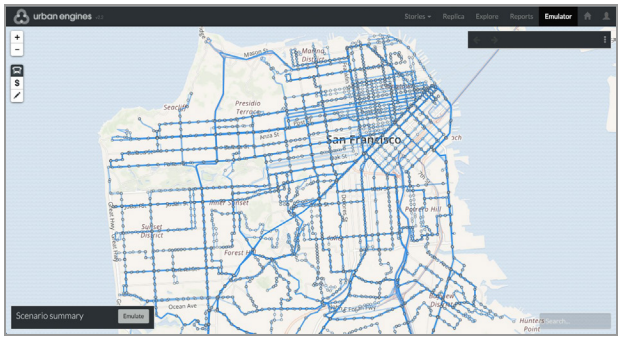
VISUALIZE, ANALYZE, OPTIMIZE with Urban Engines Scenario Planning



Whether looking at the past, present, or future, Urban Engines' cloud-based solution gives you unprecedented visibility into transit system performance and commuter flows to help make planning and operating decisions better and easier.

Taking the data you already have – such as open data feeds, commuter fare cards, origin-destination plots, and financial models – our dynamic mapping, visualization, analytics, and reporting services work seamlessly with your existing infrastructure so you can easily model service changes based on real world intelligence. From a planned exception, such as a large event drawing unusual crowds, to long-range planning, such as the city's 20-year outlook, use Urban Engines to easily visualize, analyze, and optimize commuter flows through your city.

Scenario Planning enables you to:

Measure impact in seconds
With just a few clicks, model the impact of an upcoming event or long-term city plan by adjusting supply, demand, or cost structure based on actual system data

Improve commuter experience
Easily see current commuter movement and transit system usage, then emulate schedule or service changes to address changing conditions

Save time and money
Run complex what-if analyses for passenger volumes, additional stations, and schedule changes, to see the impact on your system in seconds without the expense

Implement changes with confidence
Run unlimited comparison tests in the digital world so you can launch changes in the real world with the assurance that assumptions have been validated with real data from your transit system

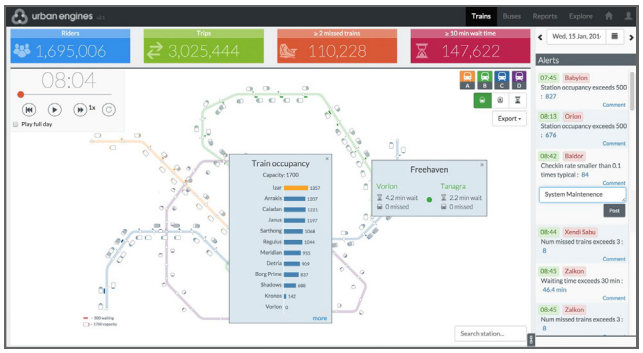
Ensure regulatory compliance
Incorporate demographic or other relevant data to understand and report on the potential impacts for compliance

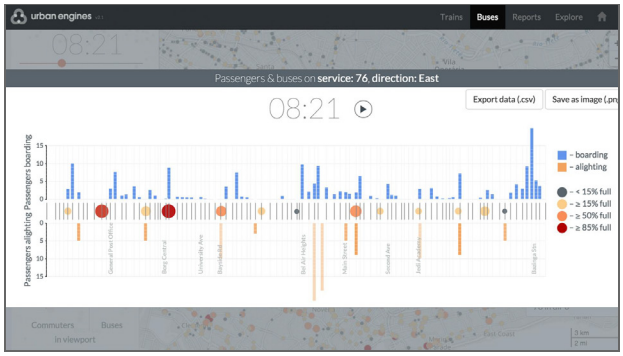
Redeploy cost savings
Save potentially millions of dollars each year in reduced operational expenses and capital outlays, funds you can reinvest to further strengthen your system

Urban Engines Digital Replica and Operational Dashboard

Urban Engines analyzes dozens of existing signals from transit systems to reconstruct every vehicle and trip on an interactive, dynamic map. Leveraging available input data (passenger counts, fare card swipe-in/out, GPS/AVL traces, etc.), our algorithms treat each user as an anonymous 'micro-surveyor' who implicitly gives us a small amount of information about the parts of the network he uses.

Combining this data across the commuter base, augmenting it with what we learn about each anonymized commuter's typical behavior, and cross-referencing data against vehicle timing, we reconstruct fleet and commuter flows. The system can even combine multiple modes of transportation (such as train and bus trips) to measure the commuter experience for each anonymous rider geographically and over time, including journey time, mixed mode journeys, and home and work flow.





