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Data Explorer for Road Assets

Risk Analytics

Risk

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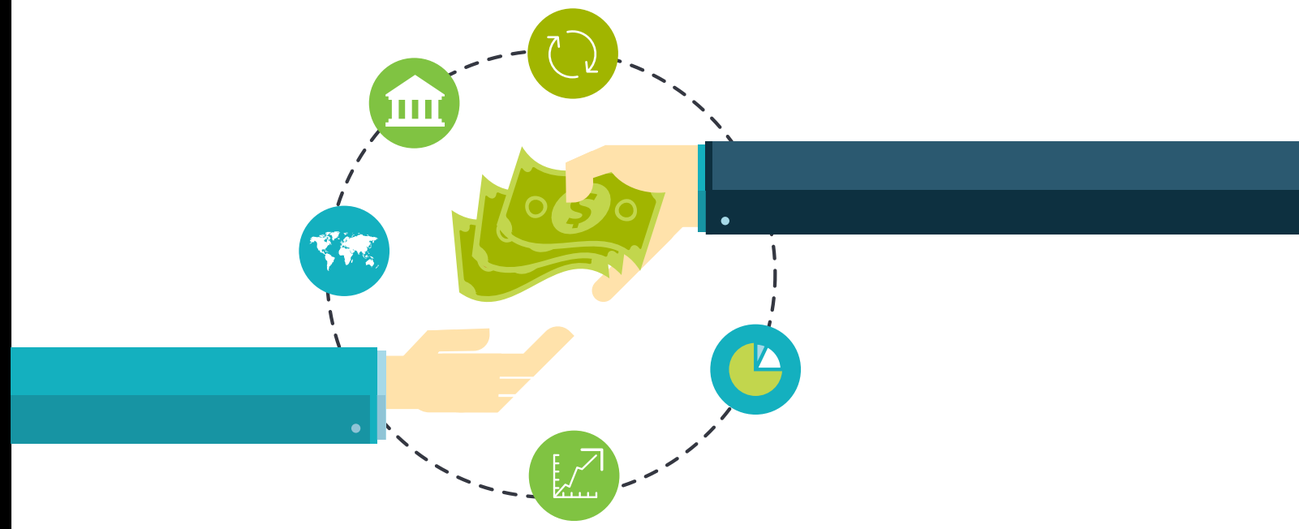
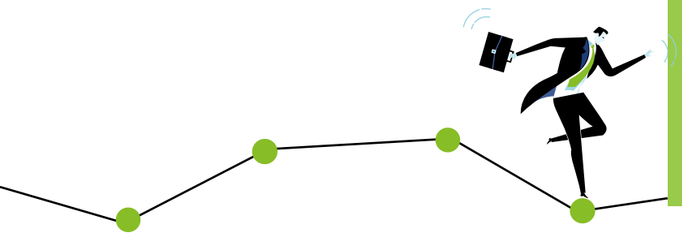


Data Explorer for Road Assets

Transforming large piles of disorganized data into business insights helps improve business agility and processes in unprecedented ways. This is more applicable for businesses with a high volume of transaction data. Deloitte's Risk Analytics applications are designed to extract meaning from large volumes of data and drive efficiency in resource allocation.

Data Explorer for Road Assets (DERA) Solution

DERA integrates service data from source systems and presents it to users, over the web, via interactive reporting dashboards and scorecards. DERA analysis addresses the dual problem of monitoring revenue leakages and performance. The platform utilises rich visualisation techniques to provide analysis of revenue and performance metrics with drill down to the transaction level. On the cost analysis side, DERA tracks various cost metrics such as operational costs, repairs, maintenance costs, and highlights any outlier costs in a given period.
The interface also facilitates a comprehensive analysis of accounting entries passed in the book keeping system and examines unusual transactions (Rare users, GL Accounts anomalies, etc.) using Trial Balance (TB) and Journal Entry (JE) Data.



