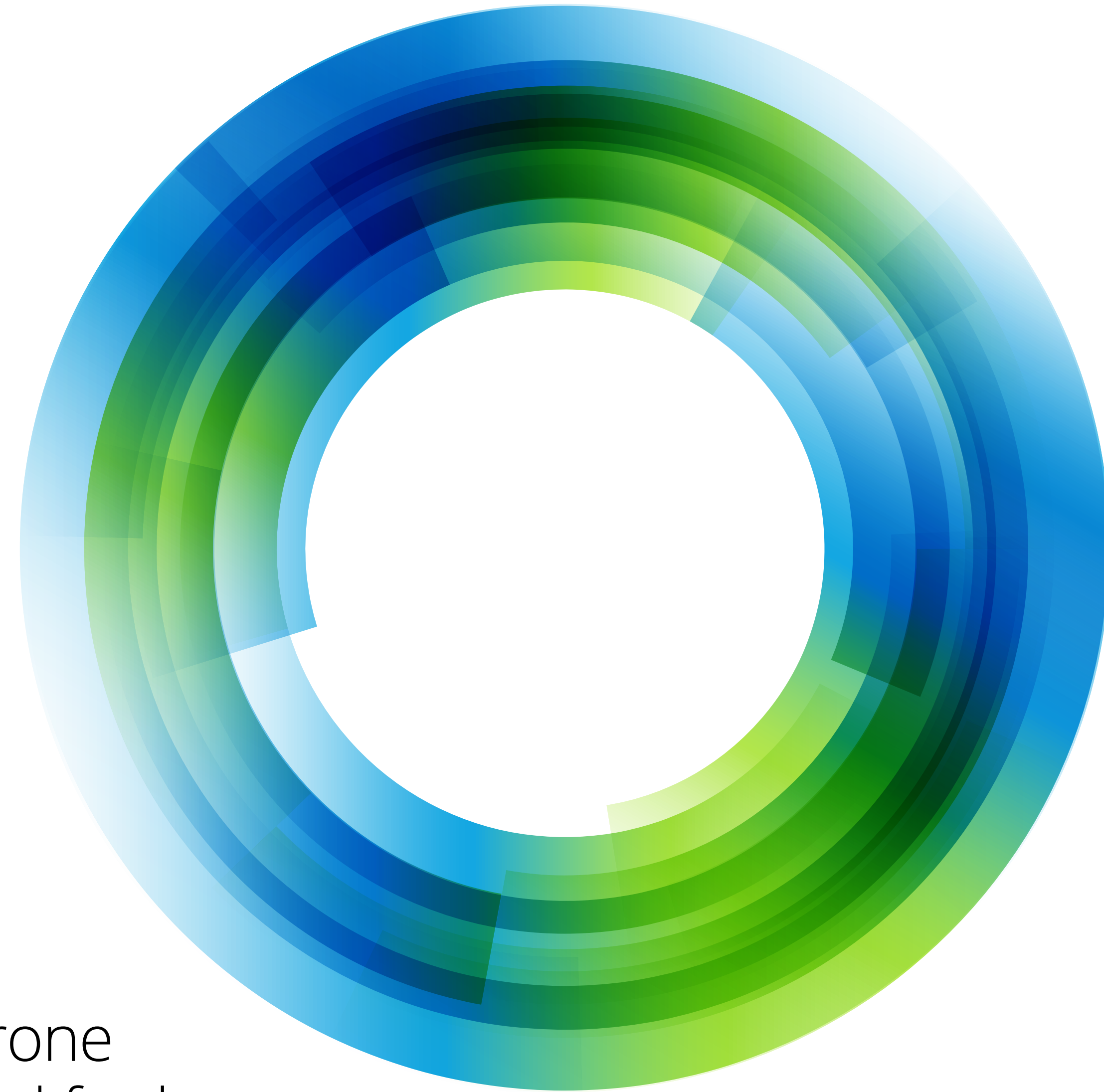


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InFocus

Insurance industry drone use is flying higher and farther

Potential applications span pre- and post-loss insurance value chain

Top takeaways



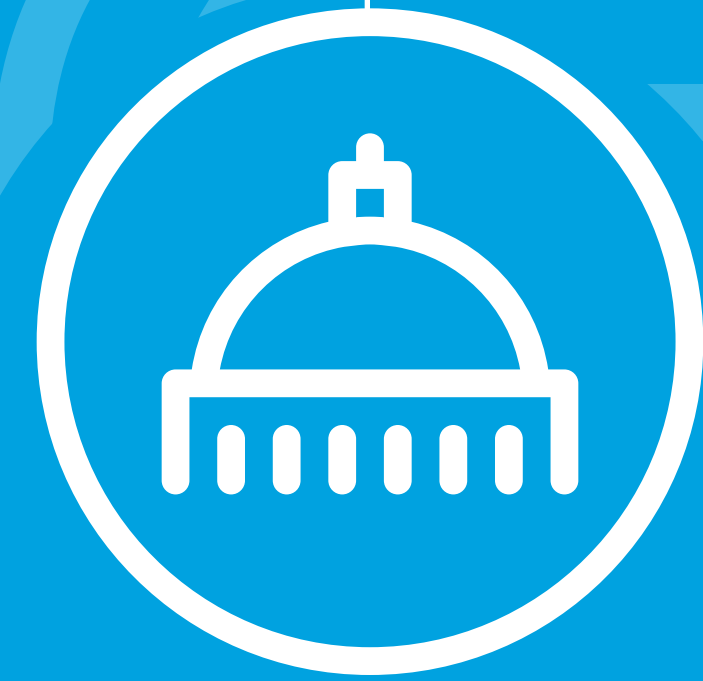
The insurance industry has been one of the earliest adopters of commercial drones.



Over the past few years, drone deployment has been rapidly expanding and evolving, with applications across the insurance value chain.



Commercial drone use has the potential to help the insurance industry save billions of dollars annually¹ by improving core transaction processing, risk management, resource efficiency, fraud reduction, and employee safety.

