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MONTHLY NEWSLETTER OF DRONE INFORMATION

THE DRONE DIGEST

This Issue

Top 3 Predictions for the Drone Industry in 2023[1]

"Science has not yet mastered prophecy," said legendary astronaut Neil Armstrong. "We predict too much for the next year and yet far too little for the next ten."

The Drone Industry in the Last Ten Years

It may be hard for newer entrants to the sector to realize that just 10 years ago, the commercial use of drones was actually illegal in the United States, according to a Section 333. From 2014 – 2016, companies who wished to operate drones commercially had to receive a Section 333 exemption from the FAA. It wasn't until the introduction of Part 107 in 2016 that there was a clear and standardized legal path for commercial drone use.

While Part 107 was a huge step forward for the drone industry, drones were still primarily flying cameras – and obstacle avoidance systems weren't yet commonplace. Hardware and operating systems have made huge strides over the last 8 years – drones are much easier to fly consistently and safely, and sensors and use cases have continued to evolve.

As the drone industry grew, so did the paperwork for both pilots and FAA. FAA released the first version of the B4UFly app in 2016. The LAANC (Low Altitude Authorization and Notification Capability) was introduced in 2017, further smoothing the way to commercial drone use. Since then, as FAA partner Aloft announced in July of 2022, the B4UFly app has processed more than 20 million airspace searches, and in 2022 commercial LAANC authorizations increased more than 100% over the year before. A rule of operations over people and at night was implemented in 2021, removing further barriers to commercial operation. Remote ID – announced at the very end of 2019 – will be finally implemented in 2023.

Along the way, as the "gray area" of commercial drone operation cleared and enterprises were able to license, insure, and standardize drone operations, use cases evolved. In 2013, most drone used commercially were used to capture pictures of homes, weddings, news stories, or other easily consumable images. In 2022, we've seen drones used to create sophisticated 3D models of assets like telecom towers, assist police and swat teams with two way communications, and carry sophisticated sensors to detect minute changes in atmosphere. We've progressed from having to watch the drone in front of you while you manipulated joysticks to the possibility of operating a drone on Mars from the safe comfort of an office on Earth.

3 Predictions for the Drone Industry in 2023

As we look back at the amazing changes we've seen in the last decade, we're looking forward with optimism and excitement to next year. Here are our top 3 predictions for the drone industry in 2023.

Drone Delivery Comes to a Retail Store Near You. It's taken several years for drone delivery to get real – and legal. Finally, 2022 saw Walmart expand their standard drone delivery program to serve millions of households with drone services partner DroneUp. Flytrex has partnered with fast food outlets in multiple states. Wing and Zipline have moved into the U.S. Matternet received the first ever type certification in 2022. In Europe and Asia, government mail services are utilizing drone delivery. Amazon has at last begun their trials in 2 U.S. states. Still, for most of us, drone delivery is something we just think about while the Amazon, UPS, or DHL truck drives past. That may change this year. With BVLOS flight becoming ever more common – even without a published rule – and type certification moving forward, drone delivery is poised to scale at last.

Counter Drone Technology Gets Implemented. Counter drone technology is an important partner for the commercial drone industry. Currently, however, laws prohibit the widespread implementation of drone mitigation technology. As cUAS technology continues to advance and more drones, both commercial and recreational, fill the skies we predict that infrastructure and energy companies will lobby to be able to put counter drone systems in place.

Drones Operated from a Central Command Post Become Standard on Industrial Sites. The BVLOS ARC was formed in June of 2021, and its recommendations released in March of 2022. Sooner or later – and we all hope for the former – the FAA will release a NPRM on drone flight beyond visual line of sight (BVLOS). When that happens, we predict that companies, law enforcement, and government entities will move quickly to implement remote operations for security, monitoring, or maintenance applications using drone in a box solutions operated from a central command post.

