

Phase II: Business Process Model Explanation (Road Accident System)

This model illustrates the end-to-end workflow, transitioning the process from initial data capture to automated blackspot classification and executive decision support. The core innovation is the immediate, system-driven analysis that moves the Traffic Authority from reactive to proactive safety management.

1. Business Process & MIS Functions (Phases VI, VII)

The process is segmented into three primary actors: the **Operator** (data entry), the **Oracle Database System** (automation), and the **Traffic Analyst** (decision support).

- **Transaction Validation (Pre-DML):** A crucial security check is enforced by a trigger and function. This validation checks if the DML attempt occurs during restricted times (e.g., weekday or public holiday) and blocks the transaction if the rule is violated.
- **Auditing and Accountability:** All transaction attempts (allowed or denied) are recorded in the `AUDIT_LOG` table, providing a continuous monitoring trail.
- **Automated Classification (Post-DML):** The core MIS function is the use of a Compound Trigger. After a successful insert, the trigger calls the `CALCULATE_RISK_LEVEL` function to instantly assess accident frequency and severity, automatically updating the `BLACKSPOTS` table.
- **Data Aggregation:** Periodic PL/SQL jobs run in the background to summarize raw `ACCIDENTS` data into the `ANALYTICS` summary table, structuring data for efficient reporting.

2. Organizational Impact and Justification

The system provides a strong organizational justification by solving the problem of delayed intervention common in traditional manual reporting systems.

- **Proactive Safety Intervention:** The near real-time classification capability drastically reduces the lag between accident occurrence and official blackspot designation, shortening the safety improvement cycle.
- **Objective Resource Allocation:** By providing objective Risk Level scores ('High,' 'Medium,' 'Low'), the system offers a verifiable basis for prioritizing scarce resources, ensuring the highest-risk road segments receive immediate funding and attention.
- **Security Compliance:** The explicit security rule enforced via triggers ensures compliance and data integrity, guaranteeing that changes are only made during approved operational windows.

3. Analytics Opportunities Identified (Phase VIII)

The data model is structured to support high-value Business Intelligence (BI) functions that enhance decision-making by the Traffic Analyst.

- **KPI Tracking and Executive Reporting:** The `ANALYTICS` summary table tracks Key Performance Indicators (KPIs) like Fatal Accidents per month, which directly feed required executive dashboards.
- **Comparative Analysis:** Analysts can use advanced SQL techniques, like Window Functions, to rank and compare locations by accident frequency or fatality rate over time, identifying performance outliers.
- **Audit Dashboard:** A specialized dashboard tracks transaction denial rates and user activity captured by the `AUDIT_LOG`, providing insights into system usage and security adherence.