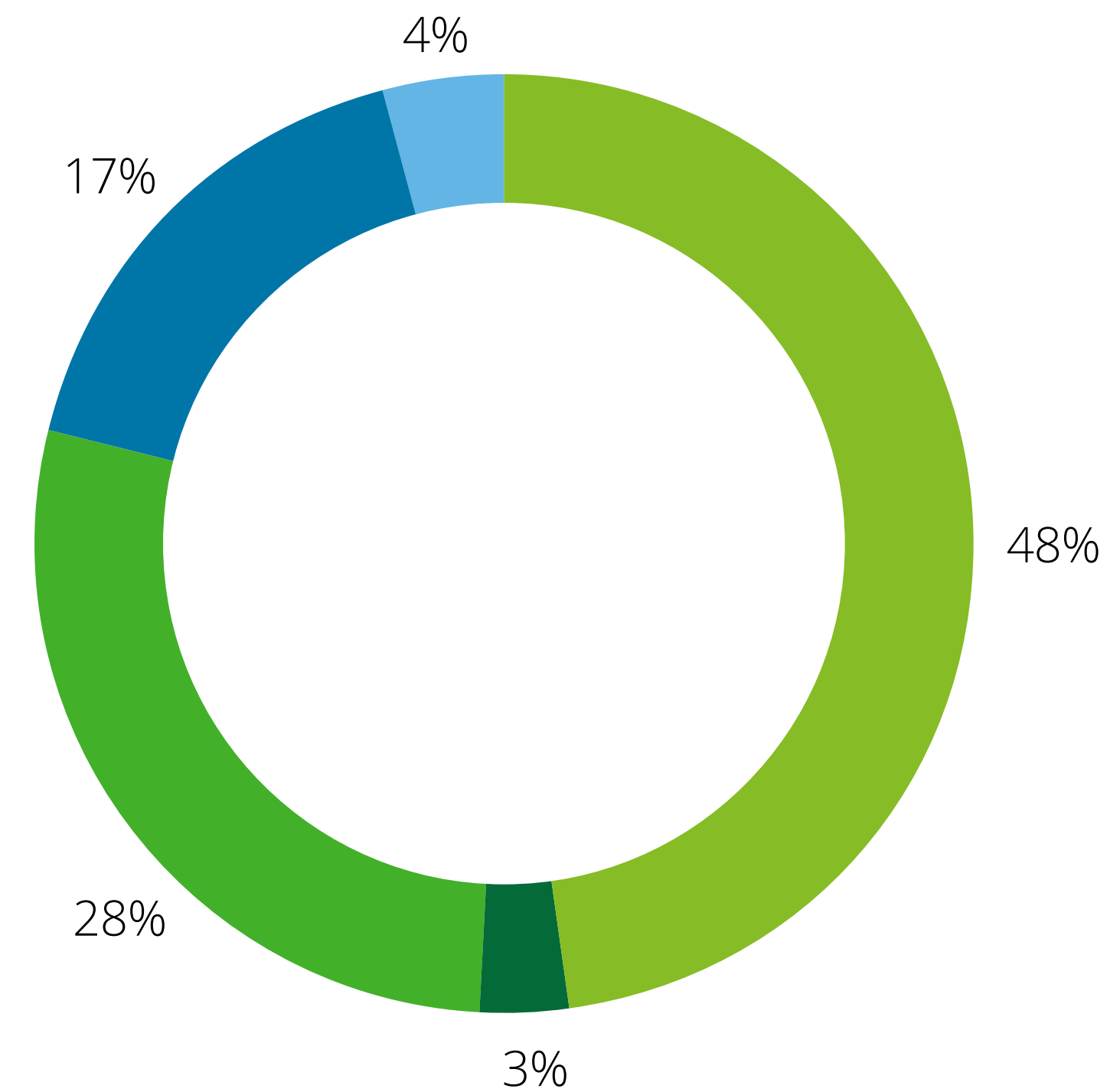


To take advantage of the empowering data and cost-saving opportunities that drones provide, companies must tackle a number of regulatory, technology, and business risks and challenges.



The proliferation of unmanned aerial vehicles (UAVs), more commonly known as drones, is changing the landscape—or, more accurately, “airscape.” According to the Federal Aviation Administration (FAA), 2.85 million small drones could fill the sky by 2022 and 450,000 of them will be used for commercial purposes.² Among promising applications are crop monitoring, construction site management, search-and-rescue operations, surveying, film-making, firefighting, and more (see figure 1). The projected value for drone solutions by 2020? An impressive \$100 billion across all industries—\$13 billion of this could come from commercial business.³

Figure 1. Present uses of commercial drones⁴



- Real estate/aerial photography
 State and local government
- Industrial inspection
 Agriculture
 Insurance

Source: Federal Aviation Administration, *FAA aerospace forecast, fiscal years 2018–2038*, https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2018-38_FAA_Aerospace_Forecast.pdf, accessed April 11, 2018.



The 411 on drones

Drones are aircraft that carry no human pilot or passengers. They may be remotely controlled or can fly autonomously through software-controlled flight plans in their embedded systems working in conjunction with onboard sensors and GPS. According to the FAA's Fly under the Small UAS Rule (14 CFR part 107), drones must:⁵

- Weigh less than 55 pounds, including payload, at takeoff
- Fly within visual line-of-sight
- Fly at or below 400 feet above ground level (AGL)
- Fly during daylight or civil twilight
- Fly at or under 100 mph

These drones can be equipped with tools—such as infrared cameras; license-plate readers; “ladar” (laser radar); sensors that gather data about weather, temperature, radiation, or other environmental conditions; and even cargo-delivery systems—to offer:

- Game-changing ways of collecting industry data that previously has been difficult or impossible to obtain (e.g., for urban infrastructure management, farming, and oil and gas exploration), thus disrupting established processes and business models
- A proven, more responsible approach to certain airspace operations from an environmental, ecological, and human-risk perspective (e.g., physical plant inspection, public safety, flood rescue video capture, and rural or contaminated area package delivery), thus mitigating operational risks

Insurance carriers take to the sky

Insurance is among the industries already deploying and expanding the potential of commercial drones,⁶ eyeing two strategic objectives: better risk management through improved data collection, analysis, and actionable insights; and reduced operational costs through improved efficiency and effectiveness in claims adjudication, claims processing, and customer experience.

