**LLM Automated Evaluation Result**

**Functional Requirement Evaluation Report**

**Step 1: Data Entity Statistics**

* According to the functional requirement document, data entities refer to core data objects managed within the system (such as those stored in a database), excluding external interfaces (e.g., external data sources or formats). Entities are extracted based on input/output descriptions and deduplicated or merged where appropriate (e.g., Traffic Data and Traffic Metrics merged into Traffic Data; Incident Data and Incident Details merged into Incident Data; Road Condition Data and Road Surface Conditions merged into Road Condition Data; Weather Data and Weather Observations merged into Weather Data; all types of alerts unified under Alerts). The final list of data entities includes:
* Traffic Data (including Metrics)
* Weather Data (including Observations)
* Road Condition Data (including Surface Conditions)
* Incident Data (including Details)
* Travel Demand Data
* Validated Data
* Cached Data
* Archived Data
* SAE J2354-formatted Data
* TMDD-formatted Data
* Alerts (including Traffic, Weather, and Asset Condition Alerts)
* MI Drive Presentation Data
* Asset Condition Data
* DataRecord
* System Log
* UserSession
* AlertConfiguration
* CacheEntry
* ArchiveEntry
* User Role
* System Configuration
* **Total: 21 data entities**

**Step 2: Functional Requirement Consolidation and Elimination**

* **Consolidation Rule**: Only merge requirements that apply to the same data entity and perform the same operation (e.g., FR-17 to FR-21 all describe browsing but target different entities, so they are not merged). No duplicate operations were found; no merging was applied.
* **Elimination Rule**: Remove generic system setup requirements (e.g., preference settings, multilingual support) that are considered infrastructure-level and not core functions. Eliminated requirements:
  + FR-30 (Java Software Foundation Integration): Technical integration, not a core function.
  + FR-31 (JDBC Database Connection): Technical database connection.
  + FR-32 (Oracle 10G Database Use): Database usage, not functional logic.
  + FR-35 (User Role Management): Common system function.
  + FR-36 (System Security Maintenance): Infrastructure concern.
  + FR-37 (System Performance Monitoring): Non-functional concern.
  + FR-46 (System Configuration Management): Not a core business function.
  + FR-51 (System Log Management): Common system function.
  + FR-52 (UserSession Management): Common system function.
* **Remaining functional requirements: 46 (originally 55, 9 removed)**

**Step 3: Hallucinated Requirement Judgment**

* **Judgment Criteria**: A hallucinated requirement introduces a new data entity that is not linked to any existing entity, breaking the weak connectivity of the E-R graph (i.e., the entity is isolated). Extensions of existing entities are not considered hallucinations.
* **Judgment Result**:
  + Only FR-50 (DataRecord Management) is judged hallucinated. Reason: Introduces a new entity “DataRecord” not referenced in any other requirement or external interface, and not connected to any core entity (e.g., Traffic Data, Incident Data), breaking weak connectivity.
  + All other requirements are non-hallucinated; their data entities are connected through processing flows (e.g., Cached Data is linked to FR-09; AlertConfiguration is linked to Alerts).
* **Hallucinated Requirements: 1 (FR-50)**  
  **Non-Hallucinated Requirements: 45**

**Functional Requirement Evaluation Table**

Each line below uses | to separate fields:

Functional Requirement | Hallucinated | Evaluation Reason

FR-01: Data Processing and Analysis Function | No | Input/output well defined (real-time data to insights), linked to Traffic/Weather entities.

FR-02: Traffic Data Collection Function | No | Input/output clear (vehicle data to DB), external interface referenced.

FR-03: Traffic Metrics Analysis Function | No | Input/output complete (DB to results).

FR-04: Traffic Incident Inference Function | No | Input anomalies to incident details, logical path present.

FR-05: Road Surface Condition Calculation Function | No | Sensor data to road status, full definition.

FR-06: Weather Observation Processing Function | No | Weather data to processed results, external interface referenced.

