Emerging Transportation Technology Strategic Plan for the St. Louis Region

- **Project Summary**

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Prepared for:
East West Gateway
Council of Governments

Background

Motivation

Process to Create the Strategic Plan

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Motivation

- New technologies may fundamentally alter the way people travel in the future, with potentially dramatic impacts on safety, mobility, and system performance over the next 20-30 years.
- The pace of technology adoption is quickening.

- The St. Louis Region needs to better prepare for the future in its regional transportation planning and investment decision-making.

Source: National Cooperative Highway Research Program, Foresight Series.

Process to Create the Strategic Plan

Components of the Strategic Plan

Transportation Technology Trends
Strategic Plan Goals
Strengths-Weaknesses-Opportunities-Threats Analysis
Policy Areas of Focus
Recommendations: Integration in EWG's Planning Activities

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Emerging Transportation Technology Trends

Technology trends span several major areas, and overlap and synergize in powerful ways.

Synergies across technology trends

Strategic Goals

Emerging technologies → Realization of the region's vision

Strategic Plan Goals

1. Harness positive impacts from technology
2. Allay potential negative impacts from technology
3. Support the region to be a laboratory for innovation

Recommendations

- Policy Areas of Focus
- Implementation Strategies
  - Regional Capacity Building
  - Integration in the Planning Process
  - Prepare for federal grants and develop pilot concepts

EWG-COG's Ten Guiding Principles

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Implications of Emerging Transportation Technologies

The expected impacts of emerging technologies on the Ten Guiding Principles are mixed. Many are positive, but several have high levels of uncertainty. Policy decisions may influence many of these impacts.

Key uncertainties:

- *Vehicle travel demand*
- *Land use and urban form*
- *Public policy*

Strengths-Weaknesses-Opportunities-Threats (SWOT) Analysis

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

Impacts to Investment Needs and Priorities

Reduced needs for new highway infrastructure - More efficient use of existing infrastructure, boosting effective capacity

Impacts on public transportation services - Opportunity to restructure public transportation services with automation, smaller vehicles running at higher frequencies

Impacts on ITS infrastructure - Shifts from radio advisories and dynamic message signs to direct dissemination of information to vehicles

Changing needs associated with law enforcement - Less need for enforcement of issues such as red light running, speeding, impaired or distracted driving

Reduced parking needs - Reduced needs for on-street and off-street parking

Workforce development needs – Potential reduction in jobs associated with driving; needs for more tech-savvy workforce or redeployment to customer service

Transportation funding – Reduced revenues through traditional transportation fuel taxes

Policy Areas of Focus in Regional Planning and Investment Decision Making

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 (Goods Movement) – 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

Transportation 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

Policy Areas of Focus: Examples of Strategies

	Responsibilities
Safety	
• Invest in V2I communications infrastructure to support safety applications for drivers and pedestrians	Illinois and Missouri DOTs, local governments
Urban Form and Public Transit	
• Advance automation in public transportation and quality improvements (e.g., free Wi-Fi) through pilot programs	Metro
Equity	
• Offer incentives for private services to provide services in marginalized areas, such as those with predominantly low-income populations	Metro and local governments
Infrastructure Preservation and Maintenance	
• Evaluate use of advanced technologies to support monitoring conditions, including use of drones and vehicle-generated data	Illinois and Missouri DOTs, Metro, and local governments

Recommendations: Moving Forward from Strategy to Implementation

Data, Modeling, and Analytics

- Bolster staff data analytics capabilities
- Develop a robust data collection plan, leveraging new forms of data to support performance measures
- Enhance modeling to address emerging transportation technologies

Long-Range Planning

- Establish a Technology Advisory Committee
- Develop a shared vision for technology to recommend regional strategies
- Conduct scenario planning to better understand alternative futures and to support more informed analyses of investment priorities
- Include considerations related to emerging transportation technology as a factor when prioritizing projects for the regional transportation plan (RTP)
- Update the regional ITS Architecture and Deployment Plan
- 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

- Build federal grant readiness by creating a compelling grant narrative
- Establish a grant tracking system
- Develop and fund a regional technology deployment pilot program

Education, Convening, and Supporting Partner Efforts

- Work with local universities to identify opportunities to collaborate
- Coordinate peer-to-peer workshops and facilitate regional discussions on topics including public-private partnerships, changes to procurement policies, and data collection and analytics
- Conduct assessments of local governments' awareness and readiness regarding technology on a periodic basis