Transportation Technology Committee Meeting

September 27, 2023

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Principal, Transportation Planning and Programming

Item III: Cybersecurity

Discussion of Cybersecurity

Cybersecurity in the TTSP

Strategy #3: *"Maximize Cybersecurity and Privacy for Members of the Public"*

- Relevance to NVTA's vision and Core Values
  - Transportation technology offers the potential to support NVTA's vision and enhance its mobility, accessibility, and resiliency goals, especially when deployed at scale, by enabling informed travel decisions in near real time.
  - Cybersecurity strongly aligns with NVTA's Core Values of Equity, Safety, and Sustainability.

- What keeps us up at night
  - The transfer of high volumes of data (infrastructure, vehicles, devices, personal) between multiple entities using information and communication technologies creates potential vulnerabilities.
  - State of practice is rightly focused on minimizing vulnerabilities, but does this inhibit transportation technologies from reaching their full potential?

- NVTA's roles
  - Since NVTA does not currently deploy or operate the transportation technology projects it helps to fund, initial focus has been observing state of the practice.
  - Proactively raise awareness of cybersecurity while exploring opportunities to expand deployment and utilization of transportation technologies?

TTSP Report Card, as of August 2023

Key

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(gray)	No role identified for NVTA
○	Role identified for NVTA
◔	Some progress has been made
◑	Moderate progress has been made
◕	Substantial progress has been made
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	Strategy		NVTA Roles								
			Authority Roles			**Shared Roles**			**Staff Roles**		
Number	**Name**		**Funding**	**Policy**	**Advocate**	**Champion**	**Facilitate**	**Stakeholder**	**Planning**	**Outreach/ Education**	**Observer**
1	Reduce congestion and increase throughput		◔		●	◑	◑		◑	◑	
2	Maximize access to jobs, employees and housing		○			◑	◑		◑	◑	
3	Maximize cybersecurity and privacy for members of the public		○					◔			◔
4	Enhance operations of the multimodal transportation system through connectivity and automation			○	◑	◔	◔		◑	○	
5	Develop pricing mechanisms that manage travel demand and provide sustainable travel options			○	◑			○	◑	○	
6	Maximize the potential of physical and communication infrastructure to serve existing and emerging modes		○			◑	◑		◑	◔	
7	Enhance regional coordination and encourage interoperability in the transportation system		○			◑	◑		◑	◑	
8	Advance decarbonization of the transportation system		◔	◑	◑	◑	◑		◑	◑	
9	Enhance mobility in the region through innovation and emerging technologies in transit		◑		◑	◑	◑		◑	◑	

Item IV:
NVTA's InNoVations Initiatives Poster

The Northern Virginia Transportation Authority (NVTA) is committed to taking a proactive approach to technology to build momentum for the innovative transportation system of tomorrow.
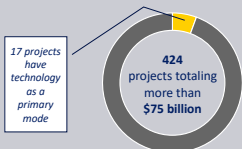
BUILDING MOMENTUM