Whatever happens in 2023, we've learned a lot in the last ten years. The drone industry is living up to its promise to perform dark, dirty and dangerous jobs quickly, safely, and cheaply. Drones are no longer a solution in search of a problem – they're a significant tool driving efficiency and innovation. In 2013, we may have been a little overly optimistic about the timeline: but we couldn't possibly have foreseen the amazing developments and achievements we've witnessed since then.

Read more at: https://dronelife.com/2023/01/02/dronelife-enters-our-10th-year-our-top-3-predictions-for-the-drone-industry-in-2023/

Walmart Drone Delivery Now Available from 11 New Stores in Texas [2]

Walmart's drone delivery may give new meaning to the phrase "last minute shopping." Just in time for Christmas, the drone delivery service is now available from 11 new stores in the Dallas area."

Walmart has plans to expand the DroneUp drone delivery network to reach four million additional households across 6 states, including Texas. As the first major retailer to implement drone delivery service. Walmart has successfully completed thousands of same-day drone deliveries to date.

"Drone delivery makes it possible for our customers to shop those last-minute or forgotten items with ease, in a package that's frankly really cool. Being on the forefront of that innovation at Walmart is something we're proud of," said Vik Gopalakrishnan, vice president, innovation & automation, Walmart U.S. "It may seem like a futuristic option, but it's giving our customers what they've always wanted, and that's time back to focus on what is most important to them."

How to Get Walmart Drone Delivery in Texas, and How Much Does it Cost? DroneUpDelivery.com

More and more customers in the US commonly shop online or use a shopping app – and getting drone delivery is just as easy. Customers within a mile of a participating store can place orders through www.droneupdelivery.com from 8:00 a.m. – 8:00 p.m. local time. "Drones can deliver more than 10,000 eligible Walmart items up to ten pounds, including fragile items like eggs, in as little as 30 minutes," says the press release.

Read more at : https://dronelife.com/2022/12/19/walmart-drone-delivery-available-from-11-new-stores-in-texas/

SwissDrones Uncrewed Helicopter Systems [4]

Uncrewed helicopter systems are a growing niche in the drone industry, providing the power and maneuverability of a helicopter without the expense or risk of an onboard pilot. Now, another round of funding for SwissDrones uncrewed helicopter systems will help boost the company's global expansion.

"SwissDrones, a global manufacturer of long-range uncrewed helicopter systems for inspection, surveillance and public safety applications, today announced that it has secured additional 7-figure funding in a round led by DiamondStream Partners, an aviation and aerospace venture capital firm, with participation from existing investors. SwissDrones plans to use the funding to accelerate product development and expand global go-to-market activities," says the company press release.

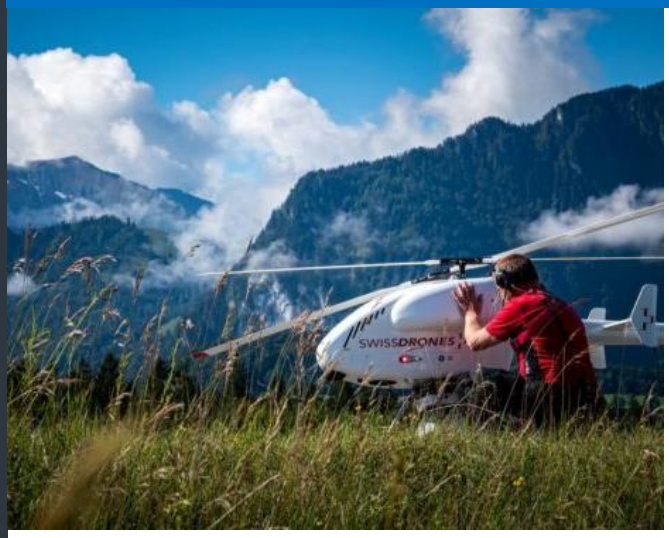
"We see SwissDrones as leaders in bringing next-generation aviation technology to critical use cases in infrastructure inspection, aerial surveillance and public safety," said David Spurlock, Managing Director of DiamondStream Partners. "The combination of the payload/range of the aircraft, a focus on customer service needs, and a platform that will enable high levels of asset utilization are set to bring disruptive economics to catalyze growth in these market segments. We are excited to support the company as it grows as a leader in this space and brings tremendous value across the sector."

