



Drones and the Opportunities They Offer

Emerging Risk Categories: Technological, Societal & Economic

*Key Industries Impacted: Government; Technology, Media & Communications;
Real Estate; Consumer Products & Services; Agriculture; Energy & Utilities*

Originally developed and used primarily for military and intelligence collection purposes, unmanned aerial vehicles, commonly referred to as “drones,” have evolved to offer a seemingly unlimited range of applications extending beyond the battlefield and aerial surveillance. From crop monitoring to oil and gas exploration, an increasing number of industries are tapping into the vast potential that drones bring to the skies. By the year 2020, the Federal Aviation Administration (FAA) projects that the amount of drone sales will triple, indicating a readiness by the market to embrace this disruptive technology and create a competitive advantage through its many unique applications.

The following graphic represents some of the current and anticipated uses of drone technology across key industries:

 Agriculture	Drone technology can assist with the tracking and management of crop health and production, including pest control, irrigation and seeding, along with the monitoring of livestock.	 Entertainment and Media	Drones can provide a variety of new vantage points for viewers and unique aerial shots for filmmaking, live sports coverage and broadcasting.
 Security and Law Enforcement	With a set of eyes in the sky, police and other law enforcement organizations can identify, monitor and prevent dangerous and hostile situations while maintaining a safe distance.	 Energy and Mining	Drones will allow companies to safely view and inspect stockpiles, pipelines and natural resource deposits, in addition to exploring and mapping new potential sites.
 Mapping and Real Estate	Drone videography and photography can provide agents and sellers with dynamic images for better marketing, and assist developers and appraisers with evaluating properties and parcels of land.	 Disaster Management and Emergency Services	Drones can quickly reach areas struck by disaster, such as a tsunami, hurricane, flood or avalanche, aid in search-and-rescue operations and deliver emergency supplies to stranded communities.
 Retail and E-Commerce	As an exciting alternative to traditional shipping and delivery mechanisms, drones have the ability to transform the way retailers and consumers send and receive a variety of goods, including groceries, apparel, household items, and even medicine.	 Environmental Research and Conservation	From the monitoring of coastline erosion to the tracking of endangered animals, drone technology can further a variety of environmental research and conservation initiatives.
 Infrastructure Monitoring	Drones are an effective means by which utility companies and local governments can perform aerial inspections and support maintenance of high-voltage powerlines, roads and bridges.	 Insurance	Drones can help property adjusters assess commercial and residential property damage in a disaster zone quickly, from the convenience and safety of an off-site location.

Key Considerations and Implications

As with any emerging and transformative technology, the clear benefits that drones present can be clouded by questions and concerns raised by their large-scale implementation. As the market for drones expands and new applications are explored, companies, governments and others will need to consider how to incorporate this complex technology into our skies safely and responsibly, without restricting its potential.

- **Regulation:** As the popularity of drones skyrockets, especially in the commercial sector, policymakers are being forced to develop and implement legal and regulatory frameworks quickly to govern the use of drones. On June 21, 2016, the FAA finalized the first operational rules for routine, non-hobbyist use of drones weighing

less than 55 pounds. Considered by the FAA to be a first step toward fully integrating the use of commercial drones into the American airspace, the rules aim to reduce the risks to other aircraft and stationary objects on the ground. Included in the set of rules are key restrictions on drone use, such as permitted hours of operation, height and speed limitations and other operational requirements. These new regulations are scheduled to take effect in August 2016, and additional rules are expected to be proposed in the coming years, at both the federal and state levels. Companies will need to examine and monitor carefully this fluid regulatory environment as they tap into the vast potential of drone technology for applications suited to their respective business models.

- **Safety:** While drones inherently remove the danger to a human pilot aboard an aircraft, other obvious safety concerns arise. Despite being controlled from the ground, by either a computer or a person, drones still present a threat of collision, either accidental or intentional, with other aircraft or with structures on the ground. In May 2016, the European Aviation Safety Agency initiated a study to assess the risks and potential damage from drone collisions with airliners and other aircraft. Furthermore, as pieces of programmable technology, drones are susceptible to corruption or hacking, even while in flight, raising concerns about potential terrorism. With 7 million commercial and civilian drones expected to be flying the U.S. skies by 2020, a potentially catastrophic accident is waiting to happen, unless appropriate measures are taken to manage safety risk.
- **Privacy:** Drones, which typically carry video and sometimes sound equipment, are raising concerns about intrusive aerial surveillance and making personal privacy and civil liberties the topics of heated discussions. Traditional barriers meant to demarcate physical property and safeguard privacy, such as fences, can be easily circumvented by drones. The privacy implications resulting from the use of this technology to penetrate airspace will need to be carefully and adequately addressed, taking into account the heightened sensitivity around this subject.

As [incidents continue to arise](#) from rogue drone operators invading sensitive airspace and private property, interfering with efforts of California firefighters and flying dangerously close to airports, we can be sure we haven't heard the last word on the related questions and concerns. The benefits and risks of drone technology will command the attention of policy makers in the months and years to come as companies leverage the technology in their operations.

Where to Learn More

"DOT and FAA Finalize Rules for Small Unmanned Aircraft Systems," [press release], Federal Aviation Administration, June 21, 2016: www.faa.gov/news/press_releases/news_story.cfm?newsId=20515.

FAA Aerospace Forecast: Fiscal Years 2016-2036, Federal Aviation Administration: www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-36_FAA_Aerospace_Forecast.pdf.

"U.S., European Regulators to Study Drone Risk to Commercial Aircraft," by Robert Wall and Andy Pasztor, *The Wall Street Journal*, May 4, 2016: www.wsj.com/articles/europe-aviation-watchdog-to-study-drone-risk-to-commercial-aircraft-1462378447. [Subscribe or sign in.]

"Drones For Good (Infographic)," ZDNet, Feb. 11, 2015: www.zdnet.com/article/drones-for-good-infographic/.

Contacts

Cory Gunderson
Managing Director
+1.212.708.6313
cory.gunderson@protiviti.com

Jim DeLoach
Managing Director
+1.713.314.4981
jim.deloach@protiviti.com

Matthew Moore
Managing Director
+1.704.972.9615
matthew.moore@protiviti.com

Jonathan Wyatt
Managing Director
+44.207.024.7522
jonathan.wyatt@protiviti.co.uk

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