

Traffic analysis with drone-based aerial intelligence

Reliance BP Mobility Limited's collaboration with Asteria Aerospace

Highlights

- Digitization of traffic monitoring processes to enhance operational excellence
- Access to accurate traffic analysis for selecting outlet locations
- Accurate, transparent, documented digital records of traffic data
- Drone tech to meet ever-changing mobility demands
- Expansion of fuel network based on aerial intelligence



Client

Reliance BP Mobility Limited (RBML)

Industry

Oil & Gas

About Reliance BP Mobility Limited

Operating under the brand 'Jio-bp', Reliance BP Mobility Limited (RBML) is an Indian fuels and mobility joint venture between Reliance Industries Limited (RIL) and BP. The joint venture leverages Reliance's presence across the country and its millions of consumers through the Jio digital platform. BP brings its extensive global experience in high-quality differentiated fuels, lubricants, retail, and advanced low carbon mobility solutions. In addition to marketing conventional fuels, RBML provides advanced mobility solutions and alternate fueling options to its customers such as Electric Vehicles (EV) charging points, and Battery Swapping Stations (BSS). The company's aviation brand 'air bp-Jio' is a leading supplier of Aviation Turbine Fuel across India. The brand 'Jio-bp Fuel4U' caters to on-demand doorstep delivery of diesel and is a market leader in the segment.

"Digital First" is amongst the five fundamental values of RBML. RBML leverages digital technologies to complement its lean organization towards driving process excellence.

Building on our pioneering technology in fuel retail, Jio-bp believes in being digital disrupter of the era. Towards continued advancement of our digital ecosystem, Jio-bp is creating new Digital Business Models, investing in predictive analysis, shifting to multi-cloud solutions, increasing CRM adoption, and adopting hyper automation.

As the only oil marketing company boasting of a stable business, a growth business and a start-up business under the same umbrella; Jio-bp success story has been scripted on the backbone of technology. The adoption includes strengthening conventional technology and network deployment of industry 4.0 technologies.

Need for Innovation in Retail Outlet Site Selection

The right selection of site locations will play a crucial role to obtain maximum return-on-investment (ROI) for RBML. For site selection/validation, RBML requires vehicular traffic analysis at roads/intersections of interest near the proposed locations. Having staff manually conduct this analysis by physically visiting all

these locations is a difficult, time-consuming and costly task that doesn't guarantee accurate and transparent results. RBML required a faster, more accurate and cost-effective way of gathering traffic data for site selection to ensure that its network expansion plans reach the desired outcome.

Site Selection Needs	Challenges in Manual Methods of Data Collection
Analyze traffic at roads/intersections of interest near the proposed location	Manually analyzing traffic in intersection locations with multiple entry/exit roads, flyovers, is very difficult and time-consuming
Access to data related to detection, classification, count, distribution, and speed of vehicles of interest	Collecting accurate data across multiple vehicle categories and data points manually is cumbersome
Digital, transparent traffic records at different times of the day/week to measure ROI	Manually collected traffic data records can be prone to error and cannot be easily audited

Asteria Aerospace's Role

RBML realized that digitization will be a key enabler and differentiator to enhance customer experience and operational excellence in their journey to expansion. RBML reached out to Asteria Aerospace to explore if the unique aerial vantage point of drones can be used to collect, digitize, and analyze traffic data for new site selection. Asteria developed and deployed a solution for RBML to capture drone-based aerial videos above traffic intersections/roads of interest and further analyze the videos using

AI/ML algorithms to generate unique traffic data insights.

And that's when the thought of striking a collaboration with a company that can provide aerial intelligence came up. Asteria Aerospace simplified the process of transitioning from traditional technology to drone technology and enabled RBML to conduct traffic analysis using aerial videos captured through drones. With drone technology expertise from Asteria, RBML was able to capture

aerial videos above a location of interest, and at the same time, analyze the collected data using AI/ML algorithms to get actionable insights. By leveraging drone capabilities, RBML was able carry out flying operations in complex scenarios – intersections with multiple roads and flyovers while tracking the number of vehicles passing through different roads on a given complex intersection with over 90% accuracy.



