboration, we strongly encourage our other DSP peers to join us on board and work with FlytBase.”

Tariq Nasarledden, Founder & CEO, Firnas Aero

About: FlytBase



Founded in 2016, FlytBase is an enterprise drone autonomy software platform that helps deploy fully automated, cloud connected commercial drones at scale. FlytBase's offerings are compatible with key drone hardware platforms (such as DJI, Ardupilot, and PX4), as well as drone docking stations, and include SDKs, simulators, and APIs for reliable testing and seamless integration. FlytBase was a part of Cisco's accelerator program and was recognized as the Grand Champion at the NTT Data's Global Innovation Contest.

About: Hextronics



Hextronics LLC is an engineering company based in Miami, FL (USA), that builds products to facilitate autonomous functionalities for the growing drone industry. Their drone-station solution offers benefits to reduce operations cost, optimize flight-time, increase the drone-transmission radius, and extend battery life. Along the way, Hextronics and their team have won the Engineering Capstone Design Competition at the Georgia Institute of Technology, graduated from the GT CreateX Start-Up Accelerator, received recognition from the largest tech journal in South Florida (Refresh Miami), and also were selected as Miami Inno's top 25 under 25 companies.



flytnow.com | hextronics.tech