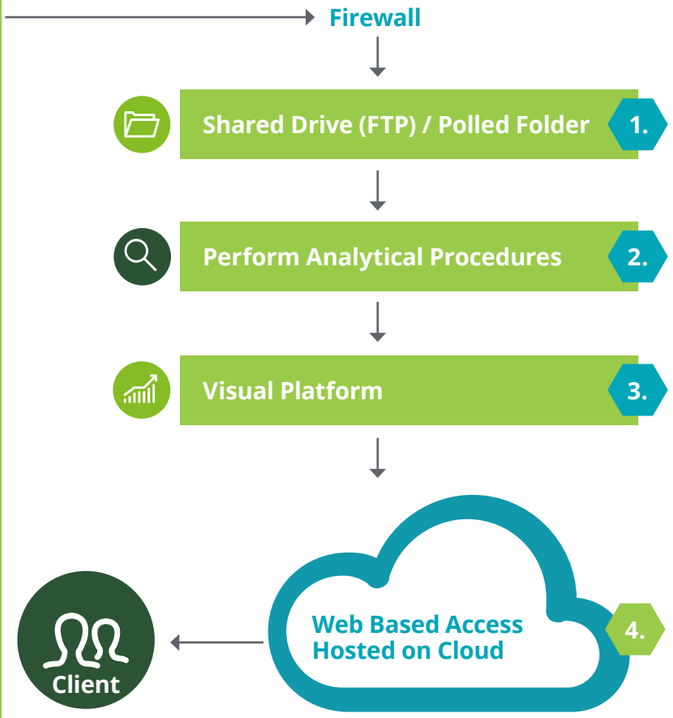
Potential Benefits

- Minimizing Revenue Leakages
  - Revenue dashboard with consolidated data from toll plazas
  - Trends and outliers on revenue and cost spread across various projects with easy drill down to transactions
  - Key Performance Indicators compared to benchmarks to provide a clear picture
- Get a complete turn-key solution in place rapidly
  - Integrate and organize data across systems
  - Leverage prebuilt analytics and integration technology
  - Focused IT and business resource support
- Fast, low risk approach
  - Rapid deployment in 6-8 weeks
  - Deep domain experience
  - Managed service – On premise or cloud based hosting

Operational Model Overview

Client Input File

- Daily shift & vehicle wise toll transaction report from Toll management software
- Fare master – Vehicle class wise
- Vehicle wise Cash collection report for Smart Card and Monthly Passes issued
- Radio Frequency Identification (RFID) report reflecting vehicle category and cash collected
- Bank Statement for cash deposition
- Day wise cash collection report from Toll Management software
- System down time report along with collection (if any) during down time
- Traffic feasibility report prepared at beginning of the project for project period
- JV dump (including user ID, transaction type, etc.)
- Chart of accounts mapped with GL account number & TB
- Trial Balance – Opening and Closing



Opportunity Flags

DERA can provide value to Road Assets in improving performance in the following areas

- Integrating and using data from multiple source systems
- Monitoring and reducing revenue leakages
- Performing traffic analysis
- Analysing and controlling costs
- Violation Reporting
- Trending, identifying outliers, and transaction scrutiny

Sample Metrics and Key Performance Indicators

- Trend Analysis – Lane wise & Loss Wise
- Traffic Analysis – Violations & Exemptions
- Revenue Loss
  - Exemption numbers are higher than normal average for that toll plaza
  - Shortage/excess of toll collection
  - Toll collected does not match with the Vehicle Type/category
  - Smart card profiling on various parameters like Frequency of travel, Average Smart Card Balance, etc.
  - Mismatch in count of transaction Date Wise, Shift Wise, and Peak Hour Wise
  - Revenue loss due to Traffic Diversion
  - Revenue loss due to Vehicle class discrepancy
  - Day/month, Vehicle class, shift wise, and Toll Collector wise Violation analysis
- Downtime efficiency loss
- Toll collector performance
- Cost analysis
- GL analysis – Manual and sub ledger

DERA - Reporting Dashboards

Facilitates Trends, Correlations & Drill-down on Interactive mode

Dashboard Overview

The overview dashboard provides a dynamic view of data statistics for toll population like number of lanes, vehicles, Toll Collectors. It also highlights the variance between the estimated and actual revenue at various dimensions such as day, toll plaza, etc.

