

TRANSPORT  
PLANNING



Strategic ally for integrated, accessible  
and sustainable transportation



# SYSTRA CANADA

## 30 YEARS OF INNOVATION, FROM INFRASTRUCTURE TO SMART MOBILITY

Since 1990, SYSTRA Canada, headquartered in Montreal, has been at the forefront of innovation, shaping the future of mobility. From strategic mobility planning to selecting the ideal transportation systems, including rolling stock and signalling, our wide-ranging expertise offers tailored solutions for every challenge. Visionary and committed, we create sustainable connections to drive the future of mobility.

SYSTRA Canada is a member of the SYSTRA Group, one of the world's leading engineering and consultancy firms specializing in public transport and mobility solutions with over 11,000 employees and a presence in 80 countries. Our teams of experts combine extensive professional experience acquired in Canada and abroad to reflect SYSTRA Group's commitment to excellence.



### THE SIGNATURE TEAM IN TRANSPORT SOLUTIONS

#### OUR MISSION

Carefully listen to our clients and fully understand their needs in order to provide customized, innovative, eco-friendly, and sustainable mobility solutions.

#### OUR VISION

Envision the transportation of tomorrow by designing mobility solutions for decades to come, paving the way for thousands of passengers. Our teams of experts advise, design, and build new mobility solutions, making SYSTRA the signature team for transport solutions for everyone.

To achieve this goal, we rely on the dedication of all our employees, who embody SYSTRA's core values: a relentless pursuit of EXCELLENCE, a strong spirit of TEAMWORK, and a distinctive identity driven by a BOLD LEADERSHIP and INNOVATION.

#### OUR COMMITMENT

Driven by our engineering culture, excellence is not just a goal but a way of working. Our clients are ambitious and demanding, and in turn, we are committed to delivering the best solutions that ensure optimal performance and sustainability — without compromising on ethics, compliance, or the health, safety, and security of all involved.

## ENVISIONING MOBILITY SOLUTIONS TAILORED TRANSPORT PLANNING

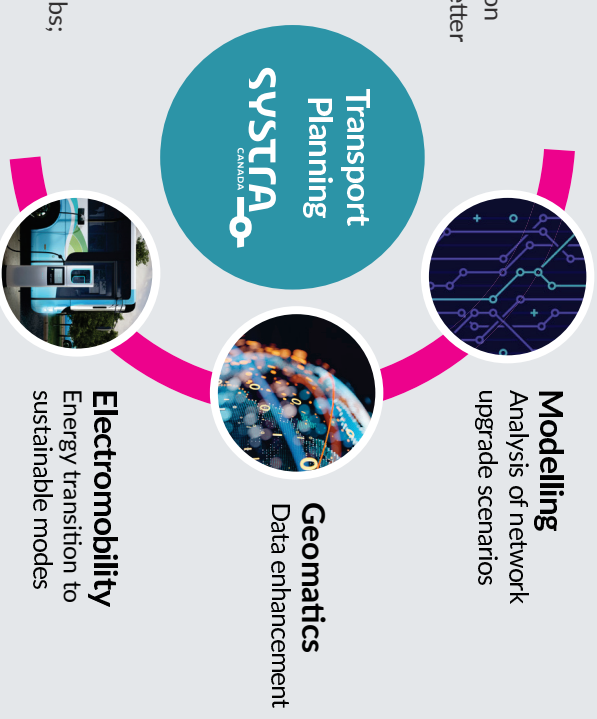
Transport planning is a strategic and visionary approach that allows SYSTRA Canada to assist our clients in their mobility decisions. Throughout your projects, we leverage our expertise to design innovative, efficient, and sustainable transportation networks that address the complex challenges faced by municipalities. As a pioneer in this field, SYSTRA Canada is involved from the earliest stages of projects, providing precise analyses and strategic solutions to guide decisions effectively.

Modelling, geomatics and electromobility all make essential contributions to transportation planning. These disciplines play a key role in better understanding mobility needs and making informed decision-making based on reliable, accurate data.

