

Draft Transportation Technology Strategic Plan - Overview

March 1, 2021





The Fourth Industrial Revolution

1. Water and Steam – mechanized production
2. Electricity – mass production
3. Electronics and Information Technology – automated production
4. Digital Revolution – transforming production, management, and governance
 - Exponential increases in computing power
 - Big Data
 - Artificial Intelligence
 - Global Connectivity
 - Speed of Innovation and Disruption

“There has never been a time of greater promise, or one of greater potential peril.”

Klaus Schwab, World Economic Forum (January 2016)/Foreign Affairs (December 2015)



Timeline

2004/5 – Apple begins product development on a computer that uses a touch screen instead of a physical keyboard/mouse or stylus

January 2007 – Launch of iPhone 2G

January 2017 – 2.2M apps in App Store

October 2020 – Launch of iPhone 12



July 2002 – NVTA created by General Assembly

September 2006 – TransAction 2030 adopted

November 2012 – TransAction 2040 adopted

July 2013 – NVTA revenue stream begins

October 2017 – TransAction update adopted



What's In This Overview?

- Introduction, including some sample Q&A
- Summary of TTSP Strategies and NVTA Roles
- Technologies mapped to TTSP Strategies
- Guidance on desired feedback and how to respond



Introduction

This presentation provides a high level overview of NVTA's draft Transportation Technology Strategic Plan (TTSP) and some guidelines for Planning and Programming Committee (PPC) members to review and provide comments.

The draft TTSP identifies eight strategies that are intended to leverage transportation technologies in support of NVTA's vision and goals for the regional transportation system in Northern Virginia. These strategies focus on mobility, accessibility, and resilience, while embracing core values of safety, equity, and sustainability.

Among other things, each strategy identifies up to nine possible NVTA roles.



Introductory Q&A

Q: How does the TTSP fit within NVTA's current primary responsibilities of planning and programming/funding?

A: In the big picture, NVTA's approach to the TTSP is driven by TransAction, NVTA's long-range transportation plan for Northern Virginia. NVTA is required by the Code of Virginia to develop and maintain TransAction, and is in the early stages of the next update. NVTA's approach to evaluating project funding requests has always embraced multi-modal solutions, including new Metrorail stations, BRT systems, road widening/intersection improvements, pedestrian/bicycle trails, first/last mile solutions, and technology deployments. Since the TTSP is complementary to, and integrated with, TransAction, both reflect the NVTA's multi-modal approach to the regional transportation system. TransAction continues to be the first eligibility filter for funding approvals since the Code of Virginia requires funded projects to be included in TransAction.



Introductory Q&A

Q: Have things permanently changed as a result of the pandemic? If so, what does this mean for the region's transportation system and how do we define success under these new conditions?

A: As we undertake the next TransAction update, we will apply the findings from our own COVID-19 analysis conducted in early summer 2020, together with subsequent research findings by others in the region and nationally. While it is most certainly appropriate to question whether the pandemic has changed travel behaviors, it remains unclear as to what the 'new normal' will actually look like. Our approach is to be open-minded but cautious, to avoid 'over-correcting' until we have greater certainty. By summer 2021, the new normal should be clearer and still within the overall TransAction update schedule.



Introductory Q&A

Q: In this changed environment, what has also changed with regard to the role of technology going forward? For example, how do we enable/support the new transportation patterns when increasing numbers of people are working from home?

A: There are significant examples of different ways in which technology has enabled new transportation patterns. Our region is one of the best in the nation in its ability to increase the level of work from home activity, which speaks highly of the preparedness among employers and employees with respect to IT/communications infrastructure, hardware/software, and HR practices. The adaptability of businesses to move to online shopping/delivery and curbside pickups is driven by technology and innovative business process re-engineering, all in a relatively short timeframe. As we are learning, there are silver linings in the form of reduced congestion and VMT, but negative consequences on transit ridership. As we noted in our COVID-19 presentation to NVTA in July 2020, transit ridership reduction may be challenging to the financial stability of some transit agencies. Finding a path forward that locks in the silver linings while mitigating the negative outcomes will be important considerations for TransAction and the TTSP.



Introductory Q&A

Q: With the political/social emergence of equity and environmental concerns as top priorities, what can technology applied to transportation do to further them?

A: The TTSP will include a discussion of core values – equity, safety, and sustainability – for each strategy. This discussion will highlight how each of the eight strategies will address each of the core values.



Introductory Q&A

Q: Considering the four pandemic recovery scenarios in NVTA's July 2020 COVID-19 analysis, what is the greatest role of technology to enhance recovery in each of them?

A: This is a difficult question to answer. Recognizing that we started work on the TTSP before the pandemic hit, it was never originally intended to address such a situation. That said, technologies that support the resilience of the transportation system while communicating decision-grade travel information to Northern Virginians will likely rise to the top. Any strategy that supports a willingness to travel in shared modes (carpools, vanpools, transit, rail, together with shared mobility devices such as bikeshare and scooters) will have an important role. More broadly, all the technologies rely on high quality data, without which much of the technology will be sub-optimal or ineffective. To that end, the data component of most strategies will be really important as we move beyond the pandemic to the new normal.