NVTA's TransAction

The Northern Virginia Transportation Authority (NVTA) develops Northern Virginia's long-range transportation plan, called TransAction. TransAction addresses regional transportation needs by identifying transportation projects that reduce congestion, enhance mobility, increase accessibility, and improve resiliency. The findings in TransAction are used to inform the NVTA's Six Year Program for Regional Revenue funding.
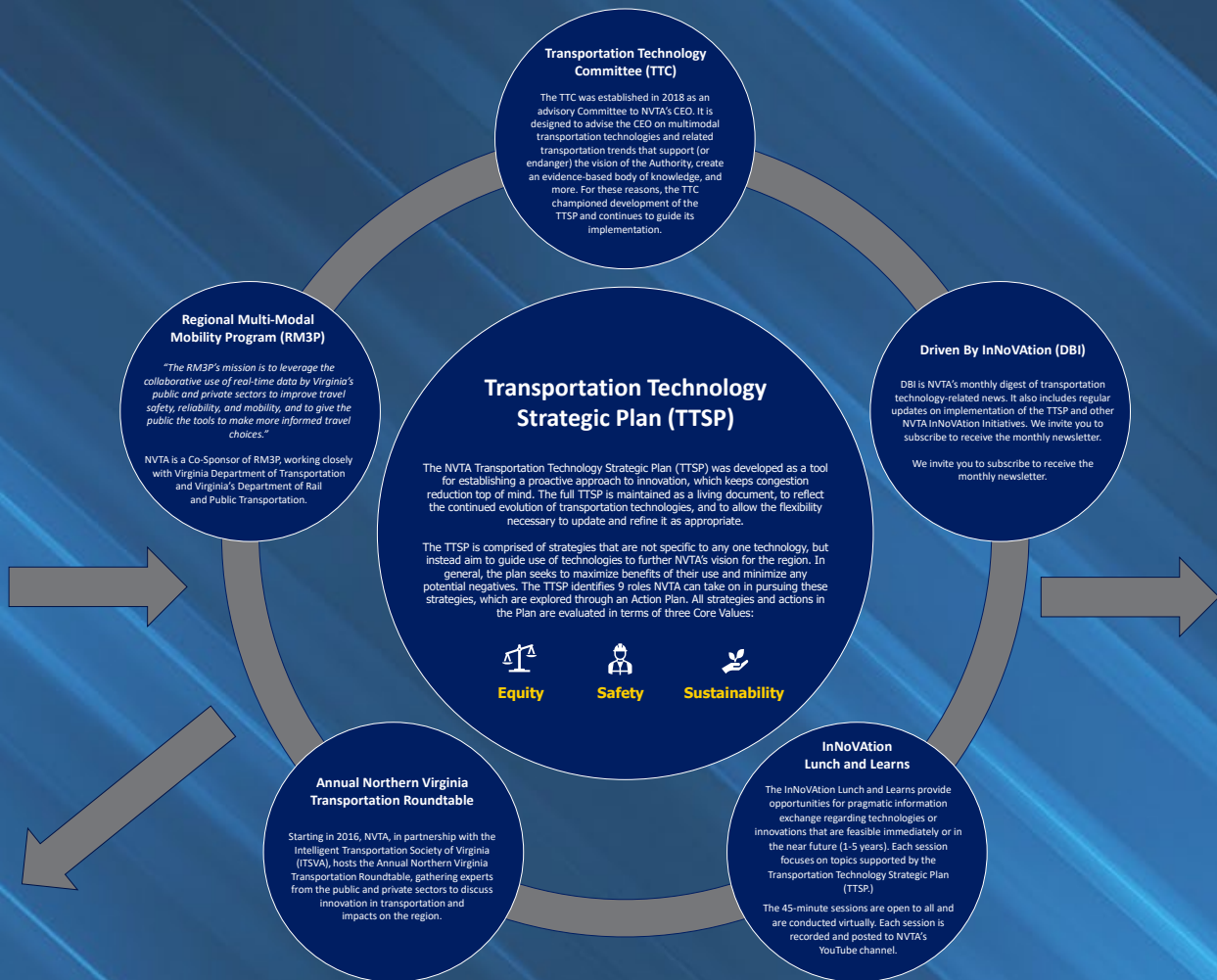
TransAction includes:

17 projects have technology as a primary mode

424 projects totaling more than **$75 billion**

TransAction Vision Statement:

*"Northern Virginia will plan for, and invest in, an **Equitable, Safe, Sustainable**, and integrated multimodal transportation system that enhances quality of life, strengthens the economy, and builds resilience."*

NVTA's Legislative Priorities

A legislative priority to "Support use of effective transportation technology" was introduced into NVTA's State and Federal Legislative Program in 2022. The position has since been updated and continued.

Transportation Technology Committee (TTC)

The TTC was established in 2018 as an advisory Committee to NVTA's CEO. It is designed to advise the CEO on multimodal transportation technologies and related transportation trends that support (or endanger) the vision of the Authority, create an evidence-based body of knowledge, and more. For these reasons, the TTC championed development of the TTSP and continues to guide its implementation.

Regional Multi-Modal Mobility Program (RM3P)

"The RM3P's mission is to leverage the collaborative use of real-time data by Virginia's public and private sectors to improve travel safety, reliability, and mobility, and to give the public the tools to make more informed travel choices."

NVTA is a Co-Sponsor of RM3P, working closely with Virginia Department of Transportation and Virginia's Department of Rail and Public Transportation.

Transportation Technology Strategic Plan (TTSP)

The NVTA Transportation Technology Strategic Plan (TTSP) was developed as a tool for establishing a proactive approach to innovation, which keeps congestion reduction top of mind. The full TTSP is maintained as a living document, to reflect the continued evolution of transportation technologies, and to allow the flexibility necessary to update and refine it as appropriate.