For many years, our team of experts in transport planning has supported a wide range of ambitious projects, including:

- Feasibility studies for the development of new structuring modes and its impact on the transportation network;
- Development of multimodal exchange hubs;

- Redesign of bus networks;
- Development of demand-based transport solutions;
- Feasibility and opportunity studies in mobility;
- Development of transport plans for municipalities of various sizes;
- Studies on the integration of structuring modes.



#### WHAT SETS US APART

- A team of 15 experienced and dedicated individuals offering innovative solutions in the field of transport planning.
- Tools developed by SYSTRA Canada, tailored to the realities of our clients, as well as their availability.
- Proven knowledge of the Canadian territory and its opportunities and specificities.
- A personalized customer experience adapted to their reality.
- Transportation solutions that fully meet the needs of all communities, residents and populations, while respecting the surrounding environment.



# GEOMATICS (GIS)

## TRANSFORM YOUR DATA INTO STRATEGIC DECISIONS

The SYSTRA Canada team masters geospatial technologies to transform your data into innovative, customized solutions. We excel in data science, web application design, spatial analysis, mapping, photogrammetry and remote sensing.

Our services cater to public administrations, urban development projects and the transportation, forestry and energy sectors. We enhance decision-making, environmental management, and diverse workflows through innovative GIS solution, creating interactive maps, dashboards, 3D models, and spatial analyses to help you gain deeper insights into your projects.

We deploy ArcGIS Online/Enterprise and integrate GIS with AEC tools, BIM, and Power BI. At SYSTRA Canada, innovation is at the heart of our approach, ensuring that we provide high-performance GIS solutions tailored to your needs.

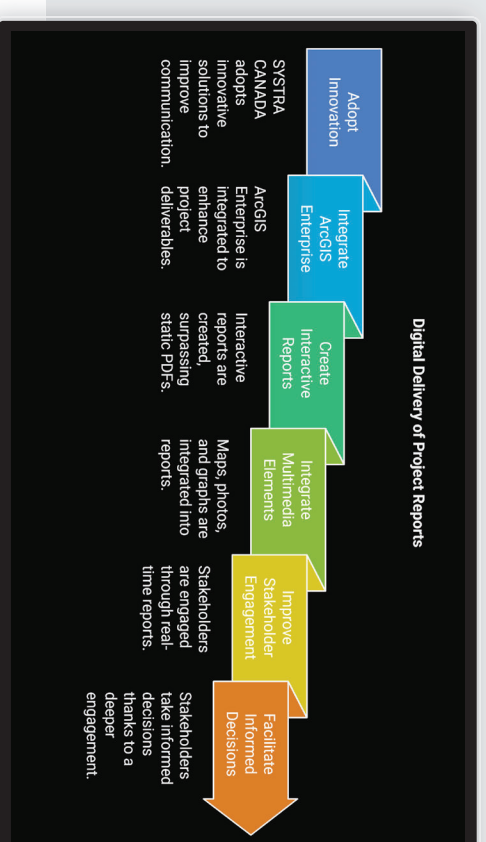
Our expertise supports you in asset management, infrastructure planning, environmental impact analysis, and the creation of digital twins of urban spaces.

### OUR ABILITY TO SOLVE URBAN PLANNING ISSUES WITH GIS

- **Road congestion:** Analyze traffic flows and optimize circulation.
- **Land use conflicts:** Assess and optimize land use.
- **Urban sprawl:** Monitor and model urban growth.
- **Environmental degradation:** Identify and map at-risk areas.
- **Public transport accessibility:** Improve service to underserved areas.
- **Urban heat islands:** Map heat zones and propose solutions.
- **Infrastructure maintenance:** Manage and optimize asset maintenance.
- **Inequitable distribution of resources:** Analyze access to public services.
- **Air quality issues:** Evaluate and monitor air pollution.



