



Drones: The Insurance Industry's Next Game-Changer?

Drones hold vast potential for streamlining and reducing the cost of insurance-related processes – from claims adjustment and risk-engineering, to post-catastrophe claims settlements for customers, to weeding out fraudulent agricultural claims.





Executive Summary

Most of us have seen or read about the objects flying above soccer fields during the recent 2014 FIFA World Cup soccer matches. These unmanned aerial vehicles (UAVs), or drones, were deployed as a security measure to patrol the skies during the sporting event. Understandably, the technology has captured the imagination of a wide audience because of its ability to maneuver and easily carry out activities that were previously performed by humans.

Drones have actually been in service since the 19th century, and used for years by the armed forces for reconnaissance. However, they are soon expected to take center stage with the anticipated ruling from the Federal Aviation Administration (FAA) on the use of small unmanned aerial vehicles in U.S. skies.

The Association for Unmanned Vehicle Systems International predicts that within 10 years (from 2015 to 2025) drones will create approximately 100,000 new jobs and around US\$82 billion¹ in economic activity. Equipped with new capabilities such as integrated audio and text with real-time video feeds and the ability to overlay images over existing footage through augmented reality, next-generation drones could have significant commercial value for businesses across industry segments.

Commercial and personal-lines insurers that cover property risks are likely to be early adopters of drone technology. For example, a property adjuster or risk engineer could use a drone to capture details of a location or building, and obtain useful insights during claims processing or risk assessments. Drones could also be deployed to enable faster and more effective resolution of claims during catastrophes.

While challenges on the regulatory front, privacy concerns and a lack of certain capabilities could stall widespread use of drones in the near future, once these obstacles are overcome, drones could have a significant impact on the P&C insurance industry.

In this white paper, we will discuss the rapid growth of drone technology, what it will take for drones to have real business impact, and how several industries are already experimenting with drones. We will also cite four realistic scenarios for employing drones in the insurance industry.

The New Disruptive Technology?

The use of technologies to automate and supplement tasks routinely performed by humans (robots, drones and driverless cars) is expected to grow at an exponential pace.² In this regard, drones have come a long way – bringing with them the potential to disrupt traditional business models across industries. While the term “drones” is usually equated with the U.S. military fleet of unmanned vehicles used for surveillance purposes, it is finding a home in commercial enterprises. Drones are well suited for commercial use. These lightweight, hand-operated devices with high-resolution cameras and recording devices can perform a variety of functions, such as taking pictures and videos, sharing information in real time, and navigating independently via location intelligence services (see Figure 1). Present-day drones have long operational duration and can be run using energy-efficient technologies, such as solar energy.³

Drones have complemented human efforts for many years – serving as “eyes and ears” in the sky to effectively and efficiently execute various tasks. Their capabilities, which extend beyond those of mobile devices such as smartphones and tablets, allow them to:

- Quickly and easily capture images and videos that are typically difficult to obtain – with minimal human involvement and better image quality.
- Perform well under challenging conditions such as inclement weather – virtually eliminating risk of injury to humans.
- Enable organizations and people to share and analyze information in real time to make faster, more knowledgeable decisions.

