ITS CANADA

Hamilton Techology Innovation Forum

SESSION SUMMARY

March 26-27, 2026 | Canadian Warplane Heritage Museum

Session 1

How is Hamilton fulfilling its role as a multi modal gateway to the Golden Horseshoe

Moderator
Shawna Boakes CEO, ITS Canada

Panelists
Ken Albright
McMaster Institute for Transportation & Logistics
Omar Shams City of Hamilton

Summary

- Panelists described Hamilton's integrated, complete-street approach to transportation planning.
- The City noted a focus on both goods' movement and people movement within constrained road space.
- Discussion included coordination with regional partners for transit integration and fare systems.
- Hamilton's location near a port, cargo airport, highways, and rail supports its multimodal role.
- ITS technologies are being used to improve efficiency, safety, and system performance.
- Planning priorities include safety, public health, and climate change considerations.

Key Points

- Hamilton functions as a key freight hub within the GTHA.
- The City integrates freight planning into transportation master plans.
- Academic partnerships support data-driven planning and policy development.
- The Hamilton Goods Movement Strategy identified bottlenecks and solutions.
- Regional coordination is required due to cross-boundary goods movement.

Challenges

- Rapid population and employment growth.
- Aging infrastructure and limited funding.
- Constrained right-of-way and geographic limitations.
- Data sharing limitations across agencies.
- Community impacts from freight movement.

Technologies / Initiatives Discussed

- Deployment of Intelligent Transportation Systems (ITS).
- Vehicle-to-vehicle communication for traffic flow improvements.
- Electrification of transit and future freight applications.
- Exploration of hydrogen as a future energy source.
- Freight staging and signal optimization near port areas.

KEY TAKEAWAYS

- Hamilton plays a significant role in regional goods movement due to its strategic location.
- Data and inter-agency coordination are critical to improving system efficiency.

Session 2

Technology and Border Crossings

Moderator
Nikos Efstathopoulos Arcadis

Panelists
Andrea McCabe Blue Water Bridge
Athena Hutchins NITTEC
Joe Dedecker Federal Bridge Corporation Ltd
Jamie Wilson Geotab

Summary

- Panelists discussed operations, technology use, and data applications at major Canada -USA border crossings.
- Blue Water Bridge reported approximately 4 million vehicles and $110B in trade in 2024, with about 60% commercial traffic.
- Discussion included reliance on technology to improve throughput and resilience due to limited physical expansion opportunities.
- Regional collaboration and shared data platforms were described as essential for managing cross-border operations.
- Technology pilots and partnerships are being used to test and deploy new operational solutions.
- Geotab described use of large-scale telematics data to support planning and analytics.

Key Points

- Border wait-time systems use Bluetooth/Wi-Fi and latency metrics to estimate delays.
- A single shared dataset is used across agencies and made available to the public.
- Travelers and commercial operators use this information to reroute between crossings (~25 miles apart).
- Centralized platforms aggregate data for situational awareness.
- Lane requests and operational coordination are partially automated through shared systems.
- Traffic volumes are highly variable, with significant shifts during disruptions (e.g., 2022 blockade).

Challenges

- Limited physical space at border crossings requires reliance on technology.
- Unpredictable traffic volumes and sudden surges in commercial traffic.
- Cross-agency and cross-border coordination complexity.
- Truck staging and parking challenges due to driver behavior and lack of amenities.
- System disruptions causing widespread congestion and impacts on surrounding communities.

Technologies / Initiatives Discussed

- Thermal cameras and automated alerts for incident detection.
- Tethered drones for continuous monitoring.
- Cold-cut laser tools for emergency response.
- Turtle fire system for EV fire suppression.
- ITS and ATMS integration for traffic and incident management.
- Telematics and historical data analytics for planning and prediction.

KEY TAKEAWAYS

- Technology and data sharing are central to managing border operations and improving efficiency.
- Multi-agency coordination and integrated systems are required to support cross-border mobility.

Session 3

Multimodal Transportation System of the Future

Speaker
Dr. Bob Edelstein
AECOM Fellow, Legacy

Summary

- Speaker presented a future vision of a connected, mission-centric multimodal transportation system.
- Mission includes safety (Vision Zero), reliability, efficiency, accessibility, and integrated freight movement.
- Discussion emphasized use of AI, IoT, and digital infrastructure to optimize transportation systems.
- Focus placed on integrating all transportation modes through connectivity, coordination, and data sharing.
- Examples included congestion pricing reducing congestion by 11% and generating funding for transit.