See delays, occupancy, and performance at a glance

Have important metrics at your fingertips to quickly identify delays in the system; monitor punctuality, excess waiting time, headway, or vehicle occupancy; and see performance by depot, route, or driver

Interactive maps built for scale

Rapid ingestion, geo-coding, and rendering of your data at scale enables you to track vehicles – from several hundred to several thousand – and their paths simultaneously

Data healing for continuous fleet coverage

Data healing "fills in" gaps in the event of lapses in data integrity, mobile coverage, or other transmission, allowing continuous monitoring and management

Key metrics at a glance

Monitor key metrics minute-by-minute, such as vehicle or platform occupancy, number of missed trains, or other OBD diagnostics as available

Information that moves the needle

Infer new data, such as average vehicle speed or approximate likely home and work location, and identify patterns or abnormal behavior over time using archived session lineage

Dynamic map filters

Select from custom filters using provided or inferred data to dynamically change results on the map visualization and see only what's immediately relevant

Monitor your system with automated alerts

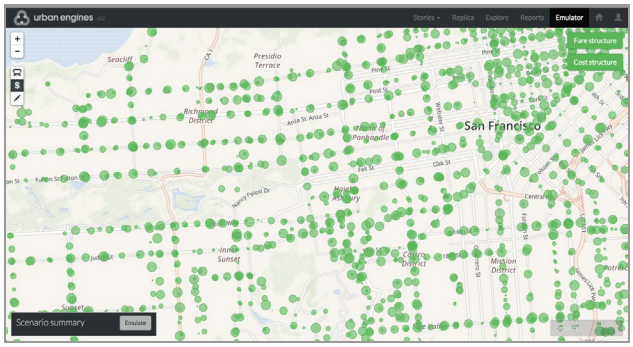
See the time and location of alerts when things aren't normal (like special events or traffic emergencies) to understand what happened, what caused it, and how many people were affected

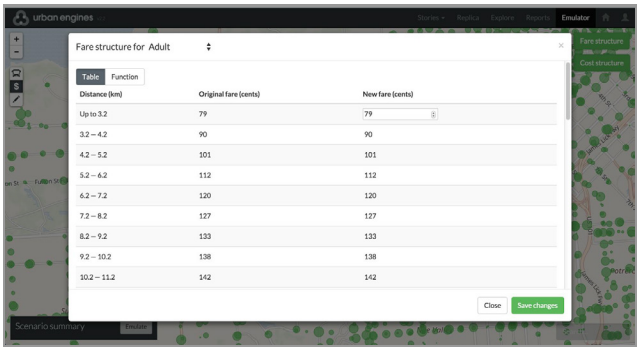
Intuitive, user-friendly tools

Use DVR-like controls to stop, start, rewind, and fast-forward movement of every vehicle in real-time; zoom in/out and pan to various locations on the map

Optimize Revenue and Service

Add financial data – such as fare revenue, fare structure, or cost structure – and you can easily run scenarios to see the effect of proposed changes. Use the interactive map visualization to evaluate the cost effectiveness of individual bus routes. Adjust fares across the board or by hour, ticket type, or distance. See how an anticipated operational cost increase will affect the bottom line.





See revenue on an interactive map

Visualize the distribution of fare revenue stop-by-stop, including total daily revenue and average fare

Analyze finances route-by-route

Run reports at a granular level to analyze the financial impact route-by-route and gain detailed insights into your bottom line

Ensure regulatory compliance

Incorporate demographic data to confirm fare increases won't disproportionately affect particular geographic or demographic areas

