Optimizing service quality for users
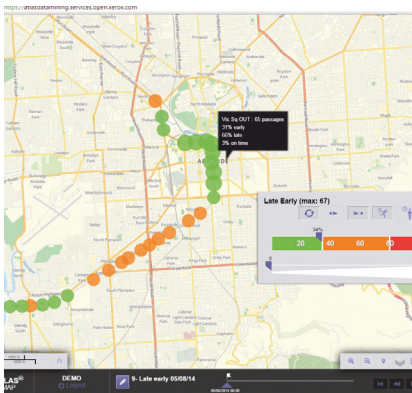
Mobility Analytics Platform : learning lessons from AVL/RTPI data

Mobility Analytics Platform (MAP) of Conduent collects, consolidates and analyzes data accumulated by public transport operators in order to help them enhance their service offering.

AVL/RTPI data mining

Drawing on data from the Automatic Vehicle Location and Real Time Passenger Information system (AVL/RTPI) – in particular the actual times at which vehicles call at stops – MAP provides valuable keys for evaluating the quality of service provided to passengers.

These AVL/RTPI data mining services provide specific information, such as services running early or late on each line, service quality at each stop (ratio of vehicles arriving on time), and destinations that can be reached within a given time from a given departure point.

Results are contextualized according to the characteristics of the network.

MAP uses a dedicated server, to which the AVL/RTPI data from the network are exported.

Detailed, customized outputs

The displays, analyses and simulations produced using the operating data can be presented in the form of:

- interactive maps, with static or dynamic views;
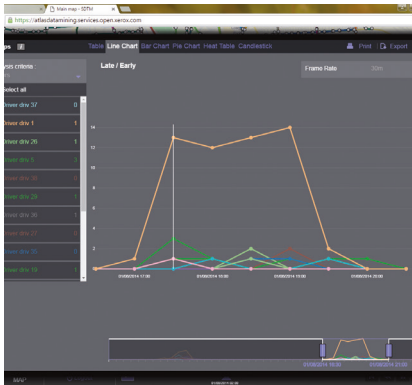- detailed graphs;
- data tables.

These displays can be customized at will. Operators can:

- view and "replay" network activity over a given period;
- select elements to be displayed;
- configure thresholds and adjust scales.

Experimenting with a variety of criteria

Histograms, sector diagrams, curves and tables provide detailed information on network activity according to a variety of criteria (e.g. type of stop, driver, day of the week, time of day).

Display, analysis and simulation

MAP provides three ways of monitoring and improving service quality.

- Its display function can be used to track and review vehicle movements intuitively, including on maps, helping operators to identify any services that are running early or late and the reasons why.

- Its analysis function offers specific viewing angles for assessing the accessibility of areas served by public transport and measuring the impact of timetable vagaries for users.

- Its simulation tool can be used to test timetable changes and their impacts.

Viewing... vehicles running early and late

Which vehicles run early or late? Where? When?
Which stops and lines are affected by a fall in service quality?
On the map produced, a color code indicates stops that are penalized by vehicles running early or late, and the deviation from their scheduled time.

This aspect can be viewed according to various criteria: by line, by stop, by driver, etc.

MAP determines service quality indicators such as the ratio of vehicles calling at each stop on time. Any stops posing particular problems can hence be identified.

These displays and calculations are produced using the network's scheduled and actual timetables.

An intuitive, dynamic approach to service quality.

Analyzing... network access times and impacts on ridership
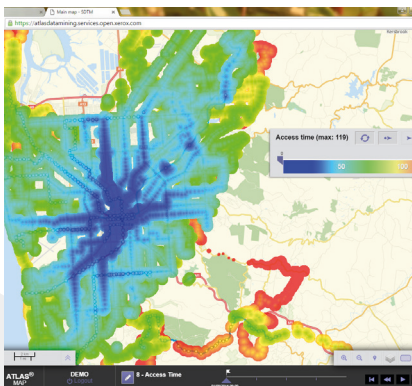
Can a given district be accessed quickly during the rush hour?
How do passengers perceive wait times at stops?
On the basis of actual vehicle arrival times at stops, MAP draws up an analysis of transport network access times.

Drawing on a multimodal route planner, MAP compiles a map representing the accessibility of a given point or zone on the network as a start point or a destination.

MAP can also model wait times at stops as they are perceived by passengers, based on indicators such as arrival delays, transfer times, service frequency on each line, etc.

An analysis of service quality across the network as a whole.

Simulating... timetable changes

How would a timetable change affect service quality and accessibility?
What impact would it have for passengers?
MAP provides a means of evaluating the consequences of timetable changes. The application simulates network operation under the new conditions, and generates the result in the form of interactive graphs and maps.

These new analyses can then be used to measure the impact of the simulated changes on service quality, in comparison with the existing situation.

Impacts on passengers are evaluated in terms of reduced waiting times during transfers, total journey times, and delays on arrival.

A decision-aid tool for targeting timetable improvements.