

Virginia Information Technologies Agency



# Growing An Industry: Virginia Unmanned Systems Commission

## Emerging and Innovative Technologies

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**2016 Commonwealth of Virginia NASCIO Award Submission**  
**Project: Growing an Industry: The Virginia Unmanned Systems Commission**  
**Category: Emerging and Innovative Technologies**

**Executive Summary**

As an emerging technology industry, unmanned systems (UMS) represent tremendous economic growth potential. Virginia offers many advantages to UMS firms, including air, land and sea access and a robust innovation infrastructure.

The industry is in a very early stage, characterized by small entrepreneurial firms, uncertain and evolving regulatory environments, few standards, and significant experimentation with technology and business models.

Prior to 2015, Virginia had no organized effort to foster UMS industry growth. Recognizing synergies and potential, the commonwealth centralized its efforts and gathered an impressive cross-section of leadership to guide the fledgling industry.

The [Virginia Unmanned Systems Commission](#) was established by Gov. Terry McAuliffe's Executive Order 43 in June 2015 and includes state and local government and business leaders. The mandate aims to remove obstacles and prepare the way for industry growth, utilizing Virginia's innovation ecosystem. The initiative aligns directly with the Governor's policy priorities, including development of the New Virginia Economy.

The commission is co-chaired by the Virginia Secretary of Technology and also includes the Virginia Secretaries of Commerce and Trade, Education, Transportation, and Veteran and Defense Affairs, a Senator and a Congressman, and 11 prominent industry executives. The Executive Director is a senior employee of the NASA Langley Research Center, one of the many technology, government and defense interests that call Virginia home.

The final commission meeting in June 2016 will present actionable recommendations from four committees. Results span policy, regulation, venture capital, partnerships, workforce education, cybersecurity, and marketing. To ensure continuity of the initiative, a successor is a business-led 501(c)(6) organization.

Multiple Virginia agencies support the commission and include Virginia Departments of Aviation, Emergency Management, Motor Vehicles, Transportation, and the Virginia Information Technologies Agency, Virginia State Police, and Virginia Economic Development Partnership. Virginia higher education entities are creating UMS workforce development content. University-sponsored UMS research and a helpful compendium of business incentive opportunities are compiled in a new marketing report, "Unmanned Vehicle Systems in Virginia."

Through its UMS Commission, Virginia has successfully enabled alignment of government, business, educational and citizen interests, positioning the state as the first choice for this exciting new technology.

## Concept

Unmanned systems (UMS) represent an emerging technology industry and also a tremendous economic growth potential. The industry is in a very early stage, characterized by an abundance of small entrepreneurial firms, uncertain and evolving regulatory environments, few standards, and significant experimentation with the technology and business models.

Virginia is home to a unique combination of assets that position it to take a leadership role in UMS. These include an educated and technology proficient workforce, existing technology companies, and strong military and government presence.

Virginia's assets cover the three "domains" of UMS: air, land, and sea as well as ideal topographical and geographic attributes. Growth opportunities also arise for the technologies, cybersecurity, data analytics, and manufacturing capabilities necessary to create a highly vibrant and diverse UMS industry.

However, prior to 2015, Virginia had no organized effort to foster growth in the emerging UMS field. Recognizing a significant economic development opportunity, the commonwealth centralized its efforts and gathered an effective cross section of leadership to pinpoint and realize opportunities.

The Virginia Unmanned Systems Commission has a strong business and economic development focus. In addition to government representation, the commission includes a powerhouse of industry expertise and executives from large and small organizations including Volkswagen Group of America, Aurora Flight Sciences, Raytheon, Huntington Ingalls-Newport News Shipbuilding, Science Applications International Corporation, Virginia Tech Transportation Institute (VTTI), and the MITRE Corporation among others.

The commission has met three times and holds a final meeting in June 2016. With final recommendations due in June, deliberations have already produced results. Pro-UMS industry legislation, marketing, and workforce development and education are among areas exhibiting positive movement.

## Background

Most of Virginia's UMS work today began with its submission to a rigorous 10-month selection process between 25 proposals from 24 states, for award of an unmanned aircraft systems (UAS) research and test site by the Federal Aviation Administration (FAA). In December 2013, the FAA chose Virginia and its proposed test site at the Virginia Polytechnic Institute and State University (Virginia Tech) as one of six awards. The UAS test site put Virginia on the map as the designated east coast site for UAS research and testing.

