# EXECUTIVE SUMMARY

# St. Louis Region Emerging Transportation Technology Strategic Plan

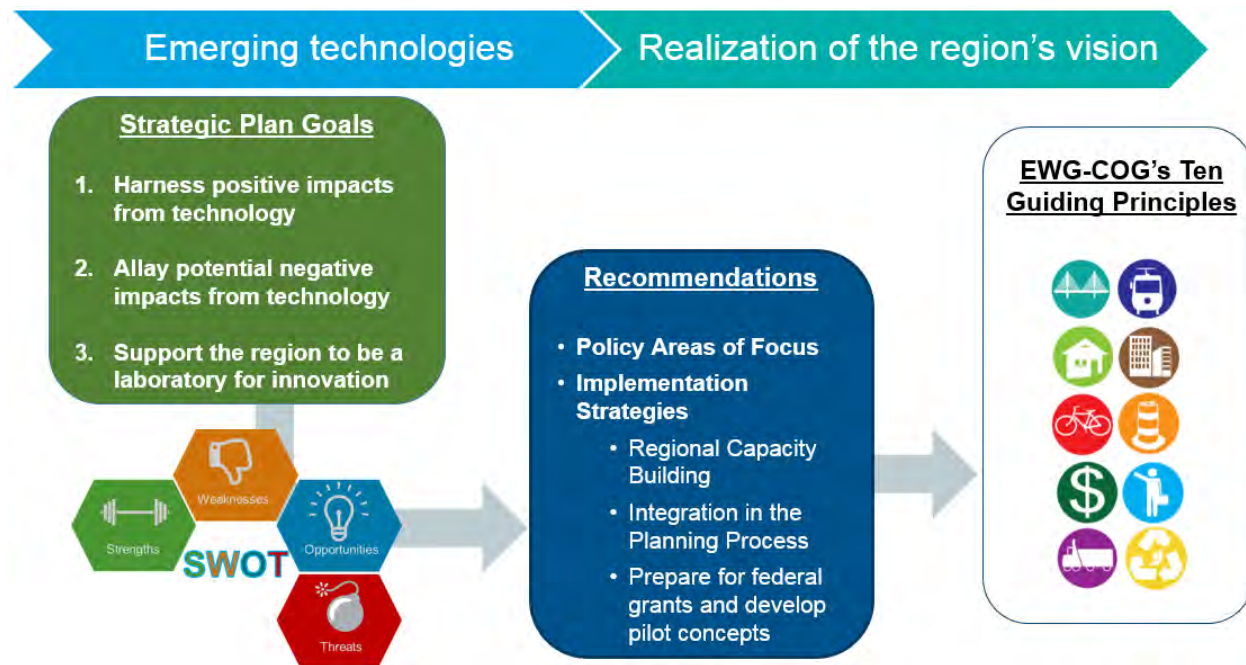**June 2017**

# ACKNOWLEDGEMENTS

# EXECUTIVE SUMMARY

This Emerging Transportation Technology Strategic Plan was developed in response to the rapidly advancing technologies that are already disrupting the transportation industry and challenging policy makers involved in transportation planning and investment decision making. The advent of connected vehicles and infrastructure that use sensors to assess real-time conditions and communicate with each other, an explosion of data and advanced analytics, new on-demand mobility options, eco-friendly vehicles and infrastructure, and other advancements offer the potential to dramatically improve the safety, reliability, accessibility, and environmental footprint of our transportation networks. At the same time, these technologies may significantly affect travel demands and modes used by passengers and freight, land use patterns, and future transportation investment needs in ways that are not fully understood. In addition to the prospect of improved performance, there are possible unintended or adverse consequences that transportation planners and policy makers may need to confront.

Recognizing these challenges, this Strategic Plan is designed to help the East-West Gateway Council of Governments (EWG) to better position itself to prepare for emerging transportation technologies in its planning and investment decision making processes.

As shown in Figure ES-1, the plan lays out three major components: 1) strategic goals; 2) analysis of Strengths-Weaknesses-Opportunities-Threats; and 3) recommendations related to policy areas of focus and implementation strategies to support positive outcomes for the region.

**Figure ES-1: Components of the Strategic Plan**



The information used as the basis for developing this document included: 1) a robust literature review to identify emerging technology trends, regional conditions, and experience of other regions in integrating emerging technologies into the transportation planning process; 2) a regional stakeholder survey to gather input on their state of knowledge, and planning in relation to emerging transportation technologies, as well

as perspectives on regional strengths and weaknesses; and 3) a series of expert interviews with 15 thought leaders from academia and the public and private sectors to gain perspectives on emerging transportation technology.

