

What is an Unmanned Aircraft System (UAS)

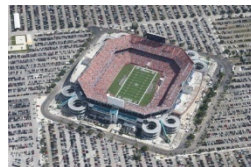
- There is nothing unmanned about an unmanned system!
- What are they called:
 - Unmanned Aircraft System (UAS)
 - FAA and Congress
 - Unmanned Aerial Vehicle (UAV)
 - Remotely Piloted Aircraft Sys (RPAS)
 - ICAO and Air Force
- Public perception is somewhat skewed:
 - Drones
 - Military
 - Hostile
 - Weaponized
 - Autonomy



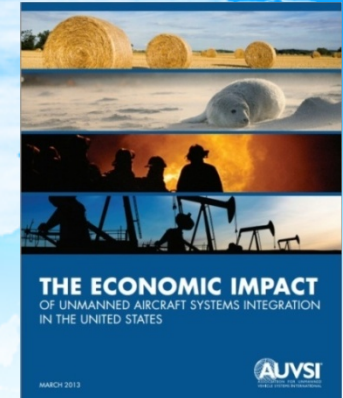
Unmanned Systems Potential Applications



Border Security	Industrial Logistics	Search & Rescue
Arctic Research	Pollution Monitoring	Volcanic Research
Firefighting	Storm Research	Pipeline Monitoring
Flood Monitoring	HAZMAT Detection	Filmmaking
Crop Dusting	Asset Monitoring	Crowd Control
Mining	Event Security	Aerial News Coverage
Farming	Port Security	Wildlife Monitoring
Aerial Photography	Construction	Forensic Photography
Real-estate	Cargo	Power line Surveying
Communications	Broadcasting	Damage Assessment



UAS Economic Potential



■ AUVSI's 2013 Economic Report:

- The UAS global market is currently \$11.3 billion
- Over the next 10 years, the UAS global market will total \$140 billion
- The economic impact of US airspace integration will total over \$13.6 billion in the first three years and will grow sustainably for the foreseeable future, cumulating to over \$82.1 billion between 2015 and 2025

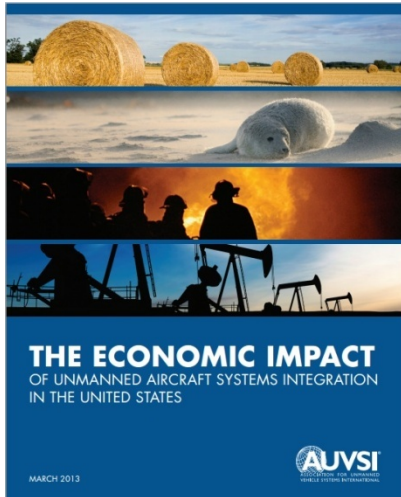


UAS Industry on the Rise

Precision agriculture totals approximately **80%** of the potential commercial market for UAS

- Drought management
- Disease detection
- Watering
- Spraying pesticides

UAS in agriculture has the potential to have an **\$11 billion** economic impact in the first three years following integration. Almost **\$66 billion** over 11 years.



“Precision application, a practice especially useful for crop farmers and horticulturists, utilizes effective and efficient spray techniques to more selectively cover plants and fields. This allows farmers to provide only the needed pesticide or nutrient to each plant, reducing the total amount sprayed, and thus saving money and reducing environmental impacts.”

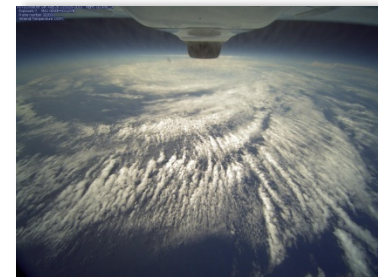
Recent Examples of UAS Use

- UAS credited with first live save in **vehicle rollover** in **Canada**
- **Japan** is using unmanned helicopters for **spraying crops** for pest control
- Predator B aircraft provided aerial surveillance for **Yosemite National Park** wildfire
- Predator surveyed **flood waters** in the upper Midwest
- **USGS** used small UAS to monitor Sandhill cranes, Pygmy rabbits and several other **wildlife species**
- **NOAA** using UAS to **monitor ice** and **weather conditions** in the U.S. Arctic, in addition to **wildlife monitoring**
- **Police** using small UAS for **public safety**



Recent Examples of UAS Use

- Aurora Flight Sciences is using the Skate UAS to study **archeological sites** in **Peru**
- **Nepal, Russia, South Africa, Thailand** testing UAS to save **endangered animals** from **poachers**
- **Nicholls State University** testing UAS to **map coastline**
- **Colorado State University, Univ. of Oklahoma** testing UAS to fly into **tornados**
- **NASA** launched three UAS into smoke plume of Turrialba volcano in Costa Rica
- **Kansas State University, Virginia Tech University** using UAS for **agriculture** research
- **New Caledonia** using UAS for **nickel ore mine** mapping surveys



Emerging Commercial Uses

- UAS hold tremendous potential to change the way that industries operate
- UAS already utilized commercially in other countries:
 - In Germany, Deutsche Post has used UAS to deliver prescription drugs
 - A Shanghai company uses them to convey cakes
 - Australian textbook-rental company, Zookal, plans to deliver books using UAS
 - Overseas, used to film scenes in "Skyfall," the latest James Bond film, as well as the Harry Potter and "Mission Impossible" films
 - British company easyJet recently announced plans to use UAS to inspect aircraft