The TTSP is comprised of strategies that are not specific to any one technology, but instead aim to guide use of technologies to further NVTA's vision for the region. In general, the plan seeks to maximize benefits of their use and minimize any potential negatives. The TTSP identifies 9 roles NVTA can take on in pursuing these strategies, which are explored through an Action Plan. All strategies and actions in the Plan are evaluated in terms of three Core Values:

Equity   **Safety**   **Sustainability**

Driven By InNoVAtion (DBI)

DBI is NVTA's monthly digest of transportation technology-related news. It also includes regular updates on implementation of the TTSP and other NVTA InNoVAtion Initiatives. We invite you to subscribe to receive the monthly newsletter.

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Annual Northern Virginia Transportation Roundtable

Starting in 2016, NVTA, in partnership with the Intelligent Transportation Society of Virginia (ITSVA), hosts the Annual Northern Virginia Transportation Roundtable, gathering experts from the public and private sectors to discuss innovation in transportation and impacts on the region.

InNoVAtion Lunch and Learns

The InNoVAtion Lunch and Learns provide opportunities for pragmatic information exchange regarding technologies or innovations that are feasible immediately or in the near future (1-5 years). Each session focuses on topics supported by the Transportation Technology Strategic Plan (TTSP.)

The 45-minute sessions are open to all and are conducted virtually. Each session is recorded and posted to NVTA's YouTube channel.

NVTA's Six Year Program

NVTA allocates Regional Revenues to transportation projects across Northern Virginia during its Six Year Program (SYP) update that occurs every two years. The process begins with a Call for Regional Transportation Projects which allows eligible entities to apply for funding to advance projects from TransAction that align with regional transportation priorities.

NVTA has funded technology-related project(s) in each of its funding programs:

2014 1 project

2015-16 3 projects

2017 1 project

2018-23 7 projects

2020-25 2 projects

2022-27 2 projects

Scan this QR Code to learn more about NVTA's InNoVAtion Initiatives!

Item V:
TTSP Recap

What is the Transportation Technology Strategic Plan (TTSP)?

- Tool that informs a proactive approach to adoption of transportation technology;

- TTSP considers how transportation technologies support the region's vision, i.e., needs-driven NOT technology-driven;

- Includes nine strategies, and up to nine NVTA roles for each strategy;

- TTSP is a living document that will be updated as transportation technologies evolve;

- TTSP Action Plan enables NVTA to think big, start small, and build momentum with respect to adoption of transportation technologies in the region.

History of the Transportation Technology Strategic Plan (TTSP)

The TTSP describes **strategies** for advancing the beneficial use of technology in transportation, in **alignment with NVTA Core Values**, and identified **roles the NVTA can take** in pursuit of them.

It also recognizes that the objectives of the TTSP cannot be achieved by NVTA alone and relies on the **strong coordination and partnerships** that are foundational to NVTA's work in the region.

Year	Month	Milestone
2017	October	An update to TransAction was adopted, which contained the genesis of the Transportation Technology Committee (TTC).
2018	October	TTC established by the NVTA CEO.
2019	January	**Meeting:** First meeting of the NVTA Transportation Technology Committee.
2020	December	Draft TTSP "core content" (8 strategies, 9 NVTA roles and 3 core values) shared with the TTC.
2020	December	The Authority unanimously voted to approve a revised vision statement for TransAction.
2021	January	**Meeting:** Draft structure for the TTSP (minus Action Plan) proposed to the TTC.
2021	February/March	**Meeting:** First full draft of the TTSP and draft structure for the Action Plan presented to the TTC.
2021	February/March	**Meeting:** Draft structure for the TTSP shared with TAC, PCAC and PPC.
2021	February/March	TTSP mini-session at the 6th annual NoVA Transportation Roundtable.
2021	April	**Meeting:** TTC, PCAC and PPC all recommend the Authority adopt the 8 strategies and Action Plans of the TTSP.
2021	May	The Authority adopted the inaugural NVTA Transportation Technology Strategic Plan's Action Plan and 8 Strategies within.
2021	Summer	TTSP-related topics included in TransAction outreach and survey.
2021	October	NVTA's Transportation Technology webpage is launched.
2021	December	The Authority unanimously adopted the 2022 State and Federal Legislative Program and Legislative Priorities, which included a new position to "Support use of effective transportation technology".
2022	February	The format of NVTA's Driven By InNoVation was updated and to include monthly features of TTSP-related content.
2022	April	**Update:** A Technology Timeline was introduced into the TTSP. Other small updates were also made.
2022	July	**Meeting:** The TTC unanimously voted to endorse expansion of the scope of strategies 4 and 8, and to add a 9th strategy.
2022	July	Trial run of a series of InNoVation Lunch and Learn begins. There were three sessions, held in October, November and December. These were not recorded.
2022	July	**Update:** The TTSP was updated to reflect adoption of the updated TransAction goals.
2022	November	**Update (substantive):** The Authority unanimously approved expansion of the scope of strategies 4 and 8, and addition of a 9th strategy.
2022	December	The Authority unanimously adopted the 2023 State and Federal Legislative Program and Legislative Priorities, which continued the position to "Support use of effective transportation technology".
2023	April	First season of InNoVation Lunch and Learns begin. There were three sessions, held in May, June and July. These sessions were promoted publicly, recorded and posted on NVTA's YouTube page.
2023	September	**Update (substantive, continued):** Content to support the expansion of strategies 4 and 8, and addition of strategy 9 was completed.