## Strategic Plan Goals

The guiding direction of this Emerging Transportation Technology Strategic Plan is to support the region in achieving its ten Guiding Principles, which have been articulated as priorities to guide the region's planning and policy:

- Preserve and Maintain the Existing System
- Support Public Transportation
- Support Neighborhoods & Communities
- Foster a Vibrant Downtown & Central Core
- Provide More Transportation Choices

- Promote Safety and Security
- Support a Diverse Economy with a Reliable System
- Support Quality Job Development
- Strengthen Intermodal Connections
- Protect Air Quality and Environmental Assets

The Plan lays out three strategic goals in relation to emerging transportation technology:

1. **Harness positive impacts from technology** – Foster and deploy emerging transportation technologies that help advance the region's vision and Guiding Principles through policies, plans, and strategic investments.

2. **Address potential negative impacts from technology** – Consider the risks of emerging transportation technologies in the region's planning and investment decision making to help mitigate potential adverse consequences on the region and its residents.

3. **Support the region to be a laboratory for innovation** – Bring innovation to the region through application of emerging transportation technologies that support economic growth and quality jobs.

## Strengths-Weaknesses-Opportunities-Threats Analysis

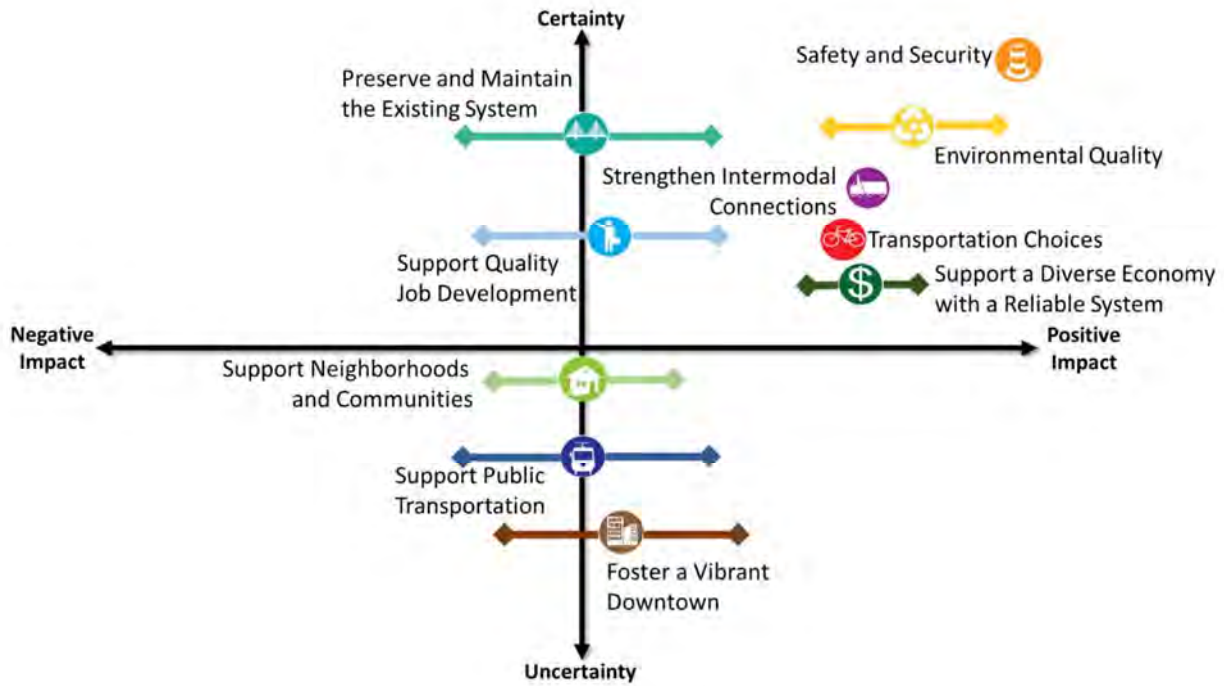The Strategic Plan utilized a Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis to determine key areas of focus for the region, taking into account the broad opportunities and threats that might arise from new technologies, as well as regional strengths and weaknesses associated with the application of emerging transportation technologies. The result from the SWOT analysis is summarized in Table ES-1.

**Table ES-1. SWOT Analysis.**

| | To Leverage | To Overcome |
|---|---|---|
| **Internal** | **S**trengths<br>• Multi-modal transportation system<br>• Major freight hub<br>• Mid-size region, potentially well geared toward pilot testing<br>• Intelligent transportation systems (ITS) infrastructure<br>• Interest from stakeholders | **W**eaknesses<br>• Fragmented and complex government structure, across two states and multiple local governments<br>• Population decline in urban core<br>• Social barriers, including perceptions of inner-city crime<br>• Sprawling region with low density and heavily car-centric travel patterns<br>• Funding constraints |
| **External** | **O**pportunities<br>• Potential positive technology impacts:<br>  - Significant safety improvements<br>  - Reduced travel costs<br>  - Increased travel choices<br>  - Improved access, particularly for those currently with limited mobility and those without access to private vehicles<br>  - Improved system reliability<br>  - Possible transit service improvements and reduction in cost<br>  - Optimized supply chain, yielding economic benefits<br>  - Quality job development in emerging technology fields<br>  - Air pollutant and greenhouse gas reductions<br>  - Potential for clean energy generation<br>• Federal grant programs<br>• Private sector funding | **T**hreats<br>• Potential adverse technology impacts:<br>  - Reduced funds from traditional transportation funding sources<br>  - Increases in vehicle travel and congestion<br>  - Increases in sprawl / decentralized development patterns<br>  - New options draw people off of public transit<br>  - Gaps in access by those who cannot afford<br>  - Cyber-security threats associated with new technology<br>  - Reduction in employment, as jobs related to driving could be displaced |

