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Transforming First-Mile Logistics with Autonomous Dual-Mode Transportation: Bridging Road and Rail for Enhanced Efficiency and Sustainability



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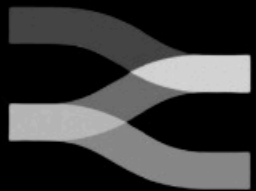
GLID

Transforming First-Mile Logistics with Autonomous Dual-Mode Transportation

Exploring the potential of autonomous dual-mode transportation to revolutionize first-mile logistics operations and beyond...



About
Kevin
Damoa



DREAMING BIG LIVING OPEN BUILDING INNOVATIVELY

Introduction: What I'll Cover



DUAL-MODE TRANSPORTATION

Systems that operate on both roads and rail can increase transportation efficiency by up to 30%, reduce logistics costs by 20-25%, and improve delivery times by 15-20% through seamless multimodal integration.



AUTONOMOUS CAPABILITIES

Self-driving technology boosts efficiency by up to 40% and enhances reliability by reducing accidents by 90% and breakdowns by 50%, while increasing operational uptime by 20%.



FIRST-MILE LOGISTICS

The final stage of the supply chain can comprise 50% of logistics costs, affect delivery speed by 40%, and influence customer satisfaction by 60%.



TRANSFORMATIVE POTENTIAL

Autonomous dual-mode transportation can revolutionize first-mile logistics in the U.S. by potentially reducing delivery costs by up to \$50 billion annually, improving delivery speed by 30%, and offering greater flexibility across the \$1.5 trillion domestic logistics market.

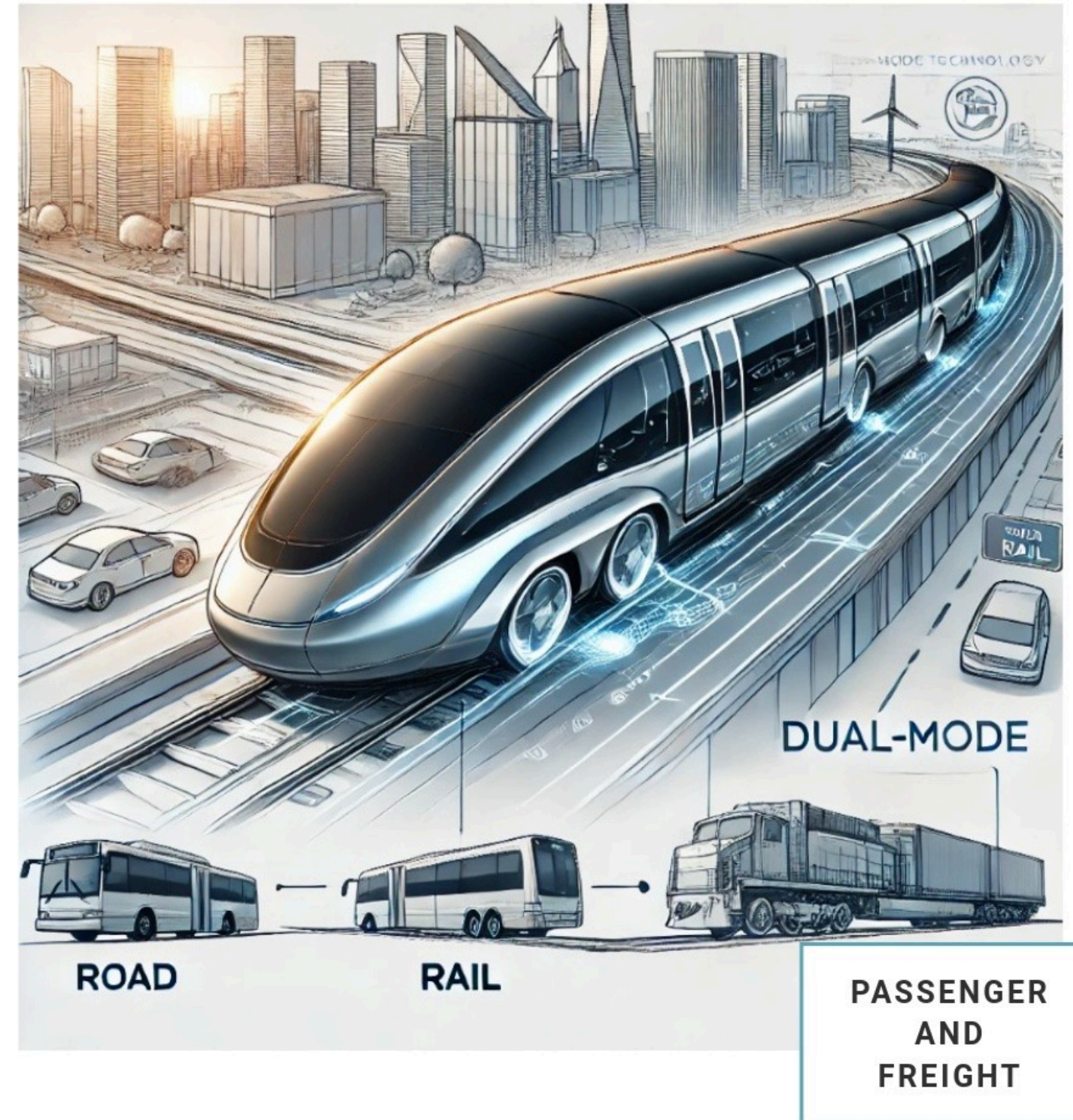
EXPLORING THE CONCEPT OF AUTONOMOUS DUAL-MODE TRANSPORTATION AND ITS ABILITY TO STREAMLINE AND ENHANCE FIRST-MILE LOGISTICS, UNLOCKING NEW POSSIBILITIES FOR EFFICIENT AND RELIABLE DELIVERY SYSTEMS.

