

Smart Commercial Drones: -- Markets Reach \$27.1 Billion By 2021**Next Generation Smart Commercial Drones:
Sense and Avoid Technology Supports Markets That Change Rapidly**

LEXINGTON, Massachusetts (August 31, 2015) – WinterGreen Research announces that it has published a new study *Smart Commercial Drones: Market Shares, Strategy, and Forecasts, Worldwide, 2015 to 2021*. Next generation Smart Commercial drones leverage better technology, they support high quality video camera work in every industry. The drone technology is evolving: better stability, better reliability, better navigation, softer landings, longer flights, better ability to carry different payloads. Affordable, useful camera drones are available. The study has 881 pages and 415 tables and figures.

Drones are smart when they have sensors and software that permits automated response to camera or sensor input. Smart drones are evolving the ability to interconnect to smart phones, but drones are smart even without smart phone guidance systems. Smart commercial drones connect seamlessly and securely to the Internet and to each other.

Smart commercial drones have a computer inside. They are easy to fly, maneuverable remotely, contain sensor logic. Soon all smart drones will have computer driven collision avoidance technology. Remote operation occurs in the context of a workflow and sensors. Cameras are improving dramatically to permit management of video and picture taking that is realistic and detailed.

In this study, we illustrate how drones achieve doing work even though they are remotely controlled. Drones are expected to provide billions of dollars in economic growth. The economic benefits are significant. Developing countries are more receptive to drones than the U.S. is. In the US the FAA early on granted one exception, then granted 8 commercial UAS exemptions, then 10 more. It has by now granted 1,000 exceptions, but this does not a market make.



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Steady, Sure Video Now Achievable from Drones

Smart commercial drones connect seamlessly and securely to the Internet and to each other. Smart commercial drone aerial vehicle (UAV) technology has reached a level of maturity that has put these systems at the forefront of aerospace manufacturing. Procurement around the world is adapting to drone availability.

Use cases are evolving rapidly for video, specialized video, targeted video, and package delivery systems. The emergence of stable flight collision avoidance systems makes market maturity a certainty. Use in the global war on terrorism has demonstrated unique usefulness for military intelligence, surveillance, reconnaissance and communications relay achieving 3 million hours of operation. Small commercial drones are being used to shoot video from the air, proving the viability of drone camera systems.

The relatively low-cost of smart commercial drones make them work for civilian applications. Law enforcement, mapping, video making, movie making, environmental monitoring, and aerial survey are positioned as among many evolving compelling applications.

Drone aircraft are sophisticated and flexible. They take off, fly and land autonomously managed by a remote controller. They enable engineers to push the envelope of normal flight. Reconnaissance drones can fly for days continuously. Remote, ground-based pilots can work in shifts.

New technology from Intel and others provides collision avoidance capabilities actually works. This bodes well for market development.

Smart commercial drone systems promise to grow significantly, approaching the growth paths of PCs and smart phones. New technology is able to achieve a significant improvement in workflow for every industry, starting with agriculture, creating a smart drone commercial market presence. US Army unmanned aircraft systems have flown 3 million flight hours giving commercial drones market credibility.



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Quantities of fielded smart drone systems have been increasing for those companies with attractive price points. Video drones continue to proliferate. Police departments, the oil and gas industry, border patrol, and utilities are all using commercial drones. Units used for agriculture have diverse applications from spraying, lifting trays of flowering plants, to rounding up cattle.

A common issue with UAV platforms is the need to optimize these aircraft. UAV are used to carry useful payloads. These platforms are flexible as to payload, permitting interchangeable or additional sensors and other electronics, extra fuel or weapons systems. The sole function of an unmanned aircraft is to get to a target location, perform a task, and then return in the most efficient and cost-effective way. Without a pilot aboard, the return trip is optional. Light weight is central to UAV design.

Drones represent a way to use air to travel faster and at less cost. The market is divided between military and commercial drones. Military drones represent the future of the national security presence for every nation. Increasing technology sophistication and lower costs are achieving dramatic market shifts.

Smart commercial drones are set to build highways in the sky. The market has evolved past the early adopter stage as the industry finds ways to build navigation infrastructure that is safe. The mature collision avoidance systems from Intel and others are part of what make the smart commercial drone market work.