Uncrewed helicopter systems offer a safer and less expensive solution for many long range missions. The SwissDrone aircraft integrates high-end sensors up to 88 pounds, and have a flight endurance of several hours. SwissDrones says that their platform also provides a significant environmental benefit over traditional crewed helicopters. "SwissDrones aircraft emit up to 95 percent fewer CO2 emissions than crewed helicopters…." says the company.

"We are very happy to have DiamondStream Partners as a new investor," said Ulrich Amberg, CEO of SwissDrones. "Our team looks forward to leveraging their vast entrepreneurial and operational experience in the aviation and aerospace industries as we strive to transform the way aerial intelligence is gathered in crucial applications worldwide."

SwissDrones has worked closely with global aviation authorities, garnering them one of the first European drone operator license, the European Union Aviation Safety Agency (EASA) Light UAS Operator Certificate (LUC). The certificate allows SwissDrones to self-authorize flight operations of its aircraft across EASA countries, including BVLOS operations, within the limits of the certificate: and is the highest authorization achievable under current European drone regulations. "The SwissDrones SDO 50 uncrewed helicopter platform has also received a Special Airworthiness Certificate (SAC-EC) from the FAA in the US. Additional regulatory approvals will be announced in the coming months," says the company.

Read more at:
https://dronelife.com/2023/01/04/swissdrones-scores-another-funding-round-for-uncrewed-helicopter-systems/



Are Autonomous Drones and Robots the Workforce of the Future? [3]

Uncrewed helicopter systems are a growing niche in the drone industry, providing the power and maneuverability of a helicopter without the expense or risk of an onboard pilot. Now, another round of funding for SwissDrones uncrewed helicopter systems will help boost the company's global expansion.

The last few years have brought labor shortages, supply chain issues, and geopolitical turmoil. These shifts necessitate major changes in the way that industry thinks about operations: and even the most traditional industries are adopting new technology solutions to become more efficient and more effective.

Are autonomous drones and robots the workforce of the future? WiBotic is a major ecosystem player, providing advanced wireless charging for autonomous robots, UAVs, automated storage & retrieval systems, and more. DRONELIFE speaks with WiBotic's new VP of Engineering Brian Crowley on what's helping drive adoption of autonomous drone and robots – and what's holding them back.

Prior to joining WiBotic, Brian has held key executive-level engineering positions for nearly two decades, as President & CEO at Alithion, Symbio and BSQUARE as well as holding engineering leadership positions at Applied Microsystems and other innovative technology companies.

While a wide variety of industries are adopting an autonomous workforce, Brian Crowley says that WiBotic has seen the fastest growth for mobile robots in the warehouse and fulfillment market. "It's just incredibly difficult these days for warehouse operators (like the big ecommerce companies) to hire and retain staff," says Crowley. "As a result, they're expediting the deployment of robots for goods transport within the warehouse – freeing up the humans to focus on picking and packaging."

Goods transport is one of the more mature applications for autonomous systems, but Crowley points out that as systems get more sophisticated and are able to accomplish more complex tasks, companies are using robots for a wider variety of applications – and ground robots and drones are being combined to form more complete solutions.

"We're also now seeing a second wave of robots being deployed for other applications like cleaning and inventory management in these same facilities. An example in the UAV space is the use of indoor UAVs for bar code scanning. Mobile robots and UAVs are increasingly being asked to work together in certain markets."

Are Autonomous Robots the Industrial Solution of the Future?

While the pandemic may have given the industry a temporary boost, Crowley says that major demographic shifts around the world will continue to strengthen the demand for robotic solutions.

"There is no short term solution to global labor shortages," says Crowley. "In many parts of the world the population is aging, so the pool of potential employees with the physical stamina for warehouse work is shrinking. This bodes well for continued growth in the use of autonomous robots."