Plan for potential cost increases

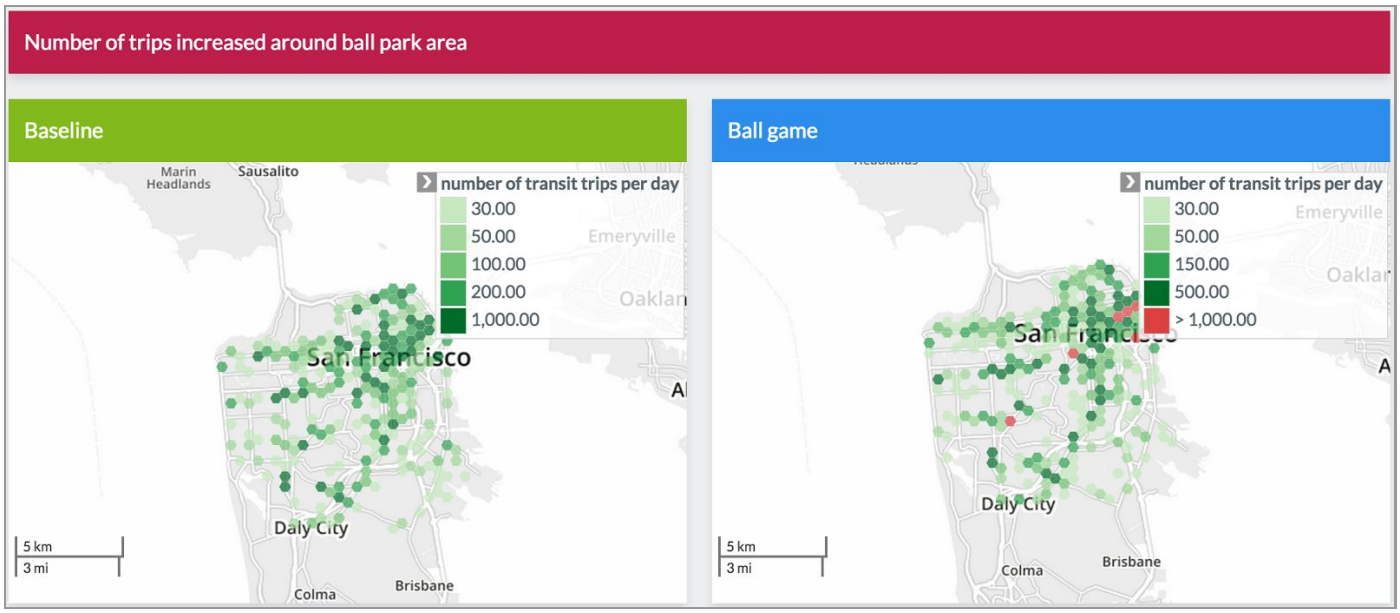
Prepare for anticipated rising operational costs by modeling system changes and measure the effect on quality of service and monetary impact

"With the more detailed information we get from technology provided by companies like Urban Engines, we can improve schedules and routes to align with the flow of city dwellers, plan for major events in the city, reduce crowding, and provide the most effective system overall."

– Ciro Biderman, director of São Paulo Transporte

Simple Results for Complex Analyses

Run deeper analysis across time and geography, using a powerful software platform designed to save you time and give you more insights. Urban Engines' flexible, robust analytics tools offer many parameters so any user can run standard or custom queries in seconds and quickly customize results – without additional work from IT or specialized data analysts.



Quickly compare key results

Segment and compare baseline results with emulated scenarios with just a few clicks of your mouse

Correlate situational information

Add contextual awareness with included situational information, such as points of interest, local events, or weather to enhance the quality of your analyses

Customize and export results

View results as bar charts, line charts, maps or tables with custom formatting; export data or images to conduct further analysis, print, or use in presentations

Save and share with colleagues

Share custom and built-in reports or collections of reports with individuals or user groups; tag for easy categorization; save and email favorite reports

Simple System Overlay – Be Up and Running in 30 Days

Urban Engines' interactive user interface leverages your existing data, so with a standard implementation you can be up and running within 30 days from contract signing. Begin recognizing the value from your investment immediately.

No hardware or software required

Provide secure access to authorized users only from any desktop, laptop, or mobile web browser – no software installation required

Always access the latest data

Access the latest data, updated as frequently as set by your system administrator

Scales with your system

Easily add additional trips, vehicles, packages, or import new datasets

Granular user controls

Quickly extend to more users, and set access controls to restrict views to specific sets of data if needed

Secure access for authorized users

Data is hosted on a centralized platform, delivered securely through the industry-standard HTTPS protocol, and password-protected with access control

ABOUT URBAN ENGINES

Urban Engines improves urban mobility — making it easier to get where you're going — by using information from the billions of trips that people and vehicles make each day.

We developed our mapping, visualization, reporting, and analytics platform specifically to provide actionable insights from the increasing amounts of movement data generated by the Internet of Moving Things — so you can navigate the real world as effectively as the digital one.

urban engines

ABOUT CITILABS

Citilabs' products and services provide the backbone of operational and predictive transportation systems in more than 2,500 locations in the world. These systems are used by governments to operate and plan their multimodal transportation systems, by private enterprise to locate and optimize their businesses, and by universities to design and test innovative transportation solutions.

Our mission is to help our customers create a better future by solving the complex mobility challenges the world faces through the development of advanced software and data analytics.

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