The Role of Autonomous Dual-Mode Transportation

Autonomous dual-mode transportation systems can address the challenges in first-mile logistics by seamlessly integrating road and rail networks.

These systems utilize self-driving and =/or telli-driven vehicles that can transition between road and rail infrastructure, enabling:

- **MODE SHIFTING - EFFICIENT DOOR-TO-DOOR TRANSPORTATION AND OVERCOMING THE LIMITATIONS OF TRADITIONAL MODES.**



Key Features of Autonomous Dual-Mode Transportation



SEAMLESS INTEGRATION

Autonomous dual-mode transportation seamlessly integrates with existing transportation infrastructure, enabling a smooth and efficient first-mile logistics solution.



AUTOMATED OPERATION

These vehicles operate autonomously, eliminating the need for human drivers and providing consistent, reliable, and on-demand transportation services.



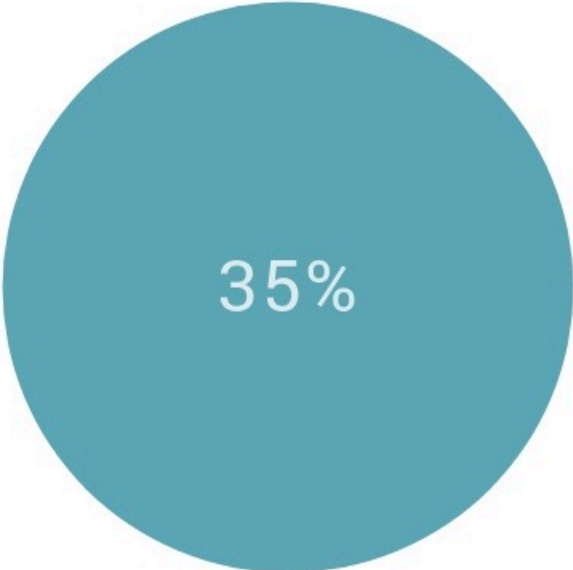
ENHANCED SUSTAINABILITY

Autonomous dual-mode transportation systems are designed to be environmentally friendly, with the potential to reduce emissions, energy consumption, and traffic congestion.

AUTONOMOUS DUAL-MODE TRANSPORTATION OFFERS A TRANSFORMATIVE SOLUTION FOR FIRST-MILE LOGISTICS, PROVIDING SEAMLESS INTEGRATION, AUTOMATED OPERATION, AND ENHANCED SUSTAINABILITY TO OPTIMIZE THE LAST-MILE DELIVERY PROCESS.

Advantages of Autonomous Dual-Mode Transportation

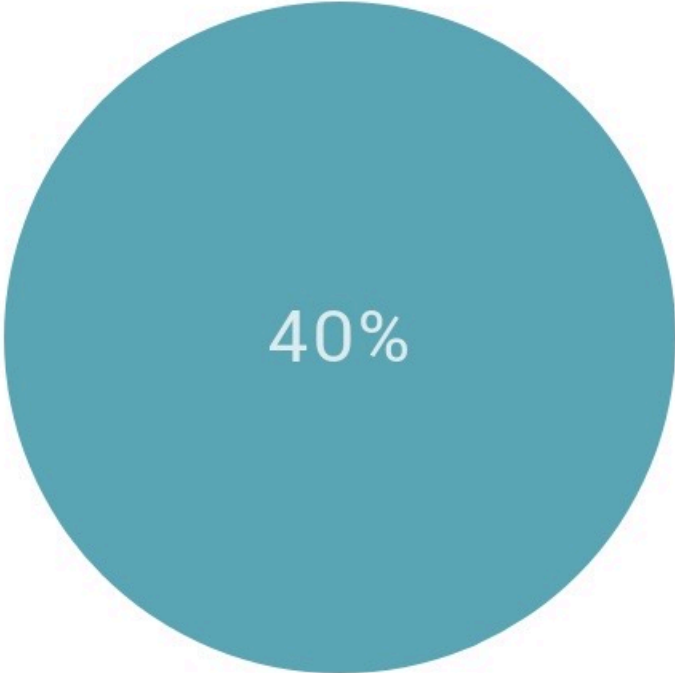
Percentage improvement in operational efficiency compared to traditional delivery methods