Several leading insurance companies were first in the air, securing FAA permission as early as 2015 to use drones for aerial data collection, catastrophe response, research and development, underwriting, and claims resolution support.⁷ Since then, more insurance companies, both national and regional, have begun using drones.

Sensing disruptive potential, numerous insurance technology (insurtech) firms have entered the drone domain to offer both comprehensive and specialized services to the insurance industry. Betterview, an

insurtech devoted to using drones for property inspections, has executed more than 6,000 rooftop inspections in the last two years⁸; the company signed a partnership agreement with Loss Control 360, which makes software for insurance companies and inspectors. Verifly, a New York-based startup, is another market entrant. The app-based, licensed producer has partnered with Global Aerospace Insurance to offer on-demand, per-flight policies.⁹

Using drones, Allstate has significantly reduced the time it takes to issue a repair estimate after a customer reports damage to as little as 4.5 days.¹⁰

Drone deployment is rapidly expanding and evolving, with current and potential applications spanning the insurance value chain. For example:

Pre-loss

- **Risk engineering and pricing**—Aerial site assessments can identify property features that allow the owner either to seek a reduced risk profile or to take appropriate actions to lower overall risk and justify premium discounts.
- **Natural disaster monitoring**—Drones can be quickly and safely deployed to monitor areas threatened by natural disasters. Governments working with insurance companies can monitor a situation and alert local residents to potential danger.

Post-loss

- **Inspection**—Drones can provide a safer, faster, and more cost-effective way to conduct a site inspection, particularly in challenging working conditions.

- **Risk assessment**—Drones may allow insurers to engage a generalist, rather than a specialist, to perform field assessments and obtain high-quality visuals.
- **Claims adjudication**—The precise photos that drones take can potentially improve the quality of the claims adjudication process.
- **Fraud prevention**—The moment a property claim is reported (First Notice of Loss), a drone could be deployed to inspect the claims site, increasing information capture accuracy and timeliness.

Using drones, COUNTRY Financial has been able to scout three times as many acres as an adjuster on foot and efficiently account for all of a customer's crop damage.¹¹

Clear or cloudy days ahead?

The insurance industry is one of the key markets for commercial drones. We see their use unfolding in three waves:

Line-of-sight drones (now): Currently, drones are restricted to very-low-level airspace—typically 400 feet AGL—and require a human operator to control them. Insurance companies can use drones today for site inspections with a company's representative controlling the drone.

Remote monitoring (within three to five years): Industry wide regulatory discussions continue to evolve. Increasing numbers of jurisdictions could permit drone flights that go beyond the current height and distance limits, enabling insurance companies to remotely monitor sites.

Self-piloting drones (greater than five years): Aerospace companies and aviation industries are already working toward development of self-piloted drones. Such pilot-optional planes may help insurance

carriers inspect long-distance sites using wireless data communication.

Market opportunity

Commercial drones are estimated to help save the insurance industry nearly \$7 billion per year¹² through:

Improved transaction processing—Companies can potentially move from dangerous, hands-on, time-intensive property inspections, to a much faster process that allows their workforce to keep both feet firmly planted on the ground; reduce claims settlement time from days to hours; and help adjusters and underwriters obtain information 10 times faster than traditional methods.¹³

Resource efficiency—Because drones can increase inspection efficiency by up to 85 percent,¹⁴ insurance companies can significantly reduce the number of field adjusters and better balance deployment of specialized, high-skill resources.

Fraud reduction—Drones can help counter fraudulent claims, which amount to \$32 billion each year.¹⁵

Employee safety—Drones allow adjusters to remain in a safe area during site inspection, minimizing their exposure to accidents and hazardous conditions.

But, as is the case with most transformative technologies, drones carry a number of regulatory, technology, and business risks and challenges that will need to be addressed before commercial drone use attains widespread adoption.

Regulatory risks

FAA regulations: The FAA currently requires that the drone operator and a visual observer be close enough to maintain a constant line of sight with the drone.¹⁶ This may limit insurers' ability to use drones for remote inspection and assessment.