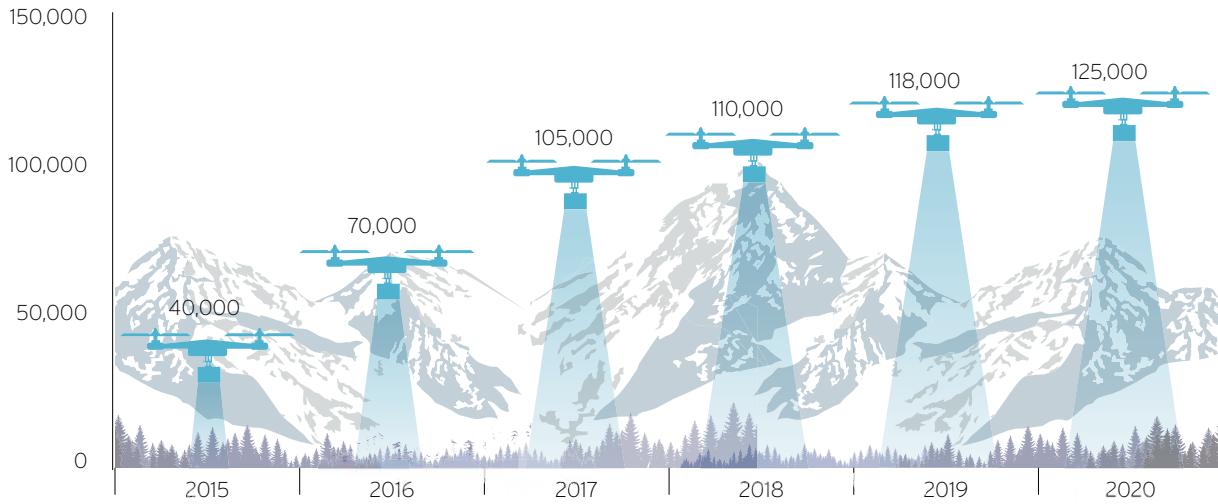
Drones Overhead



Figure 1

The use of drones could dramatically transform the way monitoring and surveillance is conducted in large and inaccessible locations. This specific application has already garnered significant interest before widespread commercial use. In fact, roughly 40,000 drones are projected to deploy in 2015 (see Figure 2).

Projected Annual Sales of Unmanned Vehicles



Source: Association of Unmanned Vehicle Systems International.⁴

Figure 2



Amazon Air Prime for Package Deliveries.
Photo Courtesy of www.amazon.com.



Although much is expected from drones, long-term commercial success will depend on overcoming several challenges:

- **Integrating artificial intelligence and augmented reality into drones.** This capability will allow drones to function more independently, and factor in historical information captured from videos and still images for better analysis.
- **Incorporating audio and text with the videos and images captured in real time.** This will enable the drone operator or specialist to provide synced voice dictations and capture notes.
- **Defining regulations by the FAA regarding the use of drones for commercial purposes.** The FAA, which governs the operations of unmanned vehicles such as drones, is in the process of developing guidelines for drones' widespread commercial use.
- **Resolving privacy concerns around drones flying over backyards and/or identifying drivers exhibiting poor driving behaviors.** Based on a Monmouth University poll, approximately 42% of Americans are very concerned about their privacy due to commercial applications of drones other than search and rescue.⁵



Quick Take

Commercial Drones at a Glance

Drones are distinguished by the following key features:⁶

- Lightweight units typically range from two to 15 pounds, with the ability to easily fit in the back of a car.
- Highly efficient propulsion systems enable quiet hover capability and flight durations typically range from around 40 to 200 minutes.
- Dual forward and side-look high-resolution color and thermal imagery cameras with image stabilization are ideal for video recording during day and night.
- Line of sight ranges from 0.5 miles to 10 miles.
- Requires minimal use of runway strips, with options for vertical take-off and landing (VTOL).
- Data connectivity is typically through low-power, digital, wireless and video links.



Source: AeroVironment, Inc
Figure 3

Cross-Industry Transformation

Although drones have yet to enter the mainstream consumer marketplace, some companies are exploring how this technology can transform their business. As of October 2013, the FAA had received more than 80 applications from entities seeking to use drones, including law enforcement agencies.⁷

Below are some examples of how drones can be put to use:

- **Consumer product delivery.** Starting next year, Amazon plans to use drones to deliver packages to customers within 30 minutes of order as long as the delivery address is within 10 miles from a distribution center.⁸ Domino's has also started testing the "DomiCopter" to deliver hot pizzas to its customers.⁹ Along the same lines, UPS is evaluating and testing different approaches for package delivery using drones.¹⁰
- **Oil and gas.** To monitor its Prudhoe Bay Alaskan oilfields, British Petroleum is using drones to generate three-dimensional maps of the field's roads and pipelines to pinpoint problems and analyze how they should be repaired (e.g., quantity of gravel required). The drones are also used to detect oil spills, monitor the coastline and terrain, and map the landscape. In one mission, drones assisted drivers in moving 3.5 million-pound drill rigs on roadways with low visibility conditions by providing high-resolution 3-D models of the road.¹¹
- **Search and rescue.** Datron is a leading manufacturer and supplier of tactical military and public-safety radio equipment. The company's 2.5-pound drone, equipped with a camera, can climb up to 1,500 feet and has a two-mile radius to capture images.¹² It is designed to help firefighters obtain information on accident locations – insights that are factored into tactical and operational decisions to help ensure that firefighter safety is not compromised.
- **Agriculture and crop management.** Drones with advanced sensors and imaging capabilities are giving farmers new ways to increase yields and reduce crop damage. Drones can provide farmers with two detailed views. First, seeing a crop from the air can reveal patterns that expose everything from irrigation problems to soil variation and even pest and fungal infestations that are not apparent at eye level of sight. Second, airborne cameras can take multispectral images capturing data from infrared and visual spectrums, which can be combined to spot the differences between healthy and distressed plants and improve crop management.
- **Media and entertainment.** More and more, news reporters are using drones to capture footage during sporting and other media events. Journalists, photographers and even film-camera personnel are increasingly leveraging small commercial drones to shoot videos and photos. For example, in one video produced by a German filmmaker in collaboration with eGarage,¹³ drones were used to look inside the country's "go-kart subculture." Conventional cameras were used for on-the-ground portions of the video, while drones were enlisted to capture awe-inspiring aerial race segments.