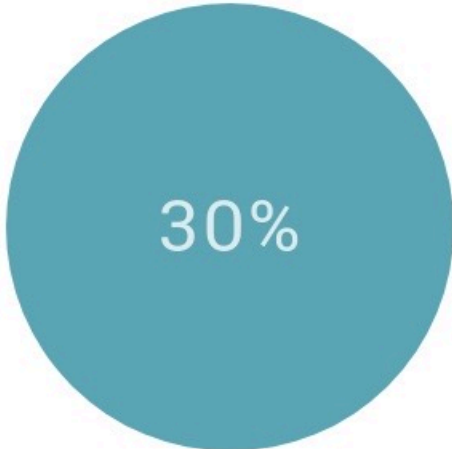
REDUCED TRAVEL TIME



IMPROVED ASSET UTILIZATION



OPTIMIZED ROUTE PLANNING



AUTOMATED LOADING/UNLOADING

Challenges in First-Mile Logistics



TRAFFIC CONGESTION

Heavily congested urban areas can cause delivery delays costing the U.S. economy up to **\$30 billion** annually, **increasing** transportation time by **20-40%** and significantly impacting logistics efficiency.



ENVIRONMENTAL IMPACT

Traditional delivery trucks in the U.S. contribute to nearly **60% of urban air pollution**, generate approximately **30% of transportation-related noise**, and account for around **7% of total carbon emissions**, significantly harming the environment.



INEFFICIENT ROUTES

Suboptimal routing and lack of real-time data can **increase operational costs by up to 25%**, waste up to **20% of fuel**, and lead to a **15% reduction in overall resource efficiency** in logistics operations.