Technology at Work

A200-XT Micro UAV

FLIGHT ALTITUDE

Up to 100 m above ground

FLIGHT TIME

Up to 40 mins

Camera Video Resolution

4K

Outcomes

- Full digital and transparent record of traffic at complex intersections and highway locations using drone videos
- Automated detection and classification of more than seven different vehicle categories using AI/ML
- Extracted traffic analysis data such as vehicle count, speed, direction across each vehicle category at multiple times of the day
- Analysis of traffic speed and flow by defining gates on road locations to gather the type, count and speed of vehicles flowing in a particular direction of interest
- Visualization of traffic patterns using heatmaps

Benefits



Access to digitized, transparent and auditable records of traffic data



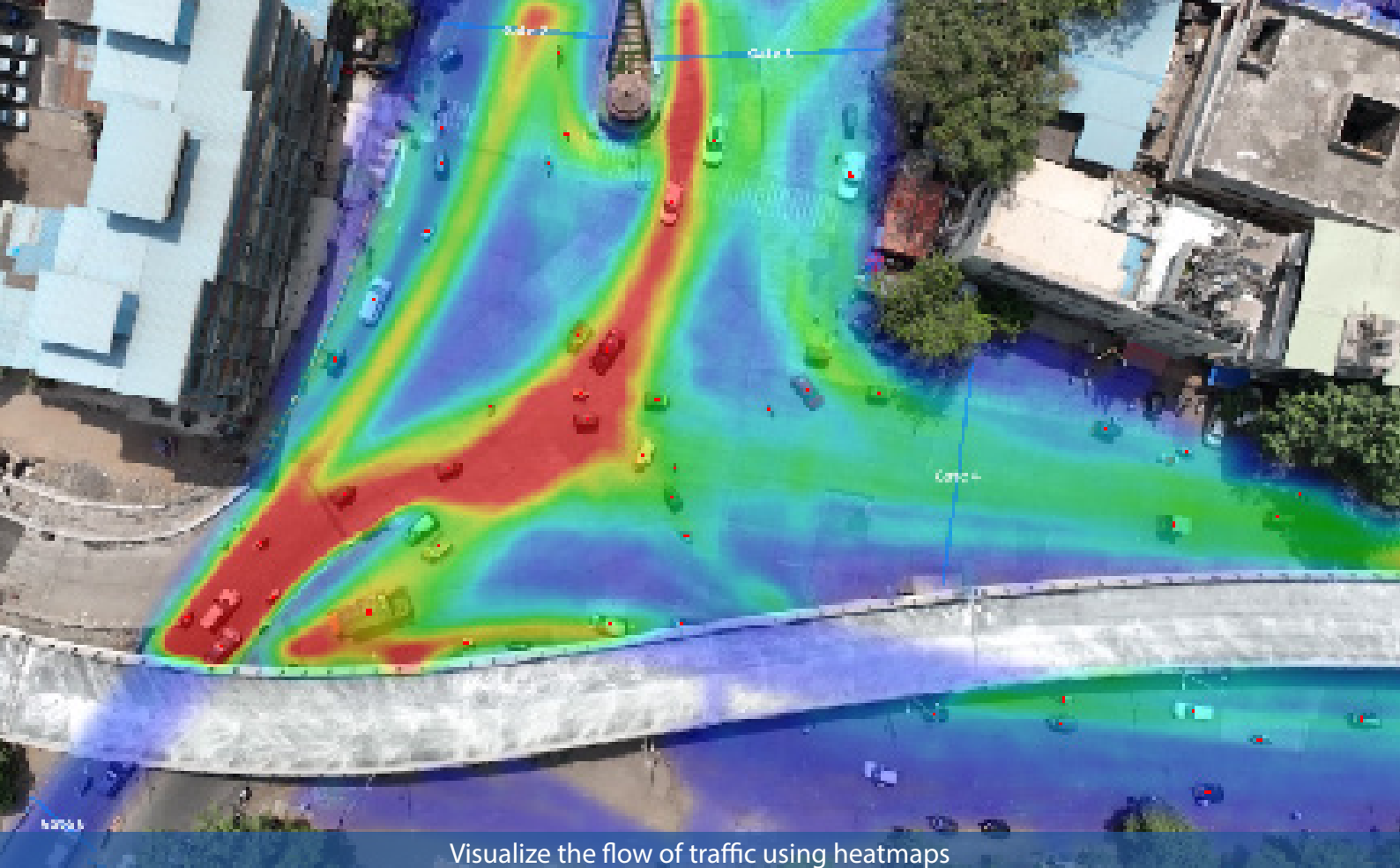
Complete understanding of vehicular traffic flow at complex location with maximum situational awareness



Enabling traffic data-driven decision making for site viability and ROI

Business Impact

A collaboration with Asteria Aerospace provided RBML with a more efficient and error-free method of collecting and analyzing traffic data to assess the viability and return of investment of setting up fuel outlets at different locations across the country.



Visualize the flow of traffic using heatmaps



Unmanned Aerial Systems & Solutions

ASTERIA AEROSPACE LIMITED

T : +91 73 5303 6888 **E :** info@asteria.co.in **W :** www.asteria.co.in
Bengaluru | Gurugram | Mumbai



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