Once customers realize the benefits of implementing more autonomous systems, says Crowley, they tend to scale use throughout an organization. "As these customers see large efficiency gains a high ROI from the first wave of robotics though, the smart ones are looking at more and more ways to automate other processes," he says. "Floor cleaning, box picking for container loading and unloading, security… these are all areas where new types of robots are being deployed."

"In the coming years we see as much growth coming from new applications at existing robot users as we do from customers who are just now implementing robots for the first time."

What's Holding Back Adoption of Autonomous Drones and Robotics?

Crowley says that while regulations are certainly needed to expand the use of autonomous drones – operating beyond visual line of sight (BVLOS) – he sees a broader need for interoperability standards throughout the ecosystem.

"Of course further easing of BVLOS regulations will also help increase adoption of those types of "resident" UAV systems that can be used for things like fire and emergency response, and repetitive inspections," comments Crowley. "There is a great deal of value in being able to remotely plan and execute missions, with data also being automatically offloaded from the UAV and delivered to users after each flight."

"In the mobile robot space, we need more interoperability across robot types and brands," says Crowley. "There is no need to have a different autonomous battery charger for each model of robot you own, and WiBotic already solves that problem with our universal wireless chargers; but it would benefit the industry in general if there were more interoperability standards for things like task sharing, communications, and navigation."

"Several industry groups are already working on this," he says. "The same issue of interoperability goes for the UAV market, where there has been an explosion of proprietary 'drone in a box' solutions from different vendors… But we hear from customers daily that they don't want to be locked into a single drone model or vendor and would prefer DIB platforms that work with a wide range of UAV models being used for different purposes. Customers also want the flexibility to outfit those drones with the payloads they want to use, not just the payload a single vendor offers… so more flexibility and interoperability is needed for permanently deployed drone stations as well."

Read more at:
https://dronelife.com/2023/01/12/are-autonomous-drones-and-robots-the-workforce-of-the-future-wibotics-vp-of-engineering-brian-crowley/

All SIM Cards Are Not the Same: The Risks of Using Consumer SIM Cards for Drone Operations[5]

Operating sUAS on mobile networks is great – but what's the right SIM card for drone operations? The Case for IoT SIM cards.

A recent report by Verizon and the FAA indicates that mobile connectivity is a valid and desirable form of control over drones and UAVs. A paper by Ericsson from 2019 explores the topic and addresses the requirements needed to support drone operations. Drone connectivity experts Elsight agree, in this position paper.

The use of mobile networks for drone C2 is good for the industry, as it does not require a whole new infrastructure. Commercial drone operators using mobile connectivity for command and control need to ensure they have the right tools to ensure connectivity and make it work, including the right SIM card.

Standard consumer SIM cards are cheaper and have higher connection speeds and lower latency. Consumer SIM cards also have limitations on data and could be risky for commercial drone ops. IoT SIM cards – designed for commercial and industrial use – might be a safer bet.

What is an IoT SIM card – and What's the Difference?

An IoT SIM card is a variation of the SIM cards which are used in smartphones and other mobile devices. It includes additional features tailored specifically for IoT devices and has greater durability, security, and flexibility. Whereas consumer SIM cards are generally activated and operated on an individual basis, IoT SIMs must be able to be remotely managed and be able to be operated and activated in bulk. IoT SIM cards are built to survive in more "industrial" conditions that normal SIMs won't be expected to encounter, including high and low temperatures, strong winds, rain and snow, and more.

That might make IoT SIM cards seem like an obvious choice, but consumer SIM cards do come with some advantages: for consumer use, they offer lower latency and higher connection speeds, traffic priority, and the ability to send voice as well as data. IoT SIM cards are also more expensive than consumer SIM cards.

(This article from Technology for Learners provides more information: this piece from Hologram.io (a vendor) also does a decent job laying out differences.)

The Risks of Consumer SIM cards: Regulatory limits.