As the site holder, Virginia Tech now leads a three-state coalition, the Mid-Atlantic Aviation Partnership (MAAP), with Maryland and New Jersey. This attention to UAS helped open the door to a broader commonwealth vision encompassing all three domains of unmanned systems (UMS) including air, land, and sea.

## Impact: Scope and Stakeholders

The Virginia Unmanned Systems Commission now can be rated as a highly effective tool to develop Virginia's environment for the UMS industry to take root and grow. The august stature of the commission itself is a strong indicator of Virginia's commitment. Ultimately, Virginia citizens will be the beneficiaries of this innovative 21<sup>st</sup> century economic growth.

Stakeholders include the Governor and directly, many of his Cabinet members, particularly his Secretary of Technology Karen Jackson. She has been instrumental in developing Virginia's UMS initiative since the earliest days of the FAA test site selection process. A growing list of executive branch agencies and the Virginia General Assembly, particularly through its 2016 legislative actions, now are in scope. Federal and local governments are included.

Educational interests and potential and participating students already are benefitting from development of new UMS coursework and other learning activities including research and development. Business interests have recognized the importance of the initiative to a wide range of existing and developing firms, including cyber and defense.

Through its creation by executive order, Virginia's Unmanned Systems Commission is one of Gov. McAuliffe's direct priorities. The work also embraces other executive priorities:

- Business Climate and Economic Development: Promote Virginia's competitive business climate to maintain the designation as the best state for business.
- Diversification: Attract businesses from new and growing fields of the 21st century economy. Targets include cyber security and biosciences.
- Innovation: Explore and pursue innovative strategies to increase government efficiency or to reduce government costs for needed services.
- Upgraded technology: Enhance current technology platforms and infrastructure while protecting all data
- Transparency: Collaborate across secretariats to improve citizens' access to government data and decision-making processes.

NASCIO priorities addressed include:

- Security and Risk Management – The intersection of cyber and UMS is enabled
- Enterprise Vision and Roadmap for IT – In this instance, the creation of a strategic plan and unification of common interests to launch innovative technology development.
- Consolidation - Operations have been streamlined to market centralized services.

## Impact: Significance and Benefits

Recommendation realized: Legislative restraint

Quickly, the commission established that an uncertain regulatory environment was a significant potential deterrent to industry growth. The commission's recommendations for policy and regulatory compliance influenced consideration of the matter in the 2016 legislative process.

The Secretary of Technology and Executive Director of the Commission undertook significant legislative outreach and education during the 2016 General Assembly. These actions contributed to passage of two UMS bills, House Bill (HB) 412 and House Bill 286. HB 412, for instance, provides that no locality may regulate the use of unmanned, privately-owned autonomous aircraft.

Eight bills addressed privacy and property rights were tabled until a future legislative session. These bills would have created a patchwork of local regulations and in some cases conflicted with federal regulations.

This legislative-executive consensus is very impactful to industry. It has kept Virginia a location that imposes no limitation on research or commercial and Department of Defense use of UMS beyond federal requirements, seen as essential for innovation in the nascent stage of this industry.

Recommendation realized: Create ongoing business and industry support

A new organization now is being stood up and will continue the UMS Commission's work, focusing on outreach, legislative advocacy, marketing and opportunity identification to foster growth of the UMS industry. The organization is projected to launch in summer of 2016 and is being formulated as an industry led and funded organization, rather than a government agency. The goal is to expedite formation and ensure sustainability across administration changes.

Recommendation realized: Create UMS-specific marketing tools

Communication planning has been integral to the commission's work. A first marketing report, [Unmanned Vehicle Systems in Virginia](#), was published in December 2015. Members of Congress, VEDP and others already use it to market UMS in Virginia. A first-ever marketing strategy has a June 2016 launch date. The Secretary of Technology led development of a [new website for UMS](#), which now generates roughly 400 unique sessions per month; 60 percent are new visitors.

Recommendation realized: Sponsor outreach activities

A Cyber-UMS Technology Showcase was held at John Tyler Community College in Chester, Virginia in September 2015. More than 170 people gathered for two days to discuss opportunities for the cyber community in UMS and to assist the UMS community raise awareness about the emerging cyber issues in UMS. The event included a live demonstration of a cyber-attack on state police cruisers.

A UMS Education Summit was held in Blacksburg, Virginia on March 14-15, 2016. It brought together over a dozen community colleges, universities, and other organizations to focus on development of the future UMS workforce pipeline. Industry leaders attended and expressed their current challenges and needs for UMS workforce.

