

▶▶▶ UNMANNED AIRCRAFT SYSTEMS

International industry development, growth, and investment over the past several years have allowed Unmanned Aircraft Systems (UAS) to evolve from remotely piloted vehicles with limited capabilities to semi and fully autonomous systems for commercial applications. There are some 100 U.S. companies, academic institutions, and government organizations developing over 300 UAS designs. Currently, the U.S. government uses unmanned aircraft for military combat, surveillance, and reconnaissance.

The UAS term is used because it includes the entire system (aircraft, data links, control station and other elements). UAS's also vary widely in size, shape, and capabilities. Some unmanned aircraft weigh 1,900 pounds and can remain aloft for 30 hours or more, because there is no need for them to land to change pilots. Some are 6 inches long. Others can perform dangerous missions without risking loss of life.

In its broadest context, there are three major market segments: military, civil government, and commercial. While market drivers and dynamics among these segments differ significantly, they share common objectives: to provide a service that cannot be accomplished by manned aircraft and/or to perform an existing manned operation at a lower cost. Because of increased interest and activity, UAS have the potential to become a major part of the commercial aerospace industry within the United States.

Federal agencies are planning to increase their use of UAS's. State and local governments envision using UAS's to aid in law enforcement and firefighting. Potential commercial uses are also possible, for example, in real estate photography or pipeline inspection. UAS's could perform some manned aircraft missions with less noise and fewer emissions.

Because the industry is in its infancy, forecasts of the number of units are relatively few and have considerable variation. Recent work by RTCA, Inc., has identified the drivers and impediments to future growth in the aforementioned three market segments and has included forecasts of the number of UAS units by market segment. The forecasts generally assumed that 1) commercial activities would not begin until 2018; 2) no significant technological or extraordinary demand would accelerate the introduction of UAS's; 3) costs of UAS systems would decline as the technology matures and as the scale of operations increases. Currently, the majority of UAS systems are operated by the military and have little impact on the NAS. However as the technology matures, increasing numbers of units will be operated by civil and commercial users, and could have greater impacts on the NAS. However the volume of units is relatively small – approximately 15,000 units by 2020 and 30,000 units by 2030.