The biggest problem with consumer SIM cards is that in almost all cases, using a consumer SIM for an IoT device likely violates the mobile network operator (MNO) terms and conditions regarding use of the SIM card. That's a risk for commercial operators, as an MNO could decide to close the account or even impose fines. That's a significant risk for commercial operators: it would require grounding the fleet until a new contract is procured and all SIM cards are replaced.

The network operator is not the only party who may cause a problem. The FCC hasn't yet approved use of commercial wireless to support UAS operations. Businesses who use a consumer SIM card for drone operations instead of an IoT SIM can risk enforcement action at the FCC – along with their MNO.

Physical SIM card limitations

In addition to regulatory issues, IoT SIM cards are more rugged and durable than consumer SIM cards – which means that IoT cards are more able to withstand a wide variety of flight conditions. IoT SIM cards can operate in temperatures ranging from -40°C to 105°C (-40°F to 221°F), and offer increased resistance to corrosion. IoT SIM cards can be expected to operate optimally even when encountering strong winds, intense vibrations, excessive movement, rain and humidity, all things which one can expect to occur during regular drone operations.

Throttling

Finally, there's the issue of data. Lots of data. The majority of consumer data plans come with a limit on how much data you can use: once that limit is reached the data speeds are severely slowed down, known as "throttling".

Read the complete article at : https://dronelife.com/2023/01/16/all-sim-cards-are-not-the-same-the-risks-of-using-consumer-sim-cards-for-drone-operations/

This Month's Q&A Drone Tips

Q: MYTH: "Drones will be flying around our property, houses and everywhere."

A: FACT: The FAA rules and regulations that will continue to evolve for unmanned aircraft will be very restrictive, and will carry the weight of federal law with severe penalties for violations. FAA rules are based primarily on safety for both people and aircraft already in the air and for the safety of people and property on the ground. Most of the feared imagined scenarios are already illegal because they would also be unsafe. If we look at the history of FAA regulations, aircraft have always been required to stay away from built-up areas (buildings and structures) and people and crowds. There are additional "line of sight" requirements for operators. Unsafe activity will not be permitted by the FAA.

Q: MYTH: "Armed drones are currently legal, so we need a ban."

A: FACT: The FAA has already stated – on the record - that armed aircraft (manned or unmanned) are strictly prohibited and illegal under federal law. Although the military has been allowed to operate armed and "weaponized" aircraft for over a century, it is illegal to arm or "weaponize" any type of non-military aircraft. State laws that ban "weaponized" or armed drones are redundant, unnecessary, and potentially confusing. Aircraft are the only type of "vehicles" that already have a federal "blanket ban" in place against "weaponization".

Q: MYTH: "The only uses for drones are for military applications or spying."

A: FACT: Most of our aviation technology over the past century has originated with the military. However, civil non-military applications of aviation technology have always grown much larger than military applications. We only need to look at the commercial aviation industry and commercial airlines to recognize the vast potential of civil aircraft applications. The same will be true with unmanned aircraft ("drones"). Just like other technologies, unmanned aircraft are a tool that improves human efficiency. It is anticipated that unmanned aircraft will excel in areas such as cargo delivery, precision agriculture, and related applications, but only after FAA safety regulations and rules are updated and in place.

EYE ON IT

New Autel Drone and NEST Accessories Launched at CES 2023[6]

A new Autel drone and NEST accessories were launched at CES 2023 in Las Vegas today.

The EVO Max 4T is Autel's newest offering for both enterprise and prosumer applications. With EVO Max 4T, Autel is featuring advanced autonomy and AI features, compared with omnidirectional obstacle avoidance to make the new Autel drone safer and easier to fly. The EVO Max 4T also offers tri-anti interference capability (RFI/EMI/GPS), for safer operation in high-interference environments like urban areas.