Key Points

- Multimodal systems require interoperability across vehicles, infrastructure, and data platforms.
- Digital infrastructure enables predictive maintenance, freight tracking, and real-time optimization.
- Sustainability and low-emission technologies are core components of future systems.
- Mobility as a service allows users to customize routes, costs, and travel preferences.
- Freight systems will rely on automation, digital twins, and AI-driven logistics.
- Transportation Management Centers (TMCs) will evolve toward proactive system management.

Challenges

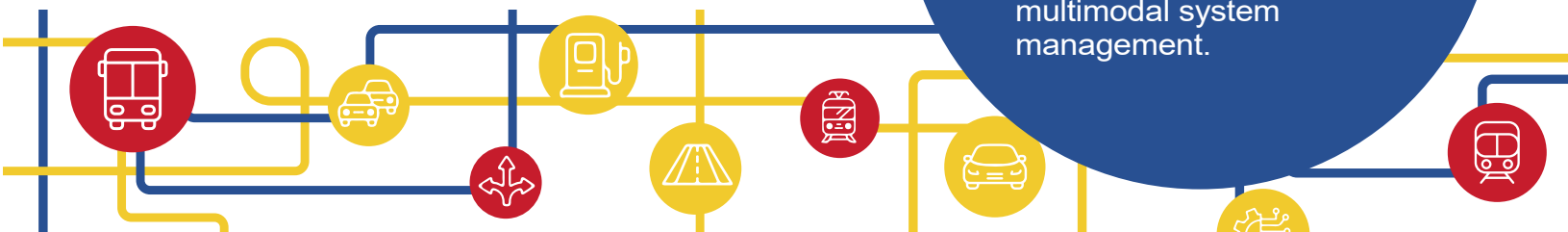
- Integration of multiple transportation modes and systems.
- Managing large volumes of data and converting it into actionable insights.
- Adapting infrastructure to support emerging technologies.
- Balancing technology deployment with long-term infrastructure planning.

Technologies / Initiatives Discussed

- Highway sensors, smart lanes, and variable speed limits.
- AI-driven transit operations and smart stations.
- Automation in ports and freight systems using digital twins.
- Advanced Air Mobility (AAM) including drones and eVTOL systems.
- In-vehicle charging and smart pavement technologies.
- Predictive analytics and dynamic pricing systems.

KEY TAKEAWAYS

- Future transportation systems will rely on integrated digital infrastructure and real-time data.
- AI and emerging technologies will enable proactive, multimodal system management.



Session 4

The Challenge of Moving Goods and Services Across Southern Ontario

Moderator
Joanne McCall AECOM

Panelists
Gina Delle Rose-Ash
Hamilton Oshawa Port Authority
Colleen Ryan
John C. Munro Hamilton International Airport

Summary

- Panelists described Hamilton as a key multimodal node supporting national supply chains.
- The port handles approximately 10 million metric tons of cargo annually, including 3 million metric tons of grain exports.
- Airport operations are driven by overnight express cargo and e-commerce demand.
- Discussion included infrastructure investments to improve capacity, efficiency, and reliability.
- Panelists noted the importance of integrating road, rail, marine, and air systems.
- Technology and AI are being explored to improve operational efficiency and scheduling.

Key Points

- Port and airport function as interconnected nodes within regional and national supply chains.
- Anchor tenants and partners drive cargo volumes, investment, and economic activity.
- Significant infrastructure investments include port upgrades and airport expansions.
- Containerization and rail investments are supporting future growth.
- E-commerce demand continues to drive air cargo operations and overnight logistics.
- Multimodal connectivity relies heavily on trucking for first/last mile movement.

Challenges

- Limited standardized and shareable transportation data across agencies and companies.
- Supply chain disruptions require long recovery times and lack redundancy.
- Slow implementation timelines for major infrastructure and system improvements.
- Coordination challenges across multiple stakeholders and jurisdictions.

Technologies / Initiatives Discussed

- AI-based truck scheduling and automation of booking systems.
- License plate scanning and data capture for truck movements.
- Use of AI for predictive demand and bottleneck identification.
- Power BI and data analytics tools for operational insights.
- Partnership with McMaster University (Fluid Intelligence) for data analysis.