Drone unmanned aerial vehicle (UAV) technology has reached a level of maturity that has put these systems at the forefront of aerospace manufacturing. Procurement around the world is adapting to drone availability. Use in the global war on terrorism has demonstrated unique usefulness for military intelligence, surveillance, reconnaissance and communications relay.

Removal of the need for an onboard pilot ushers in an era of low cost drone aerial craft. The drone elimination of the need for human support systems on aircraft dramatically reduces the aircraft's size, complexity, and power requirements. The drones effectively reduce overall program cost, development time and risk. Many advanced flight technologies are for piloted craft. These are initially tested using unmanned subscale demonstrators.



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Designers work to simplify the aircraft's configuration, making systems that are adaptable to different payloads on different days. Drones can be redesigned and tested at reduced risk than with development of manned aircraft. Drones allow configurations that would be impossible or impractical for human occupation. Drones are becoming easier to control.

Parrot S.A. Bebop Commercial Drone



Source: Parrot S.A.

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Drones represent a way to use air to travel payloads faster and at less cost and to use video as a way to do work and be entertained. The market is divided between rotor and fixed wing smart commercial drones, rotor craft dominate the market representing 75% of the market revenue. Smart commercial drones represent the future of automated process for camera applications. They are complimented by military drones that represent the future of the national security presence for every nation. Increasing technology sophistication and lower costs are achieving dramatic market shifts as investment in these parallel types of devices bring product maturity.



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Drone unmanned aircraft systems are achieving a level of relatively early maturity in this manner, having parallel markets. Fleets of unmanned aircraft systems have begun to evolve. The U.S. Army has achieved four million flight hours for its unmanned aircraft systems fleet. Unmanned aerial systems have good handling characteristics. Drone UAS units are designed to support taking remarkable video using stable platforms. Other military drones perform high-speed, long-endurance, covert, multi-mission intelligence, surveillance, and reconnaissance (ISR) and precision-strike missions over land or sea.

According to Susan Eustis, leader of the team that prepared the study, “Quantities of fielded smart commercial drone systems of every size and description are set to increase. Every photo opportunity can be enhanced vis use of a smart drone. Drones will connect to smart phones. Drones can fly indoors. Smart commercial drones units feature a variety of camera attachments, sensors, and internal loads. Large 2,000 pound payloads are possible, package delivery is set to emerge as a significant sector. Electro-optical/Infrared (EO/IR) sensor, and an all-weather synthetic aperture radar indicators are maximizing long loiter capabilities and increasing the usefulness of smart commercial drones.

Smart commercial drones drone markets at \$3.4 billion in 2014 are anticipated to reach \$27.1 billion by 2021. This forecast number is arrived at by close examination of all the segment growth trajectories. Segments are, Agriculture, Oil and Gas, Border Patrol, Law Enforcement, Homeland Security, Disaster Response, Package Delivery, Photography, Videography. Each of these will grow at a different pace, depending on the use case effectiveness of the smart commercial drones. Commercial grade consumer video drones represent the largest revenue segment in 2015 and remain the biggest throughout the forecast period.

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Key words: Smart Commercial Drones, Military drones, Drones, Drone Unmanned Aerial Systems (UAS), Drone 3D Mapping, Drone Observation, Drone Border Patrol, Drone Package Delivery, Drone Video, Drone Photography, Drone Aerial Refueling , Military Drones, Autonomous vehicles, Autonomous systems, Drones Autonomous planes, Robotics UAS, Planes, Trains, Remote Control, Drone Surveillance, Drone Reconnaissance, Drone Intelligence, Drone Missiles, Drone Launchers video, specialized video, targeted video, and package delivery systems. The emergence of stable flight collision avoidance systems makes market maturity Agriculture Smart Commercial Drones, Oil and Gas Smart Commercial Drones, Border Patrol Smart Commercial Drones, Law Enforcement Smart Commercial Drones, Homeland Security Smart Commercial Drones, Disaster Response Smart Commercial Drones, Package Delivery Smart Commercial Drones, Photography Smart Commercial Drones, Videography Smart Commercial Drones



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