For professional drone operators and enterprise users, the EVO Max 4T has a versatile payload bay allowing pilots to choose from a wide range of sensors for a wide range of applications: the company is focusing on search and rescue, firefighting, public safety, mapping and inspection applications. In addition, Autel is featuring an Enterprise App: "…Enterprise App is specifically designed to revolutionize the cooperation between drones and pilots," says the EVO Max 4T press release. "This drone can perform multiple semi-autonomous flight missions, autonomous pathfinding, live streaming, and target acquisition, and also includes various smart accessibility features."

3 Great Cameras for High-quality Imaging – Plus Intelligent Functions

The EVO Max 4T comes with 3high-quality cameras:

- a 48MP telephoto camera with 10x Optical Zoom, 160x digital zoom, and a 1/2″ CMOS sensor;
- a 50MP wide-angle camera with a 1/1.28″ CMOS sensor and 3840×2160 video resolution;
- an infrared camera with a 640×512 resolution and 1.2km ranging distance.

Autel is also making it easier for content creators, with a range of intelligent navigation and data acquisition functions, including 3D flight routes, PinPoint Mode, Team Work, Polygon Mission, Waypoint Mission, and Oblique Photography.

Read more at: https://dronelife.com/2023/01/05/new-autel-drone-and-nest-accessories-launched-at-ces-2023/

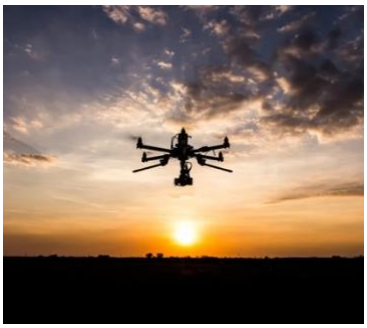
Drone Quotes to Remember.

"I predict that, because of artificial intelligence and its ability to automate certain tasks that in the past were impossible to automate, not only will we have a much wealthier civilization, but the quality of work will go up very significantly and a higher fraction of people will have callings and careers relative to today." ~ Jeff Bezos

"New ways to improve the supply chain: Artificial Intelligence, IoT, Big Data, Augmented Reality, Blockchain, Drones, Machine Learning." ~ Supply ChainToday.com.

Upcoming Local Events

- InterDrone 2023 – Rio Hotel, Las Vegas, NV – Date TBD
- International LiDAR Mapping Forum – Denver, CO – February 6-8, 2023
- UAV Technology – Hilton Arlington, Washington DC – February 6-8, 2023
- Auvsi Xponential 2023 – The Colorado Convention Center, Denver, CO – May 8-12, 2023
- 7th Energy Drone & Robotics Summit 2023 – Woodlands Waterway Marriot, Houston, TX – June 12-14, 2023
- Japan Drone – International Convention Complex – June 26-28, 2023
- Commercial UAV Expo Europe – Caesars FORUM, Las Vegas, NV – September 4-6, 2023
- Commercial UAV Expo Americas – Caesars FORUM, Las Vegas, NV – September 5-7, 2023
- Drone X – Excel London – September 26-27, 2023



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References:

1. McNabb, M. (January 2023) DRONELIFE Enters Our 10th Year! Our Top 3 Predictions for the Drone Industry in 2023. Drone Life.
2. McNabb, M. (December 2022). Walmart Drone Delivery Now Available from 11 New Stores in Texas. Drone Life.
3. McNabb, M. (January 2023). Are Autonomous Drones and Robots the Workforce of the Future? WiBotic's VP of Engineering Brian Crowley. Drone Life.
4. McNabb, M. (January 2023). SwissDrones Scores Another Funding Round for Uncrewed Helicopter Systems. Drone Life.
5. McNabb, M. (January 2023) All SIM Cards Are Not the Same: The Risks of Using Consumer SIM Cards for Drone Operations. Drone Life.
6. McNabb, M. (January 2023) New Autel Drone and NEST Accessories Launched at CES 2023. Drone Life.

If you would have thoughts, ideas, or feedback for future content or improve this newsletter, please let me know, email or call at the above listed contact info.