The emergence of unmanned or remotely piloted aircraft systems for civil and commercial applications is among the most significant aviation advancements in decades. On almost a daily basis, new beneficial applications of this evolving technology are being demonstrated. While public perception of unmanned aircraft systems (UAS) has been mixed, the public debate is changing as more system uses emerge that create personal and economic benefits for the general population.

UAS technology is progressing on a global scale. Civil applications are emerging that highlight the positive contributions UAS can make in solving infrastructure limitations in remote locations and for disaster relief and response, public safety, agriculture, wildlife protection and environmental monitoring.

This technology development also presents challenges to aviation officials. The requirement to safely integrate routine operations into a globalizing airspace system requires innovative thinking and planning by regulators, system manufacturers and service providers. Yet, since 2007, when the U.S. Federal Aviation Administration identified a need to consider regulating unmanned aircraft operations in U.S. national airspace, progress toward the creation of regulations and certification requirements has been agonizingly slow.

Continuing uncertainty in the establishment of specific certification requirements, performance specifications, and operating limitations, and suitable radiofrequency spectrum have made the process of expanding the civilian use of UAS more difficult.

Despite these limitations, the worldwide market for civil unmanned systems is rising rapidly.
Civil Applications

Projections for worldwide UAS market growth are difficult to quantify given the sectors near explosive growth. It is clear that the market continues, according to the Teal Group, “…as the most dynamic growth sector of the world aerospace industry this decade.” And the civil market will continue to build as a part of the overall market.

In a 2014 study, the Teal Group estimated that UAS spending will “nearly double over the next decade from current worldwide UAS expenditures of $6.4 billion annually to $11.5 billion, and totaling almost $91 billion in the next ten years.”

UAS applications are predicted to include search and rescue, weather forecasting, firefighting, disaster response, precision farming, commercial fisheries, scientific research and wildlife protection, aerial photography, delivery of goods in areas with poor infrastructure, communications relay, infrastructure monitoring and emergency management – just to name a few.

In fact, many of these applications are currently being employed.

The benefits promised from domestic UAS deployments are tangible and considerable: more accurate weather forecasts, safer streets, healthier and more abundant crops and fewer civilians engaged in dangerous jobs such as search and rescue missions and firefighting.

Misperceptions

It’s tough being a “drone,” especially when the public doesn’t even recognize you for what you are: an unmanned aerial vehicle under human control through a sophisticated ground-based control system. It will be difficult to advance substantive policy changes that enable growth of this highly beneficial technology. Starting the conversation begins with addressing myths and misperceptions:

**MYTH: UAS are dangerous to manned aircraft and people on the ground.**

**REALITY:**

Industry is advancing technology that enables a UAS operator to have a similar situational awareness to a pilot physically sitting in the cockpit. In fact, there are cases in which the UAS operator has better situational awareness. This capability, called “sense and avoid,” will demonstrate that UAS can be operated safely in the same airspace as manned aircraft.

**MYTH: They are best suited for military use.**

**REALITY:**

Not true. They are being used all over the world for agricultural applications, wildlife and public lands conservation, search and rescue … the list of uses beneficial to society are growing every day. Agricultural applications in particular are showing great demand for uses such as safe crop spraying or flying sensor packages for inexpensive evaluations of crop health.

**MYTH: UAS are a privacy threat.**

**REALITY:**

Privacy concerns associated with UAS are similar to those related to any platform capable of capturing imagery and other forms of surveillance. But unlike smart phone videos or images from other sources, UAS surveillance applications are expected to be highly regulated – by government agencies and existing laws protecting personal privacy.
What is needed?

The impediments to more widespread civil and commercial UAS use include some technologies and policies that have not yet adapted to unmanned flight, pre-emptive restrictions on UAS flights, the current inability for UAS to operate in controlled airspace, and spectrum allocation.

Spectrum for Beyond-Line-of-Sight

UAS communications, both for command and control and the transmission of payload data, require an allocation of the electromagnetic spectrum, which is already in very short supply. Insufficient spectrum for beyond-line-of-sight operations would significantly constrain a sizeable segment of this potential market.

While spectrum allocations for radio line-of-sight communications for UAS operations have been secured globally, work toward securing allocations for those requiring radio beyond-line-of-sight communications via satellite continue.

A Way Forward

The United Nations International Telecommunications Union (ITU) is working with the International Civil Aviation Organization (ICAO) to provide a safe, global communications infrastructure for UAS operations. One option presented to the ITU by the U.S. government – with industry support – is the use of fixed satellite service, which can safely support the projected growth of the UAS market for years to come.

Unmanned – Aircraft Systems

A Bright Future

We are in the early stages of recognizing the magnitude of the societal benefits of UAS to both developed and emerging states. So far, technological advances, human ingenuity and entrepreneurial initiatives have resulted in many applications that were not envisioned just a couple of years ago. Policy and regulatory matters worldwide may prove to be the most significant challenges to overcome. Under the leadership of ICAO and ITU, member countries can work to address many of the remaining challenges.

We must seize the opportunity to advance the cause of civil UAS at the upcoming World Radiocommunication Conference 2015. Through a risk-based approach and utilizing the expertise of ITU and ICAO, we will be able to take a great step toward the ultimate objective... safe and routine operation of UAS in the increasingly global air space.