Indicates the variance between the estimated and actual revenue Toll Plaza wise

Indicates the variance between the estimated and actual revenue Day wise, days with higher difference are highlighted

Shows the Vehicle wise Traffic Split and helps identifying the most frequently occurring vehicles

Indicates Day wise traffic split for among multiple TSPVs (Toll Plazas)

Traffic Analysis Dashboard

It provides a dynamic view of the traffic split based on Shift wise traffic analysis, Violation analysis, Automatic Vehicle Classification mismatch analysis (Vehicle Type in AVC and Actual Vehicle Type), and exempted vehicle analysis

Shift wise traffic analysis provides a detailed understanding of the traffic pattern with regards to traffic direction

Total transaction Vs. AVC mismatch. Mismatch can be analyzed by Toll collector and Toll Plaza

Day wise exempted vehicle analysis, helps to identify if there is a sudden spike in the no. of exempted vehicles in a particular day

Total transaction Vs. AVC mismatch. Mismatch can be analyzed by Toll collector and Toll Plaza

Toll Collector Performance Gauge

It evaluates the performance of the toll collector by calculating a performance score based on the traffic handled per day. It also provides a dynamic view of toll collector penalties which includes Frequency of Short Collections, Incorrect Exemptions, Vehicle Type Mismatches, and Invalid Transactions

Total Collector performance score based on the traffic handled per day, the bands indicate poor, medium, and high performance

Toll Collector Performance (Overall, based on traffic handled and various penalties)

Toll collector penalties include Frequency of Short Collections, Incorrect Exemptions, Vehicle Type Mismatches and Invalid Transactions

Revenue Analysis Dashboard

Revenue analysis provides the various aspects of revenue losses and the quantum of the same due to various reasons like system down time, delay in deposit, and discipline issues at collector level.

Total performance score based on the transaction count – Penalties for invalid transactions

Comparison of Revenue between normal time and down time

Delays in Deposit of Toll Amount Collected are indicated

Revenue loss due to Toll Collector Faults

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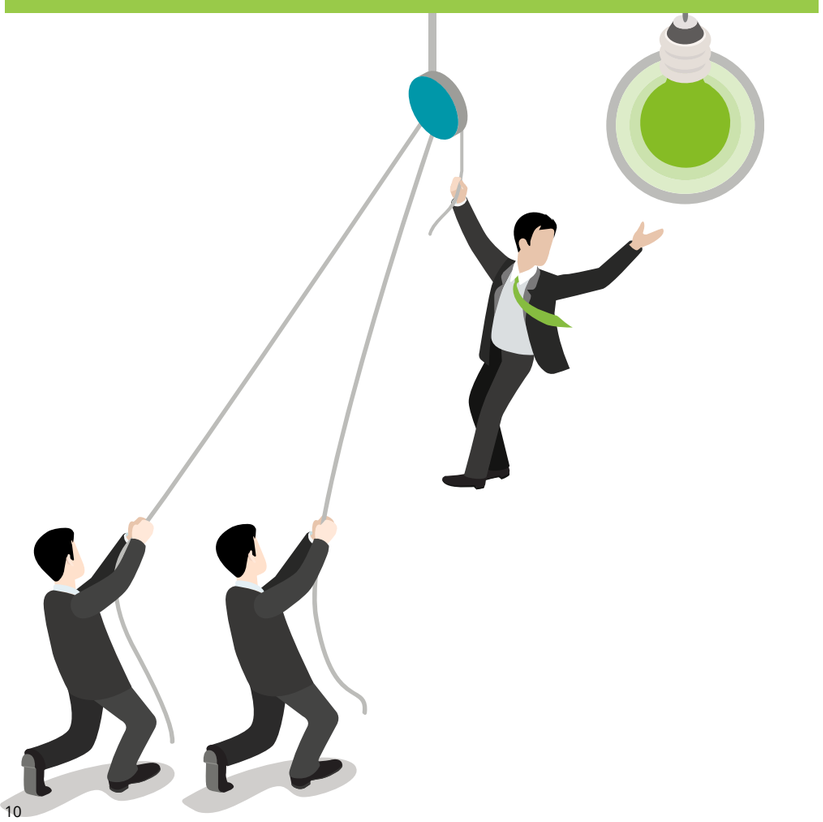

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