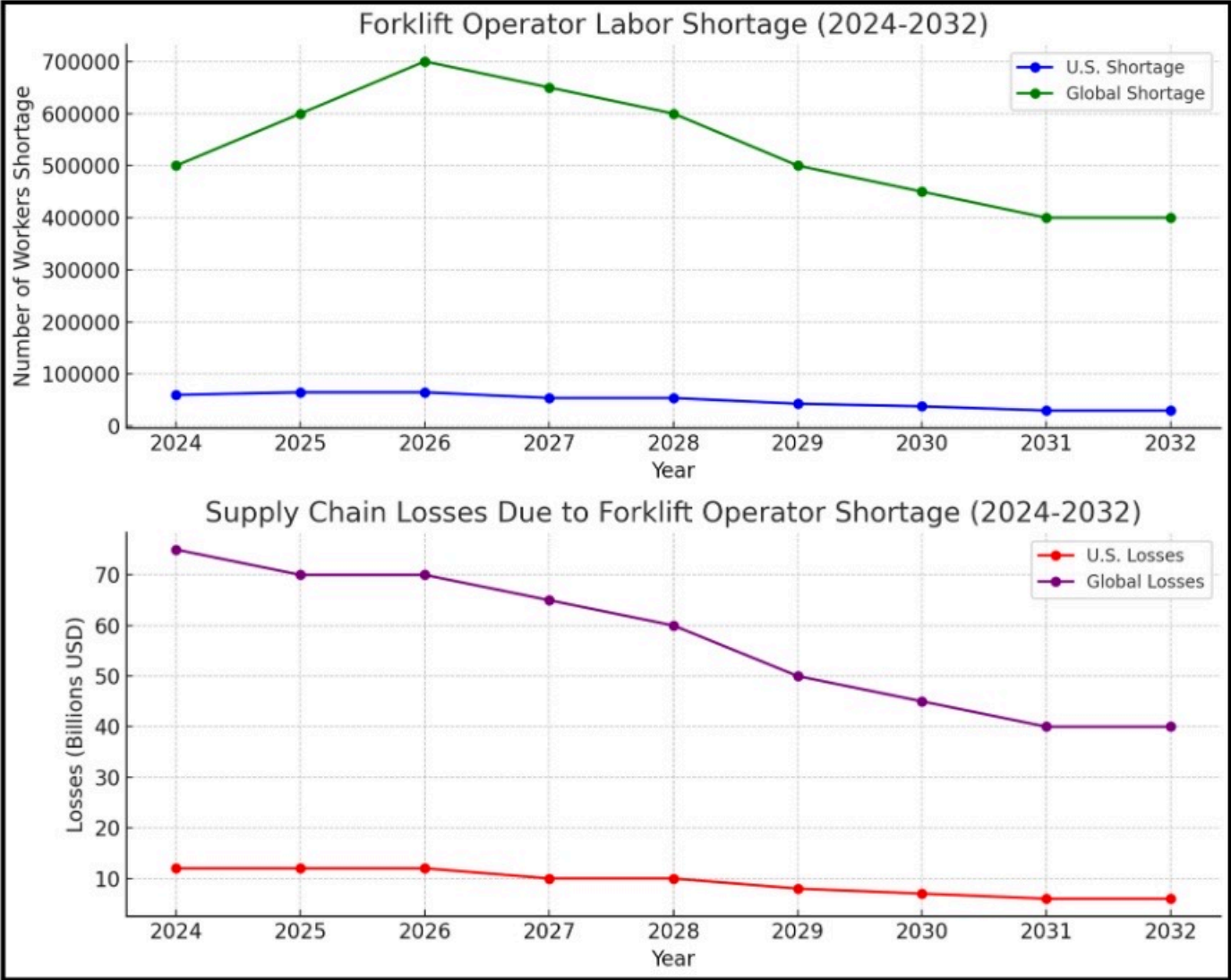
LABOR CHALLENGES

The U.S. logistics sector faces a **growing labor shortage**, including **80,000 truck drivers** and **50,000 forklift operators**, projected to double by **2030**, costing companies up to **\$20 billion** annually in inefficiencies and increased costs. Addressing these challenges is crucial for maintaining first-mile logistics efficiency.

ADDRESSING THESE KEY CHALLENGES IN FIRST-MILE LOGISTICS IS CRUCIAL FOR ACHIEVING COST-EFFECTIVE, SUSTAINABLE, AND EFFICIENT DELIVERY SOLUTIONS.

DUAL MODE VEHICLE IMPACT ON INTERMODAL OPERATIONS

Combating Labor Shortages and Growing Demand + Supporting Climate Change



85-100K OPERATORS SHORT BY 2032 @ \$20-\$30 BILLION

TRADITIONAL TRANSLOAD: LEVEL OF EFFORT PER CONTAINER



- 4 OPERATORS**
- 15-25 MINS**
- \$30-\$50**
- 11-21 LBS**
- \$486-\$1690**

REMEDIES

- **REDUCE VEHICLES/EQUIPMENT FROM 5 TO 1 VEHICLE**
- **AUGMENT OPERATIONS WITH HUMAN-CENTRIC AUTONOMY**
- **REDUCE COMPLEXITY IN OPERATIONS FOR APPLICABLE LANES**
- **ADOPT CLEAN ENERGY SOLUTIONS POWERED BY AI AND ML**
- **TAP INTO PORT AND RAIL ADJACENT MARGINALIZED COMMUNITIES FOR EMPLOYMENT INTO ADVANCED JOBS (GENERATIONAL WEALTH).**

DUAL MODE VEHICLE IMPACT ON INTERMODAL OPERATIONS



Category	Traditional Operations (Annualized Costs)	Gliders (Annualized, Including Maintenance)	Savings with Gliders
Labor Costs	\$2.38M - \$3.96M	\$1M - \$1.5M	\$1.38M - \$2.46M saved annually
Equipment Costs	\$13M - \$21.55M (all equipment over 10-40 years)**	\$15M (Gliders, 25 years incl. maintenance)**	\$6M - \$15.55M saved over equipment lifecycle
Fuel Costs	\$18M (4.5M gallons of diesel @ \$4/gal)**	\$0 (electric Gliders)**	\$18M saved annually
CO ₂ Emissions	50,400 tons of CO ₂ emissions annually	Near 0 (electric; assuming clean energy)**	50,400 tons of CO ₂ saved annually
Operational Speed	15-25 min/container, 19-32 containers/shift	20-30% faster, 26-42 containers/shift**	20-30% throughput increase (400,000 - 600,000 TEUs)
Maintenance Costs	\$1.35M - \$1.85M annually	\$0 (maintenance included in Glider cost)**	\$1.35M - \$1.85M saved annually
Accident & Fatality Costs	\$3.95M in accident costs	\$1.185M in accident costs	\$2.765M saved annually
Accidents & Fatalities	55 accidents/yr, 1 fatality every 2 years	70-80% reduction	Accidents reduced by 70%, fatalities by 80%
ROI	Significant investment due to high labor and fuel costs	ROI achieved faster due to reduced costs	ROI within 10-15 years with state & federal incentives

\$25M ANNUALIZED COST SAVINGS WITH \$13.5-\$18M STATE AND FEDERAL INCENTIVES

DUAL-MODE VEHICLE IMPACT ON INFRASTRUCTURE SPENDING

EFFICIENCY GAINS:

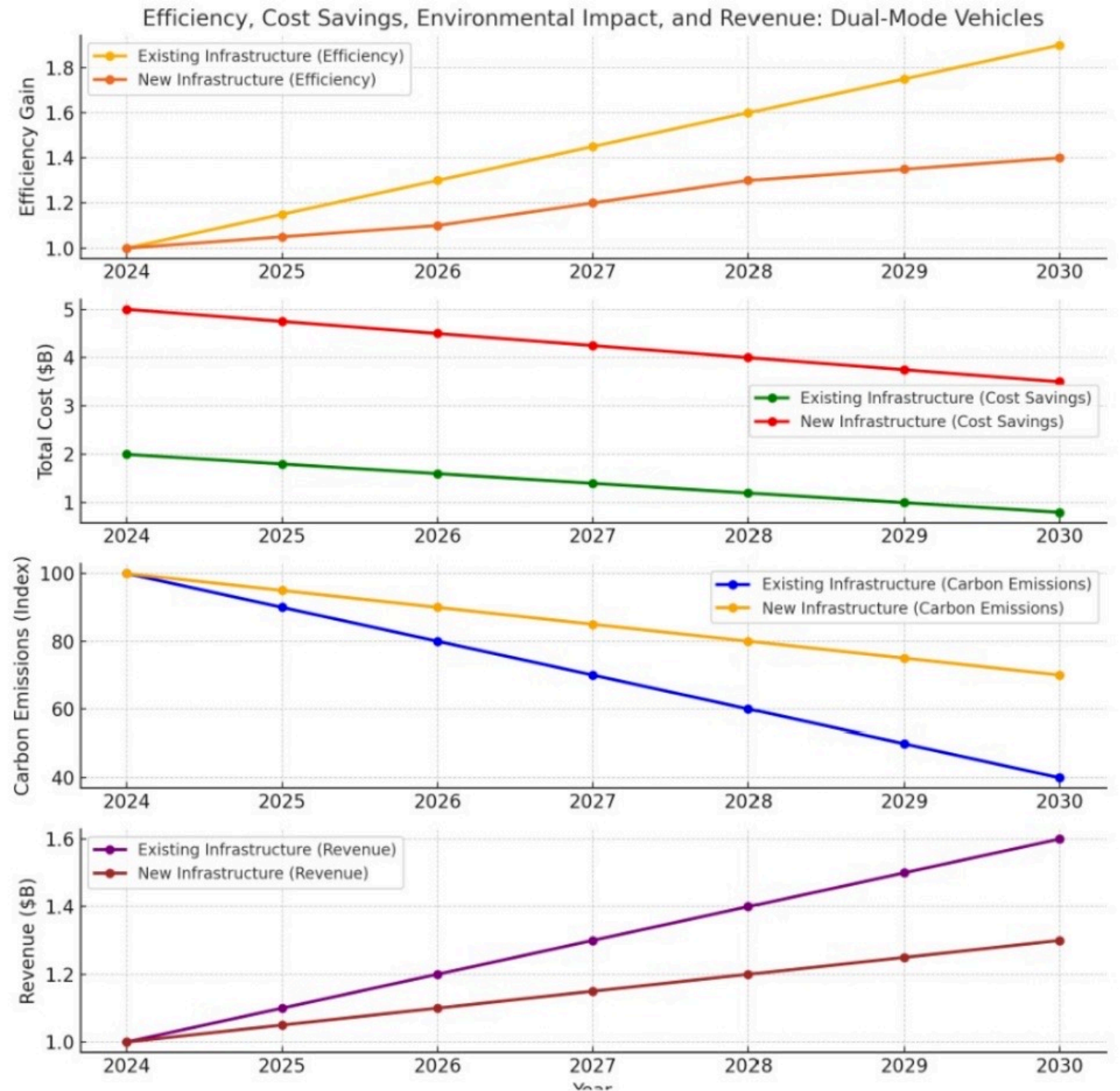
- Existing Infrastructure - 90%
- New Infrastructure - 40%

COST SAVINGS

- Existing: \$2B Investment, 60% Savings
- New: \$5B Investment, 30%

ENVIRONMENTAL IMPACT:

- Existing: 10-15% annual emissions reduction
- New: Initial emissions spike, 5% reduction annually post-construction