## INTERACTIVE DELIVERABLE: A REVOLUTION IN CUSTOMER EXPERIENCE



At SYSTRA Canada, we embrace innovation to improve communication and decision making throughout our projects. By leveraging the power of ArcGIS Enterprise, we have revolutionized the way project reports are delivered. Moving beyond static PDFs or paper documents, our interactive digital reports seamlessly integrate maps, photos, charts, and text content into an intuitive and user-friendly interface.

This dynamic approach allows stakeholders to explore project information in real time, fostering deeper engagement and more informed decisions. Our technology also enables us to elevate and transform your reports into interactive and immersive experiences tailored to your needs.

### YOUR BENEFITS

- **OPTIMIZE** your workflow with the help of integrated GIS solutions.
- **IMPROVE** the decision-making with precise spatial analysis.
- **FACILITATE** the communication by clear and interactive visualization.
- **ACCELERATE** projects thanks to automation of geospatial tasks.
- **REDUCE** costs by optimizing resource use and infrastructure requirements.



# MODELLING

## PLANNING THE FUTURE OF MOBILITY

Transport modelling is a crucial aspect of transport planning, offering innovative solutions to the challenges of tomorrow.

Thanks to our cutting-edge tools, we can accurately simulate travel behaviour, enabling us to anticipate future needs and evaluate a variety of relevant and efficient transport planning scenarios.

Our advanced models provide detailed analysis of all types of traffic flows, travel times, and greenhouse gases (GHG), offering a solid foundation for informed decision making.

## THE MODELLING TOOLS

The modelling discipline relies on powerful tools to accurately illustrate future transportation needs.

At SYSTRA Canada, we have developed our own modelling software, especially designed to accelerate analysis and offer optimal flexibility, perfectly tailored to your specific needs.

This unique know-how enables us to offer customized, high-performance solutions to support your projects with unparalleled expertise.

## CREATE ADAPTED TRANSPORT MODELS

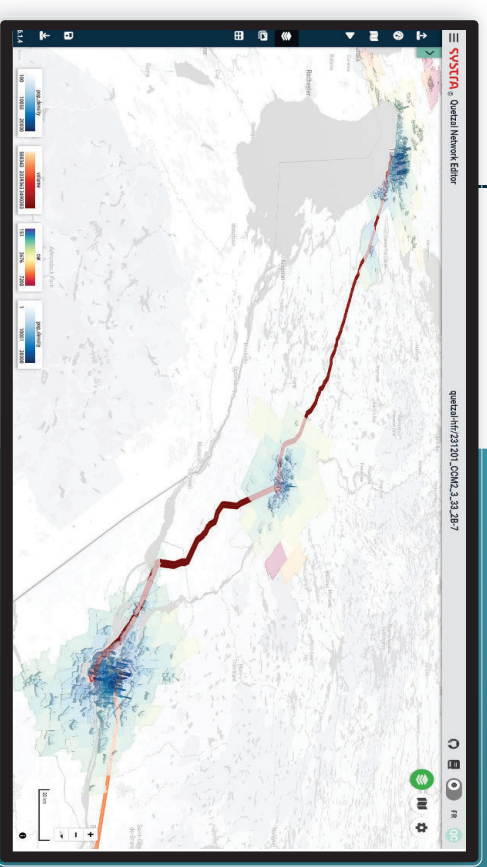


Quetzal is a powerful tool that enables the development of complex transport models based on an "Open Source" Python library.

All Quetzal models can be deployed on our online platform to offer a modelling experience that combines the simplicity of a web application, transparent customization of Python models, and parallel computing capabilities.

## YOUR BENEFITS

- **TAILORED** transport models without software constraints,
- **DESIGN** automated data processing tools to enhance responsiveness during studies and reduce production timelines,
- **MODEL** networks of all types and sizes with ease, thanks to continuously updated algorithms and model-software integration.





# ELECTROMOBILITY

## EXPERTISE, STRATEGY, DURABILITY

SYSTRA Canada specializes in supporting bus and heavy vehicle fleet operators in their transition to electric energy.

Our experts assist most major operators across Quebec in financial estimation (CAPEX and OPEX), supply chain management, environmental analysis (reducing GHG emissions), and the integration of virtual environments, such as charging and parking management systems.

