



# UNCREWED SYSTEMS

Industry leaders, researchers, and partners in Virginia's New River Valley have collaborated to promote and strengthen the region's Unmanned Systems (UAS) sector. Area companies such as Aeroprobe and MOOG helped form the Ridge and Valley chapter of AUUVSI, (Association of Unmanned Vehicle Systems International) the leading international trade group related to unmanned aerial vehicles.

**\$40 MILLION IN R&D EXPENDITURES** -Virginia Tech Transportation Institute (2017)

**2 FAA AERIAL TEST SITES** -Mid-Atlantic Aviation Partnership

**3.4 MILES OF SMART ROAD TEST TRACK** -Virginia Tech Transportation Institute (2017)

**"BEST NEW ENTRY" FOR UAS PROJECT (NRCC)** -American Helicopter Society Competition

**#30 LEADING LOCATION FOR NEW & EXPANDING BUSINESSES** -Area Development

## BUSINESS ADVANTAGES



### WORKFORCE

The history of manufacturing and information technology in our area creates a workforce full of innovative problem-solvers with various levels of experience. **New River Community College** offers Engineering Design Technology and Architectural & Engineering Design Specialization in which students work on Unmanned Ground and Aerial Vehicle projects. **Virginia Tech** has the #9 best public college of engineering in the U.S. and produces graduates who are skilled and ready to enter the workforce at a high level. Some of the engineering programs include Mechanical Engineering, Chemical Engineering, Computer Science, Electrical & Computer Engineering, and Aerospace Engineering.



### R&D FACILITIES

The **Mid-Atlantic Aviation Partnership**, which is based at the VT Institute for Critical Technology and Applied Science, is one of six organizations in the entire U.S. that can establish **FAA test sites** for unmanned aerial systems. MAAP worked with **NASA** on Project Wing to research how multiple aircrafts could safely share the same airspace. The region also has a 300' by 120' drone cage on the VT campus for UAS testing. The NRV is home to 2 FAA test sites: one at **Kentland Farms**, and one at the **Virginia Smart Road**, where companies can safely test their products. The Smart Road is a 2.8 mile test track (above) with weather-making capabilities and extensive research opportunities and is used by companies such as **GM** and **Google**.



### BUSINESS COMMUNITY

The business community in the NRV is very collaborative. Companies like Techsburg, VPT, Maxtena, Optical Cable Corp, and Moog are making this area a hotspot for the Unmanned Systems industry. Area companies have formed the **Ridge and Valley** chapter of the Association for Unmanned Vehicle Systems International (**AUUVSI**), the world's largest organization devoted exclusively to advancing the unmanned systems and robotics industries. The area is also served by the **Roanoke-Blacksburg Technology Council** (RBTC), which is a catalyst for innovation, networking, and leadership in the NRV and surrounding regions.

## SUBSECTORS

Component Manufacturing

Software & Cybersecurity

Research & Development

Unmanned Vehicle  
Systems Assembly

"I love the business culture of the New River Valley. It's one of the greatest things about being located here. The people are real and the community is very supportive. There isn't the competitiveness that is present in other communities and we work together a lot more."  
-Nanci Hardwick, Aeroprobe CEO



"The New River Valley has been the perfect spot for VTTI to perform cutting-edge transportation safety research the past 30 years. In collaboration with industry leaders, we have been researching the disruptive potential of automated vehicles to make the roadways safer here in the U.S. and abroad. Overall this region a perfect hub for unmanned system innovation."

-Andy Schaudt, Project Director, Automated Vehicle Systems  
Virginia Tech Transportation Institute (VTTI)



## UAS-RELATED COMPANIES IN THE NRV

(Not a comprehensive list.)



**TORC**

TORC continues to test and refine its automated technology. It is offered to car makers and systems developers across several markets including automotive, mining, and defense. Their self-driving Lexus is tested constantly in different conditions and even traveled cross-country in July 2017.



**VPT**

VPT, Inc. is a global leader in providing power conversion solutions for use in avionics, military, space, and industrial applications. VPT's award-winning products and services power systems for world class organizations and programs such as Airbus aircraft and the Predator UAV.



**WING**

Wing, a Google subsidiary, develops drone-based delivery of freight technology. They launched the first commercial drone delivery in the U.S. in October 2019. By collaborating with the Mid-Atlantic Aviation Partnership (MAAP) they completed the mandated NASA and the FAA testing requirements.

## ROBOTICS CLUBS

There are several robotics clubs in the NRV, including the **Tuxedo Pandas**, a club for students from 7th to 10th grade. They build robots and promote STEM throughout the NRV while participating in the global robotics program For Inspiration and Recognition of Science and Technology (FIRST) Tech Challenge. The Pandas even went to China for the World Robotics Conference, which consists of a forum, exhibition, and robot competition.

## VIRGINIA TECH CENTERS

**Virginia Tech Transportation Institute (VTTI)** is the second largest university-level transportation institute in the U.S. It has effected significant change in public policies for driver, passenger, and pedestrian safety and works to reduce environmental impacts. With more than \$36 million in annual sponsored R&D expenditures, VTTI is conducting more than 300 active projects. It is the #1 research facility for both federal and private contracts and is projected to grow 50% in the next 3 years. It houses 15 research centers and 3 that are nationally known such as the Safety Through Disruption National University Transportation Center.

**Virginia Tech research related to UAS** is extensive and spans a number of departments and programs. Research areas include guidance and control; sensing and navigation; mobility and actuation; modeling, analysis and design; safety and cybersecurity; power electronics; wireless communication; human/computer interaction; discovery analytics; sociotechnical systems; and transportation. Virginia Tech's Terrestrial Robotics Engineering and Controls (TREC) Lab was founded to study cutting edge mechanics and controls to create robotic platforms to change the way the world is perceived. One recent project example is ESCHER (Electric Series Compliant Humanoid for Emergency Response), a full-sized humanoid design to support disaster response and search-and-rescue tasks.

## AERIAL



**VT DRONE CAGE**

The **drone cage** on the Virginia Tech campus is a \$1.2 million 300'x120' unmanned aerial vehicle netted facility. It is a part of a \$75 million plan to emphasize intelligent infrastructure. Plus, Virginia Tech's **Kentland Farm** has several FAA Certificates of Operation. The primary purpose is to enable experimental research involving small flight vehicles. VTTI also has about 400 acres of aerial space for UAV testing.

## VEHICLE



**VIRGINIA SMART ROAD**

VTTI operates the **Virginia Smart Road**, a unique, state-of-the-art, closed test-bed research facility, which is an FAA approved testing site. It has weather-making capabilities, one of the tallest bridges in Virginia, and allows testing for real vehicles in realistic settings. The Smart Road was established in 2000 and has hosted 28,000 hours of research. Expansions for testing include a customizable urban track and a rural road.



Onward New River Valley is a regional economic development organization and the parent organization for the Virginia's New River Valley brand.

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