



SMART MOBILITY

SMART MOBILITY LAB



A connected future awaits, and yet, advances in technology and talent are needed to deliver the world of the possible. In response, Virginia Tech is catalyzing a Smart Mobility Lab to manage technology and data to ignite the innovation economy, advance next-frontiers of transportation of research and experiential education, and improve quality of life. By leveraging the transformational potential of Virginia Tech Innovation Campus and revitalization of National Landing, we will seize a once-in-a-lifetime opportunity proximal to the federal government and policymakers, fueled by the expansion of the rapidly growing tech economy, and in collaboration with development partner, JBG SMITH.



OUR OBJECTIVES

A lab is being formed to ignite participation by a wide diversity of organizations and ecosystem stakeholders to build on a truly unique opportunity at a scale, place, and time, never before possible. From infrastructure companies, to OEMs, to cloud computing companies, to those supporting applications, to ecosystem partners (e.g., city planners, start-ups, and venture capital firms), a robust living lab ecosystem offers untold potential for advancing research, delivering new products, shaping policy, increasing adoption, and driving economic development.

As a state institution of higher education and anchor in the district, Virginia Tech is an experienced and uniquely-positioned convener. As part of the Smart Mobility Lab, partners will catalyze a community dedicated to advancing and showcasing the benefits of technology and building an environment where the sum is greater than the parts.

Together, the Lab will:

- **Promote collaboration** among diverse stakeholders to build a global destination for smart mobility innovation and implementation;
- **Develop a “living laboratory”** in the National Landing community where smart mobility concepts are being deployed, researched, and evaluated while creating educational opportunities for students, policymakers, and the community to inspire innovation and drive adoption;
- **Inform a purposeful smart mobility implementation agenda** for the district and greater National Landing that includes planning, development, installation, data collection, performance monitoring, and sustained operation;
- **Enable the exchange of ideas** and information from pooled investments in a diverse array of pilot projects; while offering a launchpad for proprietary research, sponsored programs, and co-capture opportunities;
- **Engage the community** to identify and address its challenges and opportunities while pushing the next frontier in mobility research to spark innovation and improve the quality of life;
- **Create examples of sustainable financial models** that support scaled deployment of applications at a near-zero financial burden on the community.





EXAMPLE PRIORITY AREAS

(to be refined by Lab Steering Committee)

- **Smart intersections with sensors** (camera, lidar, radar) will enhance traffic signal infrastructure to monitor the flow of traffic, pedestrians, bicyclists, etc. Results will be used to influence the signal timing and phase change to improve safety, efficiency, and traffic flow.
- **The addition of C-V2X technologies** will enable direct communication between the vehicle and infrastructure to support red-light violation warning and green-light optimized speed approach applications. With proper integration, transit signal priority can also be implemented allowing a transit vehicle to request green-light extension/priority when running behind schedule. Many automated vehicles also either require or work better when communicating directly with the signals to understand status.
- **Automated shuttle and package delivery** will enable a variety of platforms and services to become available. Assessing the local transport and delivery needs will enable the Lab to identify and test options, including on-demand micro-transit options and their interface with traditional transit to provide more convenience while using less energy.
- **Smart parking** including through navigation instructions to nearest available parking and easy payment options.
- **Electrification** to enable and promote electric vehicle usage in both transit and personal vehicle trips by providing charging solutions and electric vehicle car share that match to user preferences.
- **Automated waste management** by outfitting trash cans with sensors and compactors and enabling on-demand servicing. (Note: these programs have been shown to reduce garbage truck trips by 80% in pilot deployments.)
- **Data exchanges** to explore aggregated transportation, IoT, and connected infrastructure data in a central data exchange that allows real time or near real time access for developers interested in developing novel mobility applications and use cases.