As other industries explore employing drones to increase efficiencies and safely obtain quality information, we believe the time is right for insurers to consider the first-mover opportunity this technology presents. With drones poised for commercial use, insurers could use them specifically to help reduce operational costs and gather better-quality information. This could help improve the productivity, efficiency and effectiveness of field staff (e.g., claims adjusters and risk engineers), and improve the customer experience by resolving claims faster, especially during catastrophic events. The scenarios on the following pages describe how drones can be a game-changer for insurers.



Use Case #1: Improving the Productivity, Efficiency and Safety of Property Claims Adjusters

When appraising property claims, claim adjusters typically encounter hazardous situations. They often have to climb scaffoldings and ladders to assess rooflines, ice dams and chimneys. For complex fire investigations, adjusters often rent scissor lifts and fire trucks to better evaluate an incident and determine the origin and cause of fires. In the case of water damage, much effort goes into tracking leaks and other sources of water damage. The risks that claims adjusters face during the winter include slippery surfaces and harsh weather.

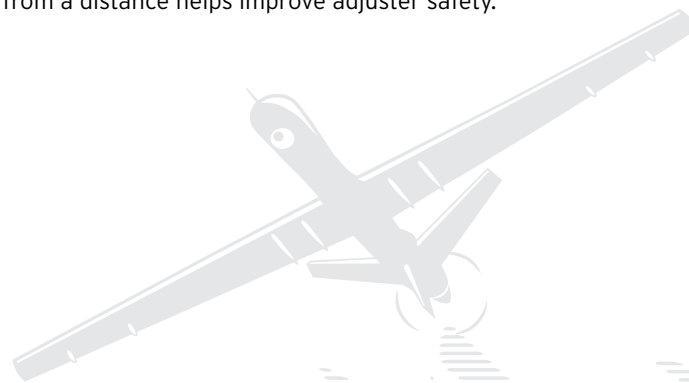
During an appraisal, adjusters must also interview people, take notes, and use a point-and-shoot camera to take photos. Consequently, they must carry numerous items, such as a digital camera, measuring devices, a ladder, a notepad and a tool kit.

Mobile devices and tablets have been introduced in an attempt to reduce the number of devices that claims adjusters must bring with them. However, these options do not resolve issues such as being able to easily obtain pictures of a roof or the interior of large warehouses.

Drones have the potential to significantly change the way property adjusting is performed. Easy portability, navigation and the ability to take high-resolution videos and photos make drones the ideal solution for supplementing claims adjudication, since adjusters would no longer need to climb dangerous ladders with a point-and-shoot camera in one hand and a notepad in the other.

Drones also enable adjusters to get very close to a roof, zoom in to questionable areas and analyze details to understand the cause of loss – all without disturbing the scene. Thanks to their infrared cameras, drones are highly accurate when it comes to detecting potential water and air leaks – often a very time-consuming process. This capability could save significant time, while improving the productivity and efficiency of claims adjusters by approximately 40% to 50%, in our estimation.

Using drones, field adjusters would have easy access to remote specialists, such as special investigation unit staff or total-loss professionals, who can view videos and photos that are transmitted in real time by the drones. Specialists could have a first-hand look, enabling more accurate decision making. Drones are especially beneficial when properties have more than two stories.¹⁴ Given the precision of photos taken by drones, the overall quality of the claims adjudication process can improve significantly. Moreover, the ability to operate drones from a distance helps improve adjuster safety.



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Use Case #2: Enhancing the Productivity of Risk Engineers

As part of property and liability risk assessments, risk engineers travel from one location to another to conduct risk-assessment surveys, gather information, and produce risk-assessment reports for underwriters and clients.

Most often, the data collected in the field has to be re-keyed into different applications – a task that is not only tedious, but can also negatively affect productivity and efficiency. Most risk-assessment or loss-control requests originate from underwriting or claims departments. Delays in producing high-quality reports often result in incorrect risk selection/pricing or increased claim costs.

As noted earlier, some carriers have provided mobile devices (such as tablets) to their field engineers; however, the time needed to complete a risk assessment survey has not changed significantly, since field personnel must still climb ladders and scaffoldings to inspect properties.

With the availability of drones, a generalist, rather than a specialist, can be sent to the field to assess risk. The generalist can easily navigate the drone through the property and capture videos and photos. Voice dictations can serve as notes, which help create accurate and timely reports. Drones also enable multiple specialists to actively participate in the survey, from anywhere. With access to a real-time view, specialists can provide instructions to the field engineer, or use the remote control feature to zoom in or pan out to obtain high-quality visuals. This eliminates the need for multiple site visits, and significantly reduces the cost and turnaround time for completing risk-assessment reports. The use of drones will also make the process of capturing photos and videos easier – even on terrains that are difficult to navigate.

