Lab**Trans**

LabTrans

Transportation and Logistics Laboratory

UFSC

Lab**Trans**

Innovation and excellence in transportation and logistics

Transforming Transportation Through Innovation

LabTrans is a pioneering research and development center specializing in multimodal transportation, mobility, and logistics. Through advanced technologies, sophisticated simulation tools, and strategic planning, we deliver innovative solutions that enhance efficiency, safety, and sustainability for businesses, governments, and regulatory agencies.

Our Expertise

Traffic Engineering

We utilize cutting-edge simulation techniques to create virtual models of transportation systems. This allows for precise scenario analysis and impact forecasting, ensuring more efficient, economical, and sustainable mobility solutions before project implementation.

Logistics

Our advanced logistics simulators and georeferenced analysis tools optimize supply chains and transportation routes. We provide scenario modeling, economic evaluations, and logistics cost assessments, empowering decision-makers with data-driven insights for smarter investments.

Shaping the Future of Mobility

LabTrans is at the forefront of transportation research, driving progress with data-driven strategies and state-of-the-art technology.

Why Partner with LabTrans?

⊘ **Academic Excellence & Industry Expertise**

Our solutions combine cutting-edge research with insights from experienced professionals and consultants beyond academia.

⊘ **State-of-the-Art Simulation & Analysis Tools**

We leverage advanced technology to optimize transportation and logistics systems with precision and efficiency.

⊘ **Tailored Solutions for Businesses & Public Sector**

Our customized strategies address the unique challenges of governments, industries, and regulatory agencies.

⊘ **Commitment to Efficiency, Sustainability & Smart Mobility**

We drive progress with intelligent mobility solutions that enhance performance, reduce costs, and support sustainable growth.

Fields of **Activity**

Air Transportation Systems

- Strategic air transportation planning to improve airport infrastructure and operations.
- Capacity assessments and demand forecasting for enhanced air mobility.
- Development of regulatory and planning frameworks to support sustainable aviation growth.

Railway Transportation Systems

- Implementation of rail system monitoring and auditing tools to optimize performance.
- Development of cost assessment models that contribute to tariff structures.
- Support for safety, supervision, and accident analysis in railway operations.

Inland Waterway Transportation Systems

- Strategic planning and feasibility studies for inland waterway transport development.
- Optimization of port and intermodal logistics for seamless cargo movement.
- Regulatory and tariff analysis to support sustainable inland waterway transport growth.

Public Transportation Systems

- Design and optimization of urban and regional public transit networks.
- Application of mobility studies to enhance accessibility and passenger experience.
- Support for policy development and innovative mobility solutions to improve efficiency.

Transport Infrastructure Management

- Assessment and planning of road networks, bridges, and transport corridors.
- Use of data-driven tools to enhance infrastructure maintenance and investment decisions.
- Development of strategies to support sustainable and resilient transportation systems.

Sustainable Mobility & Innovation

- Integration of environmentally friendly solutions for urban and regional transport.
- Research and development of smart mobility technologies for sustainable cities.
- Promotion of low-carbon, multimodal transport strategies to reduce environmental impact.

Highway Transportation Systems

- Geo-referenced highway transport modeling to analyze and optimize road mobility.
- Advanced trip simulation using a 4-stage transportation model for cars, buses, and trucks.
- Innovative weigh-in-motion systems to prevent overweight cargo violations and protect road infrastructure.
- Highway safety assessments to identify critical risk areas and implement corrective measures.

Urban Transportation Systems

- Feasibility and monitoring systems for optimizing bus lines and fare structures.
- Technical and economic studies for enhancing regional passenger rail transport.
- Support for sustainable urban mobility strategies through data-driven research and planning.

Defense Systems

- Development of logistics and mobility planning tools for defense operations.
- Simulation and analysis models to enhance strategic decision-making.
- Application of GIS-based frameworks for scenario analysis and operational efficiency.
- Solution to optimize resources and preparedness.

Road Infrastructure Assessment

- AI-powered analysis using ROR (Recognizer of Road Objects) to monitor road conditions from georeferenced video data.
- Enhances road safety by automating the detection of signage, pavement defects, and infrastructure elements.
- Optimizes maintenance planning by reducing inspection costs and processing time.

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