



## Industrial Operational Challenges & Solutions with Drone Tech

### The ZF case study



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COMPANY PROFILE &  
CASE STUDY

SMART PAPER

# INTRO DUCTION



COMPANY PROFILE &  
CASE STUDY



**B**asically, a flying drone is an aircraft without a human pilot aboard, better known as unmanned aerial vehicles

(UAV). Drones are robots that are typically controlled remotely by a pilot, yet fully autonomous drones are still under the development phase. They were initially considered safer and less expensive alternatives to manned military aircraft.

Today, not only are they used for military purposes, but they are also consumer products that offer operational efficiency for both entertainment and surveillance purposes.



Drones come in a variety of shapes and sizes, but their main components (battery, microcontroller, motor, and sensors) are all the same. They are made with smartphone parts, so investments in these parts over the last decade have driven down drone prices, making them more accessible to consumers and businesses. Unlike most fintech developments, such as big data and payment innovation, drones are valuable because their mobile hardware is integrated with internet connectivity. Their sensors enhance intelligence. They can act as a platform for the development of various applications, software, and business models. Drone mapping software, flight planning software, drone insurance, and marketplaces for people to find drone pilots are the latest trends that have emerged<sup>1</sup>.

[1] ATAL Innovation Mission.  
(n.d.). ATL Drone module:  
Get, set, fly!





# DRONE TECHNOLOGY CONTRIBUTES TO MODERN ENTERPRISES

Industries have already embraced and adapted to change as technology continues to grow and play a bigger role in consumers' lives. As a result of ubiquitous internet access, businesses have shifted from brick-and-mortar locations to online services, reducing the overhead costs of running a physical store, such as rent and wages.

Unmanned aerial vehicles (UAV) are currently regulated in the United States with a maximum altitude of 400 feet in populated areas. Commercial use of drones is currently illegal and has not been sanctioned by the Federal Aerospace Association (FAA). The FAA is hesitant to issue licenses allowing companies to test drone services within the US due to airspace and ground safety concerns<sup>2</sup>.



<sup>[2]</sup> Nath, T., Khartit, K. (2020, December). How drones are changing the business world. Investopedia.



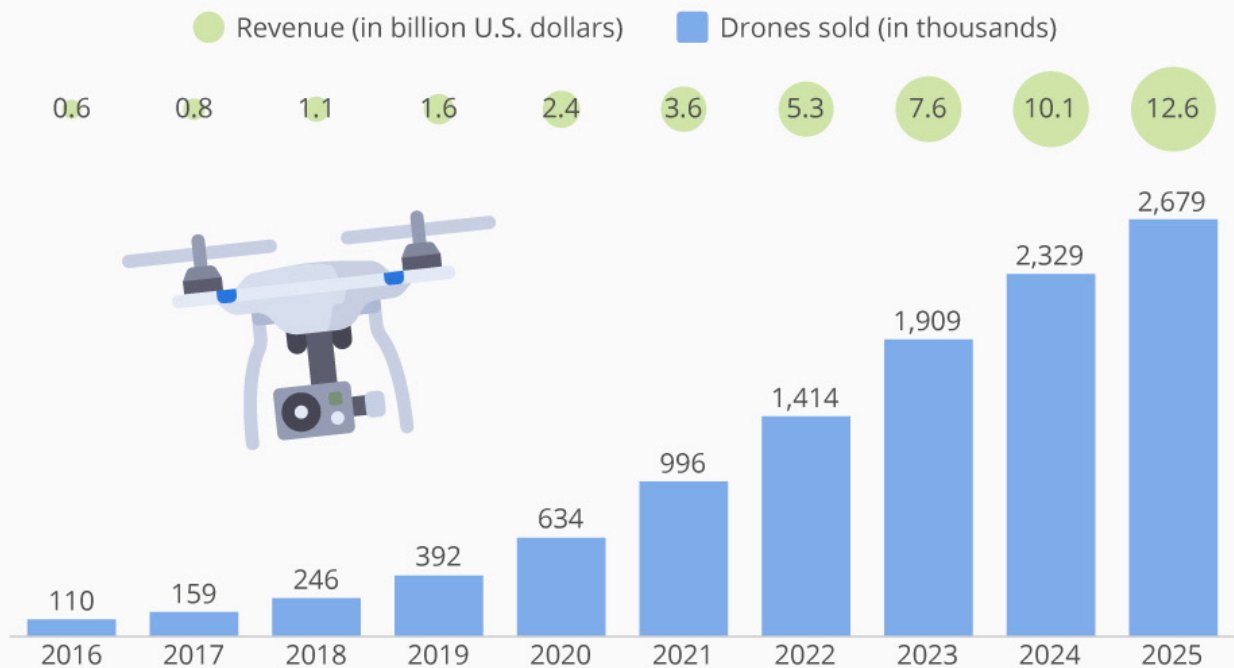
The demand for UAVs is expected to rise due to an increasing preference in commercial applications. Drones are considered sophisticated devices that can take aerial photographs and record high-definition videos for a variety of applications. This is raising demand for drone-related products, such as drone software, which is widely used for analyzing, image processing, and surveying.

Unmanned aerial vehicles (UAVs) are being used commercially for excellent quality photos and videos in industries such as media, entertainment, infrastructure, security, and

**Fig 1.** Projected worldwide market growth for commercial drones. Buchholz, K. (2019, February). Commercial drones are taking off. Statista.

## Commercial Drones are Taking Off

Projected worldwide market growth for commercial drones



the military. In a broader sense, technology provides well-equipped sensors on board combined with data and analytics systems. This integration has created numerous opportunities for the energy and power, agriculture, logistics, and transportation industries. Due to the complexities of image processing, UAV software is incorporating machine learning and other technologies to fill in the gaps. Throughout the pandemic, UAV services have been expanded, such as drone delivery, remote monitoring, asset management, surveys, and homeland security has increased, as well as the demand for this market<sup>3</sup>.

Globally, the growing use of drones in various industries is driving up mandate for modern technology in aerial vehicles. Drones can fly in numerous geographic locations, regardless of range or altitude. These advantages are increasing the demand for unmanned aerial vehicles in several countries. Precision agriculture, construction and infrastructure, security, energy and power, insurance, transportation, and logistics are some of the commercial applications that are thrusting the drone industry forward. They are classified into three types: fixed-wing, rotary-wing, and hybrid. The most common drone configuration is a multi-rotor with four, six, or eight propellers. A fixed-wing rotor airplane, for example, is designed for much greater efficiency and endurance at high altitudes. Military drones are commonly configured for long-range, high-altitude missions. During this unprecedented period, the growing global adoption of unmanned aerial vehicles is expected to boost the drone software market.

[3] ATAL Innovation Mission. (n.d.).  
ATL Drone module: Get, set, fly!

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