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Use Case # 3 Improving the Customer Experience During Catastrophes

It is no secret that the frequency and severity of catastrophes is rising in the U.S., as well as worldwide. Hurricanes and tropical storms make up around 40%¹⁵ of insured catastrophic losses. In most scenarios, catastrophe (CAT) claims adjusters encounter damaged and blocked roads, fallen trees, broken power lines, debris and other safety hazards they must navigate to visually examine and evaluate losses.

With the help of CAT models and CAT vans, carriers have been able to send claims-adjusting teams to affected areas within hours of a disaster. However, they are still hampered when it comes to assessing and handling large numbers of claims within a short period of time.

According to Labor Statistics, with around 20%¹⁶ of the insurance workforce at 55 years and older, a significant portion of the industry is preparing for retirement. This means that over the next 10 to 20 years, the P&C insurance industry could face a talent crunch when looking for experienced adjusters.

Given the increasing number of catastrophes, the limited availability of claims adjusters and the high number of claims, insurers face some tough challenges when it comes to managing the customer experience and settling claims in a timely manner. When a tornado hit Joplin, Missouri, it took roughly three days for adjusters to locate the perimeter of loss due to access issues; moreover, it took an average of 10 to 14 days¹⁷ to resolve homeowners' claims.

Drones can help overcome this problem by accelerating claims adjudication. Given their portability and their ability to quickly take videos and photos using latitudinal and longitudinal coordinates, drones can reduce claims settlement time and thereby improve the customer experience. These devices can quickly locate insured locations using built-in GPS locators, evaluate the ground situation through sensors, take high-resolution photographs and send information back to adjusters for preparing estimates – all within a compressed timeframe.

Since drones can cover large areas of property in a short span of time, the number of adjusters needed in the field can also be reduced – removing the operational stress of employing and deploying large numbers of claims adjusters. Equally important is the fact that drones allow adjusters to remain in a safe area during the claims adjudication process – minimizing their exposure to accidents.



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Use Case #4: Reducing Fraudulent Agricultural Claims

Although only a few insurance carriers participate in crop insurance, it is the single largest source of financial protection for farmers. In 2012 alone, 280 million¹⁸ acres were insured under crop insurance.

One of the major causes of loss protected by crop insurance is drought. In 2012, crop insurance indemnity claims payout was around US\$17.4 billion.¹⁹ During claims adjudication, adjusters are required to audit the farm to validate if the crop can be sent for silage. As drought hits the crops across the agricultural belt of the U.S., farmers sometimes have to wait for days before an adjuster can come to effectively inspect the farmland – a situation that can result in lost revenue for the farmer. Furthermore, in this type of coverage, there is a significant potential for fraudulent claims; recently, a fraud amounting to around US\$100 million²⁰ was detected.

Drones can also be used effectively in crop insurance – not only to determine the actual cultivatable land, but also during the claims process to understand the extent of loss and the actual yield. Drones equipped with high-precision cameras can help adjusters understand the true health of a field in a color contrast. Also, due to their ability to cover distances quickly, drones can significantly reduce the time it takes to settle claims – from days to hours.

Based on weather trends, drones can be proactively positioned in areas of high-claim activities. The moment a claim comes in, the nearest available drone can be assigned to inspect the claims site, thus increasing the accuracy of the information captured. Since drones can relay information back to remote specialists in real time, more claims can be resolved within a shorter time period.



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Looking Ahead

As technology evolves, it will become increasingly vital for companies to adapt to technology advances or risk losing business to more future-focused competitors – something most insurers can ill afford during periods of sluggish growth.

Drones promise to be the next disruptive technology, with the potential to dramatically alter business conventions by introducing new ways of working. As noted in the previous pages, the property and casualty insurance industry can benefit significantly from the use of drones, especially in the areas of claims adjudication, risk engineering and catastrophe claims management.

Drone enhancements such as artificial intelligence, augmented reality and integrating audio, text and video already exist in some shape or form. Insurance carriers should expect to see the adoption of drones increase significantly as these features are integrated into standard drones, and as regulations for commercial use of drones are defined.

As insurance carriers build business and technology use cases and the necessary architecture and services, they must consider not only how and where drone technology fits into their digital roadmap, but also how the operating model can be enhanced to deliver optimal benefits for the business and its customers. We believe that now is the time for insurance carriers to begin strategizing and prototyping with claims adjusters and risk engineers to prepare for this technological innovation.

Footnotes

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