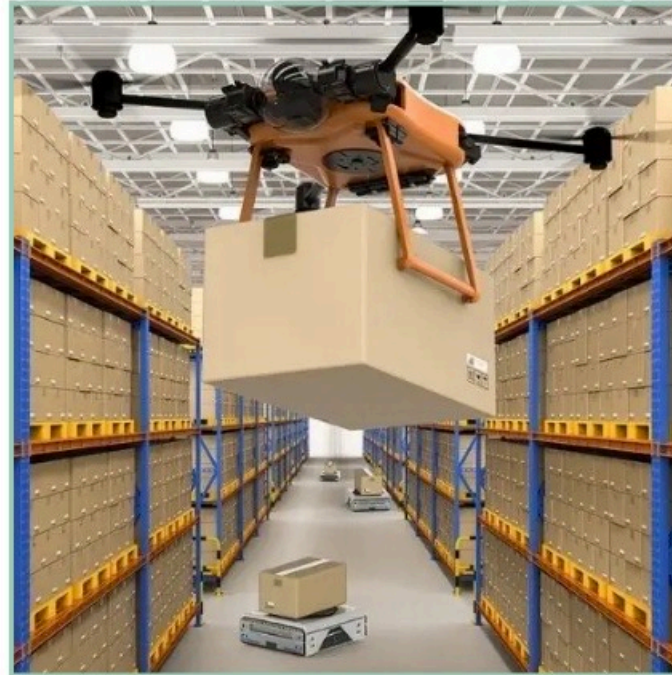


Case Studies



LAST-MILE DELIVERY WITH AUTONOMOUS VEHICLES

Showcase an autonomous delivery vehicle efficiently transporting goods from a distribution hub to a residential neighborhood.



WAREHOUSE INVENTORY MANAGEMENT WITH AUTONOMOUS ROBOTS

Demonstrate how autonomous robots work alongside human workers to streamline inventory tracking and order fulfillment in a warehouse setting.



AUTONOMOUS SHUTTLE SERVICE FOR AIRPORT PASSENGERS

Showcase an autonomous shuttle service transporting passengers efficiently between an airport terminal and a remote parking lot or transportation hub.



INTERMODAL FREIGHT TRANSPORT WITH DUAL-MODE VEHICLES

Illustrate the seamless integration of autonomous dual-mode trucks that can transition between road and rail transport to optimize first-mile logistics.

The Thought Process



- ✓ **COMBINE 2 MODES OF TRANSPORTATION INTO ONE VEHICLE USING ROBOTICS, AI, AND ALTERNATIVE ENERGY**
- ✓ **MAKE IT FEEL FAMILIAR AND EASY TO ADOPT - LIKE IT'S ALWAYS BEEN THERE**
- ✓ **AS SOON AS IT ARRIVES, IT'S READY TO HIT THE GROUND RUNNING, A **TURNKEY END-TO-END SOLUTION****
- ✓ **LET IT'S **POWER** LIE IN THE **SOLUTIONS** THAT IT PROVIDES TO THE **WORLD****

Introducing



Glid Benefits

Cheaper, Faster, More Reliable, & Near Net Zero Emissions



PROCESSING TIME



14X
FASTER

LABOR



181K HRS
HOURS/DAY

COST



\$4.5M/DAY

EMISSIONS



2088 MT
CO2

SAFETY



1.37
ACCIDENTS

*Processing 70K TEUs per Day

Go-to-Market Strategy



OUR TARGET MARKET

Military and Defense



Energy and Oil



Aerospace



Yard Marshalling



Commercial Intermodal



Decarbonized Transportation
Lean & Efficient Operations
Self-Powered Autonomous
Road & Rail System
A "True" Multimodal Solution



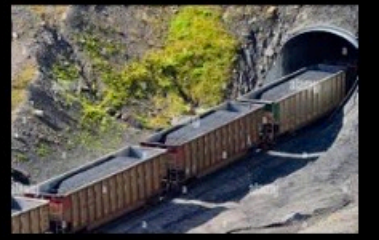
Automotive and Equipment



Agriculture



Lumber



Coal Mining

GLIDERS CAN HAUL ANY HIGHWAY TRAILER OR RAILWAY CART WITH MINOR OR NO ADJUSTMENT, MAKING IT A GREAT FIT FOR MULTIPLE COMMODITY TYPES

\$600B U.S. MARKET

CONTAINER PORT DRAYAGE

Partnered with seaborne ports for ground based drayage operations for the first-mile



Congressional backing is secured as partnership boosts technological progress in the region.



\$700B U.S. MARKET

OUTBOUND TRUCKING

Aligned with Trucking Operators shifting their cargo from Trucks to the rails to save on cost and increase delivery speed



Pilot projects with high-profile industry stakeholder - Binding PO \$250K



\$3.1B U.S. MARKET

SHORTLINE RAILROAD

Collaborated with Shortline railroad operators to implement eco-friendly technology, enhance capacity, and improve rail usage.