FR-07: Travel Demand Monitoring Function | No | Travel input to demand pattern output.

FR-08: Data Quality Check Function | No | Data to validation result, clear transformation.

FR-09: Dynamic Data Caching Function | No | Real-time input to cached output.

FR-10: Long-Term Data Archiving Function | No | Processed data to archive data, clear path.

FR-11: Data Formatting for SAE J2354 Function | No | Input to formatted output, standards well defined.

FR-12: Data Formatting for TMDD Function | No | Input to format data, external interface referenced.

FR-13: Traffic Alert Publishing Function | No | Incident input to alert, uses Traveler Information Systems.

FR-14: Weather Alert Publishing Function | No | Weather input to alert output.

FR-15: Asset Condition Alert Publishing Function | No | Asset input to alert output, linked to external system.

FR-16: MI Drive Presentation Support Function | No | Historical input to presentation data output.

FR-17: Traffic Information Browsing Function | No | DB input to UI output.

FR-18: Incident Information Browsing Function | No | Incident input to UI output, complete definition.

FR-19: Traveler Information Browsing Function | No | Travel input to UI output, external interface referenced.

FR-20: Asset Condition Information Browsing Function | No | Asset input to UI output, clear path.

FR-21: Weather Information Browsing Function | No | Weather input to UI output.

FR-22: Map Display Function | No | Spatial input to map output.

FR-23: Icon Layer Management Function | No | Configuration input to icon layer output.

FR-24: De-Cluttering Capability Function | No | Map config input to simplified map output.

FR-25: Data Source Addition Function | No | Data source detail input to integration output, external interface used.

FR-26: Algorithm Update Function | No | Algorithm version input to update result.

FR-27: Output Format Modification Function | No | Input format not clearly defined in documentation.

FR-28: Presentation Method Adjustment Function | No | Input subjective (scope undefined), real-time output uncertain.

FR-29: MDIT Standards Compliance Function | No | Input to compliant data output, supported by external interface.

FR-33: Standard SQL Query Execution Function | No | SQL input to query result output.

FR-34: Michigan Geographic Framework Application Function | No | Input to spatially aligned output, external interface referenced.

FR-38: Traffic Report Generation Function | No | Traffic input to report output.

FR-39: Weather Report Generation Function | No | Weather input to report output, complete definition.

FR-40: Road Condition Report Generation Function | No | Road input to report output, clear transformation.

FR-41: Data Integrity Maintenance Function | No | Input data to validation result.

FR-42: Data Source Status Tracking Function | No | Status input to dashboard output.

FR-43: Incident Detail Update Function | No | Incident input to update output.

FR-44: Outdated Data Deletion Function | No | Retention policy input to deletion result, clear flow.

FR-45: Traveler Information Modification Function | No | Edit input to update output, linked to external system.

FR-47: Historical Traffic Data Retrieval Function | No | Param input to historical data output.

FR-48: Historical Weather Data Retrieval Function | No | Param input to historical data output, fully defined.

FR-49: Historical Road Condition Data Retrieval Function | No | Param input to historical data output, clear transformation.

FR-50: DataRecord Management Function | Yes | Introduces isolated entity “DataRecord” with no links to other entities (breaks weak E-R graph connectivity).

FR-53: AlertConfiguration Management Function | No | Param input to alert config output, linked to Alerts entity.

FR-54: CacheEntry Management Function | No | Operation input to cache state output, linked to Cached Data.

FR-55: ArchiveEntry Management Function | No | Operation input to archive state output, linked to Archived Data.

**Summary**

* Total data entities involved: **21**
* Final number of functional requirements (after elimination): **46**
* Hallucinated requirements: **1 (FR-50)**
* Non-hallucinated requirements: **45**

**Evaluation Strictness Note**: The assessment adopts a moderately strict standard. Only FR-50 is flagged as hallucinated due to isolated entity. All other requirements meet structural and logical consistency criteria.