### Benefit: Cybersecurity Focus

Executive sponsorship of the Commission by the Secretary of Technology brings together the challenges and opportunities in the realms of both cyber security and unmanned systems. These two communities exhibit intersecting needs, with significant Virginia strengths to support. Officials are aware of no other state with this comprehensive view of UMS and its relationship to other industries such as cyber security.

### Benefit: Cross-government Collaboration

NASA Langley Research Center provides a senior-level employee under the Intergovernmental Personnel Act Mobility Program (IPA) who serves as the Executive Director of the UMS Commission and is co-located in the Governor's Office with Secretary of Technology Karen Jackson. This IPA detail furthers the mutual regional economic development goals for the NASA Space Technology Mission Directorate and the Commonwealth.

Application funding was supported during the site application process through award of a \$2.6M Virginia Federal Action Contingency Trust (FACT) grant over three years, 2014-2016.

The application process and initial operation of the MAAP was a public-private working relationship including Virginia assets, community organizations such as the Hampton Roads Military and Federal Facilities Alliance and private industry.

### Benefit: New Automotive Initiative; Partnerships

A [governor's proclamation on June 2, 2015](#) announced designation of Virginia automated corridors for on-road testing. This effort to make Virginia a leader in researching and developing automated-vehicle technology includes a new partnership between VDOT, DMV, the Virginia Tech Transportation Institute (VTTI), Transurban and HERE to create the Virginia Automated Corridors. An August 2015 *Washington Post* opinion column recently noted, ["Virginia is in the driver's seat on piloted cars."](#)

### Benefit: Expansion of UAS Testing Areas; Involvement of Localities

The UMS initiative and allied economic development efforts reach to the local level through the implementation and now expansion of a UAS testing corridor. The MAAP has led establishment of first a 200-square mile test area. As of May 1 this area has been expanded to well over 4000 square miles, permissioned for testing of vehicles, sensors, beyond line of sight flight, and business models for UAS inspection of linear infrastructure.

### Benefit: Power line and pipeline inspections

Virginia now supports development of this beneficial UAS use. Letters of support for acquisition of venture capital have been sent for a firm that is building the coalition to conduct this work. The Secretary of Technology worked within the legislative process to include funds in the FY2017 budget to equip the expanded testing area with infrastructure to support beyond



line of sight testing. Her office and the commission's director also have been working with local officials to provide a welcoming environment. A consortium including Dominion Resources, Colonial Pipeline, and Exxon Mobile already have joined together to develop UAS solutions for their operational needs.

#### Benefit: Leadership in UMS applications for first responders

An initiative has begun to train and assist first responder units in UAS use for emergency situations. Requirements are being established for a new data base of qualified UAS operators that have been trained in the support of emergency services, to be managed by the Virginia Department of Emergency Management. The Secretaries of Technology and Public Safety and Homeland Security are collaborating. Expected implementation is late 2016. The benefit is expected to be an operational system to enable lifesaving missions by UAS in Virginia.

#### Innovation: UMS Firsts in the Nation

On a warm day last summer, a small drone helped Virginia make history. The first approved medical package that met Federal Aviation Administration (FAA) approval was delivered to the Remote Area Medical Free Clinic in rural Wise, Virginia in July 2015. The significance of this event is illustrated by the recent acceptance of the historic vehicle into the collection of the Smithsonian's National Air and Space Museum.

- The drone's ease of access highlighted possibilities foreseen for UMS technology, particularly for citizens in rural, remote and sometimes mountainous or marshy terrain. See <https://www.youtube.com/watch?v=K4jRfQenabI&nohtml5=False>
- The first news interview of a governor via a UAS also took place during this event. See <https://www.youtube.com/watch?v=KXMIcaND0Vc>

#### Successful Alignment through Collaboration

Virginia has now promoted synergy between all domains of unmanned systems including UAS, automated automobiles, and maritime systems. Common needs exist across these domains including education and workforce, policy and regulatory, incentives, and supporting industries such as cyber, data services and business services.

Virginia has the significant expertise and assets to contribute to all domains, with the MAAP for UAS, VTTI leading the way in making Virginia a hub of automated automobile development, and the Hampton Roads region contributing its maritime environment, industry and plethora of civil and defense users. Now, those assets have begun collaboration.

Through its UMS Commission, Virginia has successfully enabled alignment between government, business, education and citizen's interests. It has positioned itself as the first choice among the United States for this exciting new technology.