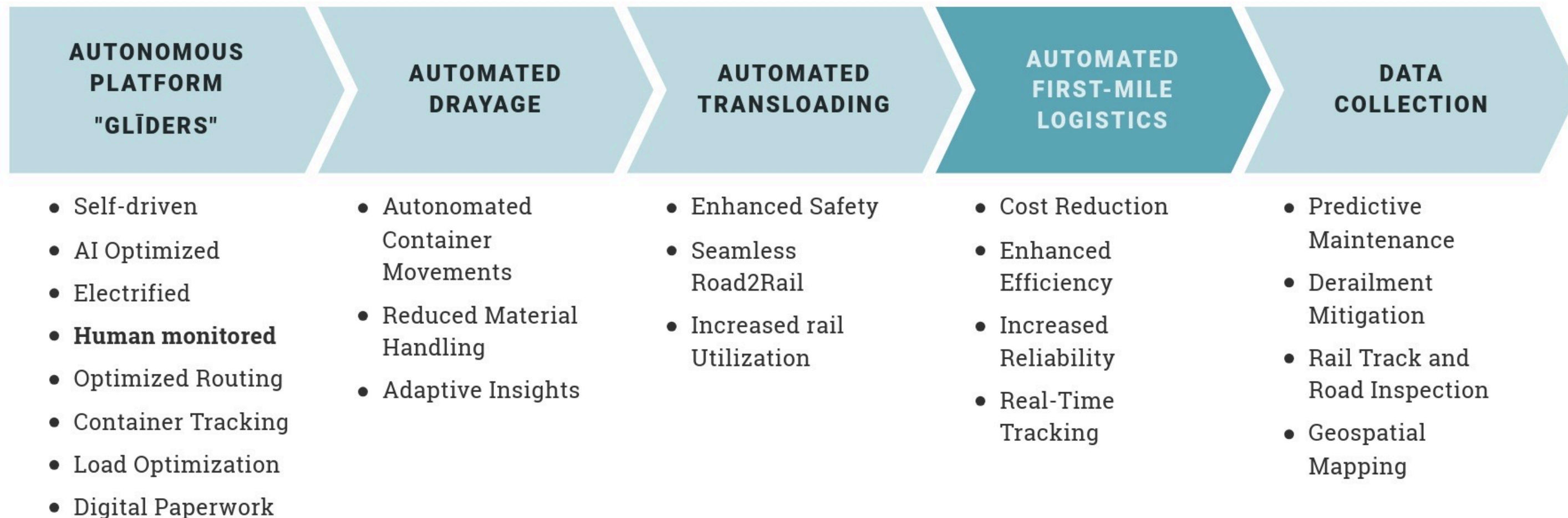


Signed deal for autonomous transition operations on provider's 33-mile rail track.

How Our Patented Technology Works



PROPRIETARY OPERATING SYSTEM POWERED BY AI INTEGRATIONS



Technical Considerations

- **SENSOR FUSION AND PERCEPTION**

Integrating multiple sensors (e.g., cameras, LiDAR, radar) to create a comprehensive understanding of the vehicle's surroundings, enabling robust object detection, classification, and localization.

- **MOTION PLANNING AND CONTROL**

Developing advanced algorithms for trajectory planning, vehicle dynamics modeling, and precise control systems to enable safe and efficient navigation in both autonomous and manual driving modes.

- **POWER MANAGEMENT AND ENERGY EFFICIENCY**

Designing efficient power systems and energy-saving strategies to maximize the range and operating time of the autonomous dual-mode transportation system, especially for the electric or hybrid propulsion modes.

- **CONNECTIVITY AND COMMUNICATION**

Implementing reliable and secure vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication protocols to enable real-time data exchange, fleet coordination, and seamless integration with transportation networks.

- **SAFETY AND REDUNDANCY**

Ensuring the highest levels of safety through robust fail-safe systems, redundant components, and comprehensive testing and validation processes to mitigate risks associated with autonomous operations.

Infrastructural Considerations



EXISTING NETWORK INFRASTRUCTURE

Leverage current roads, highways, and transportation corridors to minimize new infrastructure requirements and costs.



INTERMODAL CONNECTIVITY

Integrate with existing freight and logistics hubs, such as rail terminals, seaports, and airports, to enable seamless multimodal transportation.