Casualty and liability: In case of bodily injury or property damage, the courts may recognize a generalized tort duty on the part of the drone operator to use due care to prevent bodily injury or property damage to others.¹⁷ As federal and state regulations define specific rules for operating drones, they may further shape and define the “duty” element of negligence claims.¹⁸

Privacy violation: Courts have upheld trespass claims involving aircraft operated below navigable airspace that interfered with a property owner's use of their land.¹⁹ In addition, drone operators may be liable for trespassing for physically entering on land to retrieve a drone.²⁰ In addition, where risk assessment is conducted by drone, regulators may expect insurers to seek prior approval from insureds. Because drones are capable of flying at lower altitudes than manned aircraft, common-law nuisance claims against drone operators might be successful.

Technology risks

Hacking: Because drones are controlled by radio or Wi-Fi signals, they are vulnerable to hijacking attempts via “spoofing,” in which another control station hacks a drone’s radio signal and gives it bad GPS coordinates.²¹

Drone operations: Loss of control can result from a system failure or a drone flying beyond the signal range or into an area where communication is interrupted due to frequency interferences.

Data leakage and security: Valuable recorded data can be lost when the device is flying and transmitting information to the control station or during a cyberattack on the company gathering and storing the data.

Business challenges

Product definition: Inadequate historical and analytical data can present product development challenges. In addition, multiple players involved in drone operations

may complicate underwriting and claims handling, including valuation and fraud detection.

Product enhancements: Underwriters face difficulties in categorizing drones under traditional liability coverage and in defining what’s covered or excluded (e.g., privacy). Currently, many policies do not explicitly mention drones, which could expose insurers to liability claims.

Talent and resources: Introducing drones into traditional processes likely will impact how employees handle their responsibilities and may create hiring and training challenges.

Fleet management: Over time, insurers are likely to expand drone usage across their business enterprise. This increases the need for fleet management to address increased risk exposure and regulatory scrutiny.

What's next?

More and more insurance companies are aspiring to be data- and insights-driven organizations. A confluence of enabling technologies (e.g., IoT, artificial intelligence) is fueling companies' digital transformation—including their use of drones.

Going forward, we see four key drivers supporting the insurance industry's widespread use of drone-powered solutions (see figure 2).

Figure 2. Drivers of drone-powered solutions



Well-developed regulatory framework

- Clearer local and global boundaries (e.g., privacy restrictions) for commercial usage of drones are expected to encourage insurers to experiment future
- Likewise, transparent and relaxed regulations could help drive the adoption of drones in insurance industry



Growing demand for high-quality data

- Photogrammetry and geospatial analysis capabilities are becoming increasingly important to business operations
- Mass production and use of drones appears to be promising and can be a cost-effective way to acquire high-quality data



Increased focus on data-driven decision making

- Growing customer demand for data accessibility anytime, anywhere, is likely to open the gates for emerging technologies
- Availability of a wide range of data processing tools in the market could help insurers to deliver results



Disruption and changing business operating models

- Development of new technologies (e.g., autonomous avoidance systems) has the potential to improve drone adoption across the industry
- Reduced weight and increased flight times through advanced technologies may increase the rate of adoption

Since several leading insurance companies are already using drones for competitive advantage, others that don't act now potentially risk being grounded. Executives ready to take to the air should consider the following pre-flight steps:

- Actively monitor drone technology trends; establish innovation hotspots to learn about the latest developments.
- Consider drones' impact on current and future operations:
 - How do we anticipate changes in our business operating model for pre-loss and post-loss activities (e.g., pricing sophistication, business decision making that is more and more data driven than experiential)?
 - What do we need from a technology-enabler standpoint (e.g., an enormous amount of data will be made available in real time through drones;

how do we solve data management headaches)?

- What "building blocks" are necessary for mainstream adoption and integration of drones into our routine business processes?
- Consider partnering with startups to build pilot solutions and create a network of partners to provide tools and resources for designing potential solutions.
- Get involved in insurtech programs, such as incubators, and mechanisms to fund companies; engage in strategic acquisitions to address specific problems.
- Assess current portfolio to identify emerging coverage needs (including drones) and risks to refine and redefine future product offerings.

If you would like to learn how your insurance company can use drones to improve risk management and operational efficiency, we should talk.

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