**Public Transportation optimization**

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## Abstract

In order to be environment-friendly, relieve traffic congestion, reduce pollution, and be green and sustainable, the optimization and development of public transportation, as the subject of people's long-term research, has always been shining.

**INTRODUCTION :**

* With more and more Internet of Things (IoT) devices entering the market daily, it’s getting easier and easier to capture interesting data from the sensors and control systems involved with running a modern city.
* Low Energy Bluetooth (LEB) devices, GPS, near-field communication, mobile apps, streaming apps — data comes from everywhere today, and cities are generating data at a rapidly increasing rate. [**Smart cities**](https://solace.com/blog/smart-city-data-management/) use this data to enhance the quality of life for their citizens, and there’s no better example than when you apply a “smart city” mindset to public transportation systems.

**PUBLIC TRANSPORT OPTIMIZATION:**

* By optimizing your public transport systems you can help citizens get where they’re going more quickly by reducing congestion on roadways and intelligently allocating and routing buses to areas with more travelers.
* That means locals, visitors and workers spend less time in transit and more time enjoying your city, successfully completing errands or getting to and from work.
* Finally, smarter transportation can reduce environmental impact. The [**EPA has found**](https://www.epa.gov/smartgrowth/smart-growth-and-transportation) that investing in public transport and other types of transportation can lower greenhouse gas emissions.
* Considering that in 2017 the transportation sector represented the largest source of emissions from fossil fuel combustion, this is a significant win.

**DIAGRAM:**

#### C:\Users\HCL\Downloads\Intelligent-Transportation-system (1).png

#### C:\Users\HCL\Downloads\Functional-diagram-of-a-common-transit-operation-planning-process.pngPROCESS:

* TRANSPORTATION OPTIMIZATION is the process of analyzing shipments, rates and constraints to produce realistic load plans that reduce overall freight spend and gain efficiencies across entire transportation networks.
* Once actual freight rates, approved carriers, specified capacities, transit times and other available data are entered into the optimization platform, the software generates a realistic, executable load plan for the shipment. With this information in hand, shippers, 3PLs, and consultants can make better decisions, save valuable resources, improve revenues and cut costs
* The process can be used for orders from anywhere in the world—and from multiple customers, locations or vendors— and can be combined into multi-pick/drop movements, continuous move shipments, backhauls, and pooling scenarios. From consolidating loads to finding better routes to choosing more capable carriers, transportation optimization helps companies save both time and money.

For example, with Mojo Transportation Optimization, MercuryGate’s optimization solution, users can: a Identify optimal mode, carrier, rate, and route.

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**TRANSPORTATION OPTIMIZATION A WIDE SPECTRUM OF USE CASES**

Sourcing :A Evaluate and analyze carrier bids with simulation of actual shipment data, lanes and volumes.

Planning :

A Capacity PlanningAssess future needs of carriers.

Execution :

A Generate optimized load plans across inbound/ outbound, private fleet/ common carriers and consolidate across customers

Sales :

A Demonstrate ability to minimize cost with customers

A Evaluate new customer additions on existing route models

BENEFITS:

* There are many different benefits that come from transportation optimization, including ROI that ranges from 1% to 30%, depending on the firm’s current setup.
* A company that uses a combination of partial-truckload and less-than-truckload with few distribution points/manufacturing plans, for example, will see very big wins from their optimization efforts.

A Tale of Two *Smart* Cities: One with Smart Public Transport, One Without:

* Smart public transport may be the most important element of smart city planning because it affects everyone.
* All citizens and visitors need to get from one place to another, quickly and safely, and in today’s densely populated cities that means public transport.

## Event-Driven IoT

* In keeping track of vehicles in-route and transit demand, many events occur per second.
* The timely [**processing of this information**](https://solace.com/solutions/industries/transportation/) is critical to successfully operating a smart city transport service. In addition, any system downtime will result in significant loss of data — hindering your ability to operate at the capacity you need.
* The most innovative smart cities are relying on event-driven architecture to solve these challenges. Event-driven architecture is designed to capture and distribute digital events, and it enables cities to better respond to and capitalize on events as they happen, instead of after they happen.

With event-driven architecture, you’re able to create a modular framework for your data to be processed in a stream, which will allow multiple organizations within your city to utilize data for their use case — from traffic lights to parking meters.

Instead of relying on polling, a network of [**event brokers**](https://solace.com/what-is-an-event-broker/) – called an event mesh – can be used to publish data as it happens to the systems that subscribe to certain types (topics) of events.

#### Advantages of Public Transport

1. Public Transport leads to less air pollution as more people commute via single vehicle eliminating the need to travees.
2. In some areas, public transport is the only means to commute. It is the only facility for people to travel to different places. Hence, public transport is like a blessing for them.
3. Many people who cannot afford to buy their vehicles and cars generally travel by public transport. It is a very cost-effective mode of commuting for them.
4. Public transport is a very fuel-efficient mode of transport per capita or person; fuel consumption is less.

#### Disadvantages of Public Transport

1. The commute by public transport can be slower than by personal vehicles. It has to cover stoppages, stands, and stations on the specific route.
2. As public transport vehicles don’t stop at specific destinations, you must take care of your travel from the stand or station to reach your desired stop.
3. Privacy is a big issue in public transport. There are a lot of crowds, and sometimes you need more space to sit.
4. Public transport has a low level of comfort .

APPLICATIONS:

* Transportation optimization helps shippers, 3PLs, and transportation consultants analyze shipments, rates.
* Constraints to produce realistic load plans that reduce overall freight spend.
* “Companies are being asked to deliver more frequently and in smaller batches.

**CONCLUSION:**

Finally, studies have shown that public transportation reduces air pollution, which contributes to both short- and long-term health risks. Save your time! Public transportation is a great way to get around a city. It is a safe, inexpensive and eco-friendly way to commute