CHARGING/FUELING STATIONS

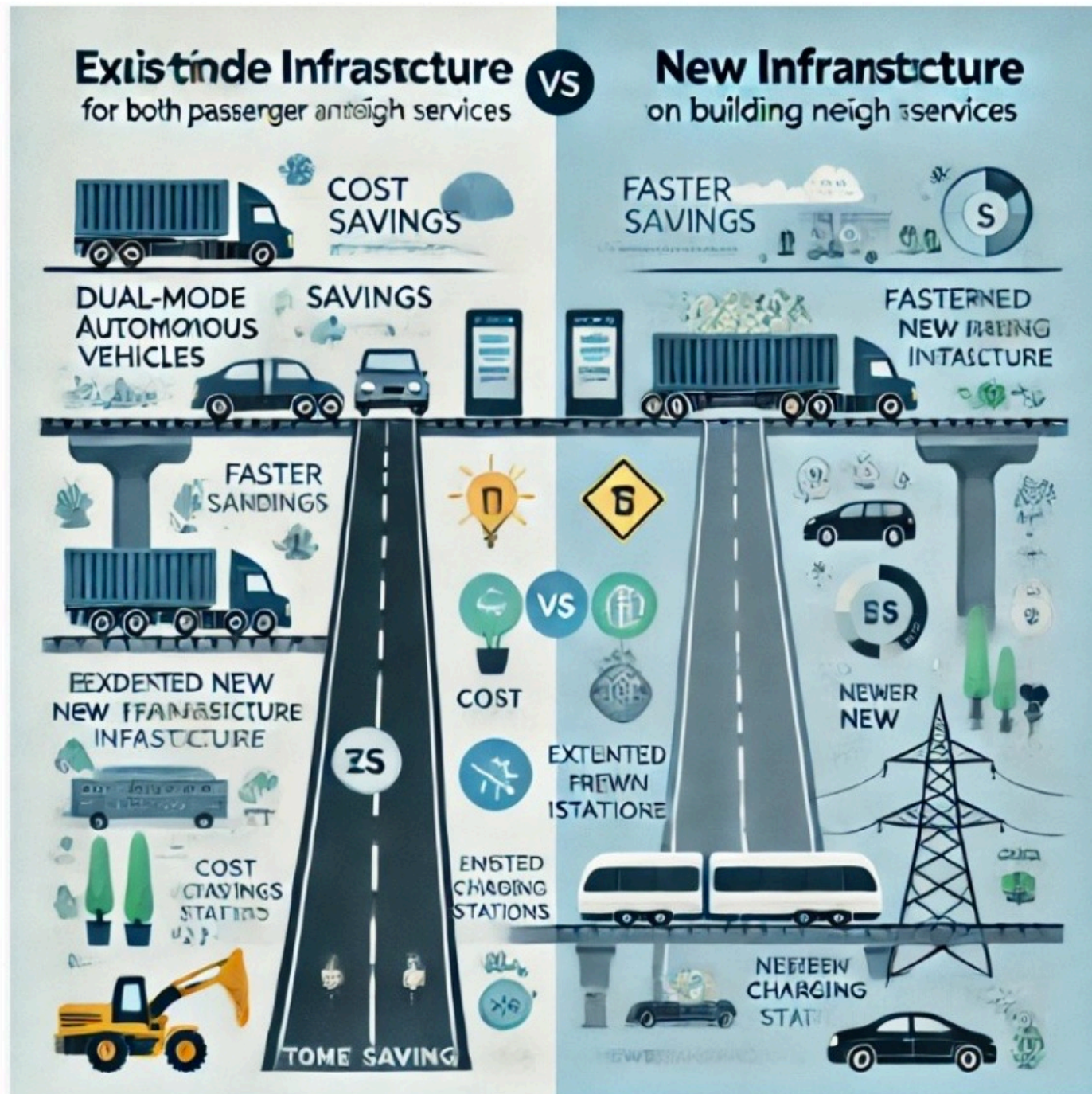
Utilize and expand upon existing electric vehicle (EV) charging or alternative fuel stations to support the autonomous dual-mode vehicles.



DATA AND CONNECTIVITY

Leverage existing telecommunication networks, such as 5G or fiber optic, to enable real-time data exchange and remote monitoring of the autonomous vehicles.

RECAP OF THE BENEFITS OF DUAL-MODE VEHICLES



Key Enablers



- INCREASED RAIL UTILIZATION
- REDUCED HIGHWAY CONGESTION
- REDUCED DERAILMENTS



- MAKING RAIL MORE ACCESSIBLE
- [amazon](#) [Uber](#) [Walmart](#) [IKEA](#)



- REDUCED CARBON EMISSIONS



- INCREASED REVENUE
- REDUCED OPERATIONAL COSTS
- LOWER SHIPPING COSTS



- SAFER OPERATIONS
- REDUCED ACCIDENTS AND FATALITIES
- REDUCED POLLUTION (AIR/NOISE/WATER)
- CREATION OF ADVANCED JOBS

Roadmap and Future Outlook

2023-2025

Pilot deployment of autonomous dual-mode vehicles in select first-mile logistics hubs to test feasibility and gather user feedback.

2025-2027

Scaling up of autonomous dual-mode vehicle fleets and integration with existing logistics networks in major metropolitan areas.

2027-2030

Development of standardized operational protocols and regulatory frameworks to enable widespread adoption of autonomous dual-mode transportation in first-mile logistics.

2030-2035

Expansion of autonomous dual-mode transportation to smaller cities and rural areas, connecting remote communities to the broader logistics network.

2035-2040

Seamless integration of autonomous dual-mode vehicles with advanced analytics and optimization algorithms to enhance overall efficiency and resilience of first-mile logistics.

Thoughts? Questions?

Open the floor to feedback and discussion.





THANK YOU!

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Wrap Up, 2025 and Beyond



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Wrap Up, 2025 and Beyond



Jeffrey Brandes
CEO/Founder
Florida Policy Project

**See you next year at the
13th annual FAV Summit!**

**The Summit will be presented by Central Florida
Expressway Authority (CFX)
November 5-7, 2025
Omni Champions Gate**

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