Drawing upon the regional SWOT analysis and research on the ongoing and expected impacts of technologies more generally, expected impacts of technology on each of the region's Guiding Principles were identified. Given the uncertainty associated with many technologies, impacts were considered on the basis of both their certainty and the degree to which they would have a positive or negative impact on advancing the regional goals (Figure ES-2).

*Figure ES-2: Estimated Impacts of Transportation Technologies on EWG's Guiding Principles*



This analysis revealed that emerging transportation technology is likely to have many positive impacts and create positive opportunities for utilizing technology to support regional goals – most notably on safety, environmental quality, intermodal connections, transportation choices, and reliability – but also creates some threats of negative impacts. For instance, technology could support public transportation through automation and providing more seamless on-demand connections to fixed route services; yet at the same time, new on-demand services could attract riders away from traditional public transportation. While market forces and advances in technology that are currently unknown will play a critical role in these impacts, public policy is likely to have an important role. In addition, technology will likely have implications for transportation investment needs and funding. For instance, through more efficient routing, shorter travel distances between vehicles, and potential for higher speeds, automation may squeeze more vehicle capacity out of existing highway infrastructure, reducing the need for new capacity to address congestion. Impacts on investment needs should be considered as part of long-range transportation planning.

## Recommendations

Based upon the SWOT analysis and the expected and uncertain impacts of technology, this Strategic Plan recommends several areas of policy focus directly linked to the region's Guiding Principles:

- **Safety** – Advancing deployment of safety innovations.
- **Security** – Ensuring data privacy and cybersecurity.

- **Urban Form and Public Transit** – Fostering policies that address the threats of increased decentralization due to technology and harness the advantages to support a vibrant central core and the success of public transportation.
- **Reliability** – Using technology to improve access to real-time traveler information and optimize system reliability.
- **Equity** – Using technology to enhance connections for underserved communities and ensuring that technology-based services don't bypass disadvantaged communities.
- **Freight and Logistics** – Using technology to enhance efficient goods movement and spur economic development.
- **Infrastructure Preservation and Maintenance** – Applying technology to improve the monitoring of infrastructure conditions and strengthen transportation asset management.
- **Funding** – Addressing the challenge of technology exacerbating the problem of limited revenues for transportation investment and maintenance.
- **Environmental Quality** – Advancing the adoption of eco-friendly infrastructure and vehicles.

Based on these results, the Strategic Plan provides recommendations for EWG to integrate emerging transportation technology into its planning activities, with a focus on improving institutional readiness, changes in the planning processes, and initiating pilot projects. Recommendations are highlighted in relation to the roles and responsibilities of EWG:

- **Data Modeling and Analytics**
  - o Bolster staff data analytics capabilities,
  - o Develop a robust data collection plan, leveraging new forms of data to support performance measures, and
  - o Enhance modeling to address emerging transportation technologies.
- **Long-Range Planning**
  - o Establish a Technology Advisory Committee,
  - o Develop a shared vision for technology to recommend regional strategies,
  - o Conduct scenario planning to better understand alternative futures and to support more informed analyses of investment priorities,
  - o Include considerations related to emerging transportation technology as a factor when prioritizing projects for the regional transportation plan (RTP),
  - o Update the regional ITS Architecture and Deployment Plan, and
  - o Update the Congestion Management Process and ensure that other regional planning products integrate emerging transportation technology.
- **Programming and Funding** – Update the current Transportation Improvement Process (TIP) project selection process to encourage innovative technology applications.
- **Pilot Program Development**
  - o Build federal grant readiness by creating a compelling grant narrative,
  - o Establish a grant tracking system, and
  - o Develop and fund a regional technology deployment pilot program.
- **Education, Convening, and Supporting Partner Efforts**
  - o Work with local universities to identify opportunities to collaborate,
  - o Coordinate peer-to-peer workshops and facilitate regional discussions on topics including public-private partnerships, changes to procurement policies, and data collection and analytics,
  - o Conduct assessments of local governments' awareness and readiness regarding technology on a periodic basis.

If implemented, these activities will help to support the St. Louis Region in maximizing the benefits and reducing the risks of new technology, support innovation, and help the region to achieve regional goals.