KEY TAKEAWAYS

- Data availability and sharing are critical to improving supply chain efficiency.
- Infrastructure investment and multimodal integration are required to support growth.

Session 5

Academia's Role in Advancements & Opportunities for Multimodal Travel

Moderator
Nelson Melendez
City of Toronto

Panelists
Dr. Mohamed Hussein, Harith Abdulsattar
Dr. Saiedeh Razavi & Dr. Moataz Mohamed
McMaster Institute for Transportation & Logistics

Summary

- Panelists discussed the role of academia in advancing multimodal transportation through research and innovation.
- Discussion focused on connected vehicles, AI, and digital twins for monitoring and optimizing transportation systems.
- Research emphasized a shift from reactive to predictive and cooperative transportation systems.
- Real-time safety frameworks using sensors, AI, and telematics were presented.
- Supply chain resilience and multimodal integration under disruption were discussed.
- Data access and sharing limitations were identified as key constraints.

Key Points

- Connected vehicles generate speed, location, and roadway-condition data for traffic monitoring.
- AI and machine learning analyze data to enable predictive traffic management.
- Digital twins provide virtual models for monitoring, testing, and planning systems.
- Safety research examined autonomous vehicle interactions with pedestrians and cyclists•
- Prediction models can identify road-user risks within a defined radius (e.g., 200 m).
- Academic research supports integration of passenger and freight systems.

Challenges

- Fragmented data access and limited data sharing across institutions.
- Use of incomplete or imperfect data for decision-making.
- Disconnect between academic research and industry implementation.
- Need to align AI development with privacy, fairness, and transparency.

Technologies / Initiatives Discussed

- Connected vehicle data and telematics systems.
- AI and machine learning for predictive analytics.
- Digital twins and digital shadow models.
- Real-time safety frameworks using sensors and drones.
- Simulation platforms for multimodal system testing.

KEY TAKEAWAYS

- Academic research enables predictive, data-driven transportation systems.
- Collaboration between academia and industry supports implementation and commercialization.

Session 6

Connected, Trusted, and Moving: Building a Multi-Modal Future for Southern Ontario

Moderator
Rish Malhotra Orange Traffic

Panelists
Dr. Hossam Gaber Ontario Tech University
Chris Philp CIMA+
Javed Khan City of Hamilton
Ali Hamdy LIVESENS
Tony Geara City of Detroit

Summary

- Presentations focused on integrated, connected, and data-driven multimodal transportation systems.
- Discussions included digital twins, connected and automated vehicles (CAV), and intelligent traffic management systems.
- Human performance was identified as a critical component in transportation system design and safety.
- Traffic Management Centers (TMCs) are evolving toward proactive, data-driven operations.
- Urban sensing and real-time data collection systems were presented to support decision-making.
- Case study from Detroit highlighted implementation of innovation zones and data integration.

Key Points

- Human-in-the-loop analysis is required for safe integration of CAV systems.
- Digital platforms and simulators are used to model human behavior and system interactions.
- TMCs are shifting from reactive operations to proactive, AI-enabled systems.
- Multidisciplinary collaboration is required across transportation and data teams.
- Urban sensing systems provide real-time data for planning and operations.
- Innovation zones enable rapid testing and deployment of new technologies.

Challenges

- Fragmented and outdated data across transportation systems.
- Integration of multiple technologies and agencies.
- Need for standardized and shareable data.
- Balancing innovation with safety, accessibility, and equity considerations.

Technologies / Initiatives Discussed

- Digital twins and simulation platforms.
- AI-enhanced traffic signal control and predictive analytics.
- Connected vehicle (V2X) systems.
- Edge-based sensor systems for real-time data collection.
- Cloud-based traffic management platforms.
- Transportation innovation zones for pilot deployment.

KEY TAKEAWAYS

- Future systems rely on integrated data, AI, and real-time awareness.
- Collaboration and human-centered design are critical.

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5 Key Takeaways

1. Hamilton is a critical multimodal gateway in Southern Ontario
2. Data integration and sharing are essential—but remain a major gap
3. Technology is compensating for physical and funding constraints
4. Transportation systems are shifting from reactive to proactive
5. Collaboration across sectors is a core success factor

Report prepared by Sahaja Mandava, AECOM