From the preparatory phase to operation, including design, tenders, construction, and commissioning, we are your partner of choice for an efficient and sustainable fleet electrification.

## ELECTROMOBILITY TOOLS

SYSTRA Canada has developed a suite of cutting-edge digital tools designed to simulate electric bus operations and assist its partners in transitioning to electric mobility.

These tools effectively tackle the challenges associated with this transformation, while maximizing its benefits.

From the initial sizing phase to the development of optimized route programs, including the simulation of various operational scenarios and the tracking of asset life cycles, SYSTRA Canada offers comprehensive and tailored solutions to bring your sustainable mobility projects to life.

## SIZE THE INFRASTRUCTURE, FLEET AND SERVICE OF ELECTRIC VEHICLE NETWORKS

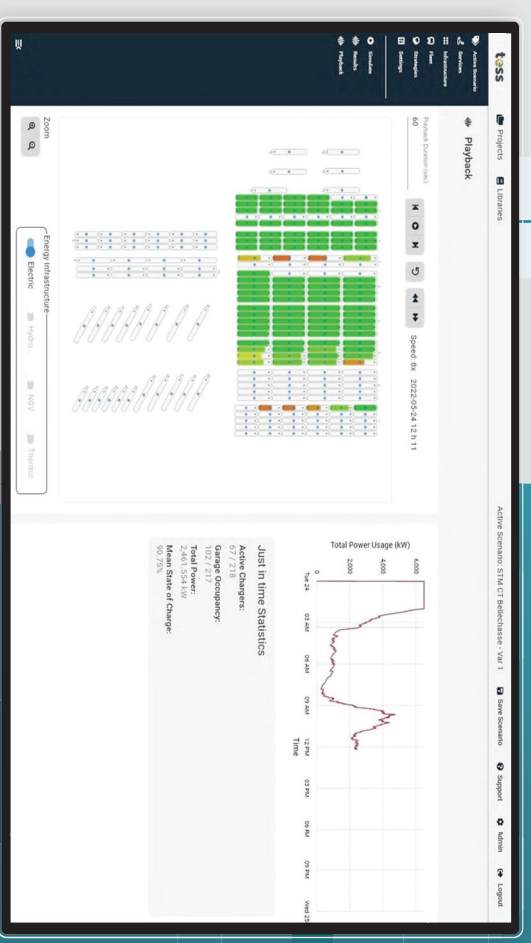


TESS is a powerful tool that models and simulates electric bus charging scenarios in real-world conditions, taking into account the operational constraints of your depots and operations. It easily generates the graphical representation of the service, integrating the specific autonomy requirements of electric buses based on your network's timetable.

As a result, you can realistically simulate your electrified operations at every stage of the project and determine the optimal operational strategy.

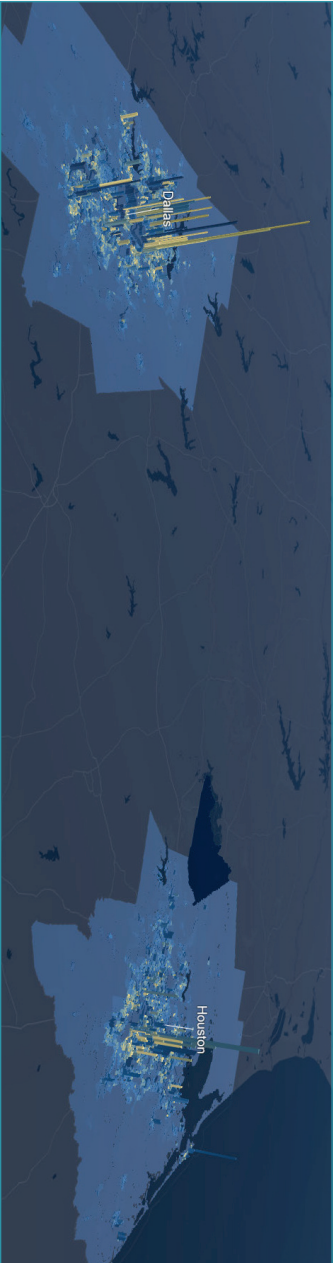
### YOUR BENEFITS

- **MODEL** your infrastructure and your fleet of vehicles.
- **ESTIMATE** the consumption and the electrification of your service.
- **OPTIMIZE** the acquisition and operation costs.