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2	Maximize access to jobs, employees and housing	○			◕	◕		◕	◕	
3	Maximize cybersecurity and privacy for members of the public	○					◔			◔
4	Enhance operations of the multimodal transportation system through connectivity and automation		○	◑	◔	◔		◑	○	
5	Develop pricing mechanisms that manage travel demand and provide sustainable travel options		○	◑			○	◕	○	
6	Maximize the potential of physical and communication infrastructure to serve existing and emerging modes	○			◑	◑		◑	◔	
7	Enhance regional coordination and encourage interoperability in the transportation system	○			◕	◕		◕	◕	
8	Advance decarbonization of the transportation system	◔	◕	◕	◕	◑		◕	◑	
9	Enhance mobility in the region through innovation and emerging technologies in transit	◕		◕	◕	◕		◕	◕	

Item VI:
Artificial Intelligence in Transportation

Discussion of Artificial Intelligence

What is Artificial Intelligence (AI)?

"Artificial intelligence is the capability of a computer system to mimic human cognitive functions such as learning and problem-solving. Through AI, a computer system uses math and logic to simulate the reasoning that people use to learn from new information and make decisions." – Microsoft

- Possible near-term applications that support NVTA's vision
  - NVTA is a Co-sponsor of RM3P (Regional Multi-Modal Mobility Program), which includes an AI-Based Decision Support System. This could enhance the multimodal transportation system through connectivity and automation (TTSP strategy #4) and contribute to regional coordination and interoperability (TTSP strategy #7.)

  - AI can be used to optimize traffic management through signal timing and help reduce congestion and advance NVTA's Core Values of Safety and Sustainability.

- What keeps us up at night
  - AI that has been trained on/is referencing datasets that are not representative of the population or otherwise contain biased information, being used in critical decision-making processes.

  - The benefits of AI in transportation being concentrated in geographic areas and/or with demographic groups.

Discussion of Artificial Intelligence

Suggestion for NVTA's role:

- Continue to monitor developments around AI and create educational opportunities.
- Consider incorporating AI into the TTSP, either as a technology or a new strategy.
- Evaluate if any other action is appropriate under the current TTSP, including updates to NVTA's technology-related legislative priorities.

Technology	TTSP Strategies								
	1	2	3	4	5	6	7	8	9
	Reduce congestion and increase throughput	Maximize access to jobs, employees and housing	Maximize cybersecurity and privacy for members of the public	Enhance operations of the multimodal transportation system through connectivity and automation	Develop pricing mechanisms that manage travel demand and provide sustainable travel options	Maximize the potential of physical and communication infrastructure to serve existing and emerging modes	Enhance regional coordination and encourage interoperability in the transportation system	Advance decarbonization of the transportation system	Enhance mobility in the region through innovation and emerging technologies in transit
Artificial Intelligence	◕		◔	◑	◑		◑		

Key					
Will definitely be helpful	Potential to be helpful	Equal potential to be helpful or detrimental	Potential to be detrimental	Likely to be detrimental	Not applicable or Insufficient Information
●	◕	◑	◔	○	

Thank you!