Introductory Q&A

Q: Here are some examples of possible priorities for technology in the new normal — more demand responsive, attractive and reliable bus service — what can technology do to make that happen? Electrification of the entire vehicle fleet — commercial, private, trucks and cars — what can technology do to speed that and make it more cost/effective?

A: Multiple strategies will address a new normal bus service, including Strategy #1, #4, #5, and #7. Strategy #8 will address electrification infrastructure. However, note that the strategies alone will not necessarily achieve the desired outcomes. This will require a broad regional coalition of support among jurisdictions, transit agencies, other regional partners and stakeholders. The key point is that NVTA's TTSP is the first-of-a-kind initiative to take such a comprehensive position on how technology can be leveraged to support NVTA's vision for the NoVA transportation system.



Transportation Technology Strategic Plan (TTSP) Proposed Structure

- Purpose and Scope
- Overarching Core Values
 - *Safety, Equity and Sustainability*
- Vision and Goals
- NVTA Roles
- Related Initiatives by Other Regional Partners and Coordination
- Transportation Technology Trends
 - *Overview*
 - *Automation, Sharing and Electrification*
 - *Emerging Business Models*
 - *Technologies*
 - *Opportunities and Challenges*
- Strategies for NVTA
- Data Needs
- Caveats and Assumptions
 - *Impacts of Covid-19*
- Monitoring Progress and Update Cycle
- Action Plan
 - *Introduction*
 - *Strategy-Specific Summaries*
 - *Consolidated Actions Table*
 - *Next Steps*
- Glossary



TTSP Strategies Summary Structure

Strategy:																			
<p>Description</p> <p>NVTA Goal Choose an item.</p> <table border="1"><thead><tr><th colspan="4">NVTA Roles</th></tr><tr><th>Authority Roles</th><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td></tr></thead><tbody><tr><td>Shared Roles</td><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td></tr><tr><td>Staff Roles</td><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td><td>Choose an item. Click or tap here to enter text.</td></tr></tbody></table>				NVTA Roles				Authority Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Shared Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Staff Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.
NVTA Roles																			
Authority Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.																
Shared Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.																
Staff Roles	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.	Choose an item. Click or tap here to enter text.																
Safety	Strategy: <i>Application of Core Values</i> Click or tap here to enter text.																		
Equity	Strategy: Click or tap here to enter text.																		
Sustainability	Strategy: Click or tap here to enter text.																		
<p>Potentially Applicable Technologies Click or tap here to enter text.</p>																			



TTSP Strategies and NVTA Roles

Strategy		NVTA Roles								
		Authority Roles			Shared Roles			Staff Roles		
Number	Name	Funding	Policy	Advocate	Champion	Facilitate	Stakeholder	Planning	Outreach/Education	Observer
1	Reduce congestion	✓		✓	✓	✓		✓	✓	
2	Maximize access to jobs, employees and housing	✓			✓	✓		✓	✓	
3	Maximize cybersecurity and maximize privacy for members of the public	✓					✓			✓
4	Minimize potential for Zero Occupancy Vehicles		✓	✓	✓	✓		✓	✓	
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 all systems	✓			✓	✓		✓	✓	
8	Create a network of charging infrastructure, for use by private and fleet vehicles	✓	✓	✓	✓	✓		✓	✓	



Technologies Mapped to TTSP Strategies

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 Available	

Strategies		Technologies										
Number	Name	Automated/Autonomous vehicles	Shared Mobility Devices (SMDs)	Signal technologies	Apps	System optimization	Drones	Changes to delivery and freight systems	Surveillance/monitoring (including telematics)	Data generation/collection/sharing	Improvements to mass transit (including BRT)	Smart technologies/cities and IoT
1	Reduce congestion	●	●	●	●	●	●	●	●	●	●	●
2	Maximize access to jobs, employees and housing		●	○	●	●	●	●	●	●	●	●
3	Maximize cybersecurity and maximize privacy for members of the public	○	○	○	○	○			○	○		○
4	Minimize potential for Zero Occupancy Vehicles	●	●	●	●	●	●	●	●	●	●	●
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 all systems	●	○	●	●	●	●	●	●	●	●	●
8	Create a network of charging infrastructure, for use by private and fleet vehicles	●	○			●						



Feedback Requested from PPC Members

- Thoughts on what you have heard today?
- 8 strategies/9 NVTA roles – anything we need to change/add?
- Beyond NVTA Committees, who should we seek feedback from?
- Are there any related initiatives we should be aware of?
- What level of detail is required for the public-facing versions of the TTSP/Action Plan?
- Suggestions on low-cost visualizations? Examples?
- We request that you review the draft TTSP and provide any feedback, via email, by **COB on Monday, March 15th.**
- We will share draft TTSP Action Plan prior to PPC meeting on March 25th.



THANK YOU!