# TAILORED PROJECTS

## AT THE CUTTING EDGE OF TECHNOLOGY



### CAISSE DE DÉPÔT ET PLACEMENT DU QUÉBEC, INFRA (CDPQI)

#### Prospecting for the Development of a Structuring Mode in 14 Cities in Canada and the United States

CDPQI sought the expertise of SYSTRA Canada to provide prospecting and technical assistance to assess the potential of 14 North American cities for the integration of a mass transit system. Prior to starting the study, CDPQI identified 14 Canadian and American cities demonstrating investment potential for the implementation of a new mass transit system. The objective of the mandate was to provide guidance to CDPQI in the selection of the most suitable agglomerations for the development of a mass transit system.

The project is broken down into three main phases:

**Phase 1:** Conduct a multi-criterion analysis and rank the urban areas based on their potential for developing a structuring transport mode.

**Phase 2:** Develop preliminary ridership simulations for the selected urban areas using modelling (Quetzal) and geomatics (ArcGIS).

**Phase 3:** Develop a web-based deliverable for dynamic presentation of results.

#### KEY FACTS

- Network modelling coupled with geomatics to quickly and efficiently identify optimal scenarios for the insertion of structuring modes;
- Multi-criterion analysis to identify urban areas to be prioritized when prospecting for clients;
- Developing a website for results deployment, allowing clients to deliver high-quality presentations to interested cities.



### AUTORITÉ RÉGIONALE DE TRANSPORT MÉTROPOLITAIN (ARTM)

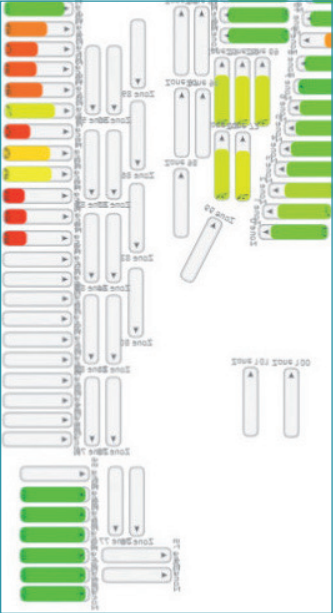
#### Optimization of Public Transport Services Between the Anjou and Radisson Terminals

The extension of the Blue Line will provide a new, efficient transportation option in the eastern part of Montreal. With the Blue Line extension underway, we need to think about its impact on other modes of transportation.

SYSTRA Canada was mandated to recommend scenarios for optimizing the public transit offer to, from and between the Anjou and Radisson terminals.

#### KEY FACTS

- Mapping to visualize the different scenarios;
- Precise network modelling for optimization;
- Identification of constraints, challenges, advantages, and disadvantages of each scenario.



### SOCIÉTÉ DE TRANSPORT DE TROIS-RIVIÈRES (STTR)

#### Transportation Electrification Project

Growing environmental concerns have led governments to reconsider their position on the use of fossil fuels.

In this context, the SyBEL consortium — made up of SYSTRA Canada, BPA, EXP and Lemay — was mandated to provide professional engineering services to support the gradual electrification of its garage.

#### KEY FACTS

- Support provided to the city of Trois-Rivières by electromobility experts;
- Reduction of STTR's carbon footprint;
- Progressive electrification plan for STTR's transport fleet.



## OUR RELATED ARTICLES



Transport Planning: An Integrated Approach  
for Advanced Transport Networks



Transform Your Urban Transit With  
SYSTRA Canada's Electric Bus Expertise



SYSTRA Canada's Comprehensive GIS Services:  
Tailored Solutions and Technological Excellence



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