**Requirement Document: Schedule Adherence Summarization**

**1. Overview**

We maintain **separate tables per account** (e.g., TranSchAdhAccount1, TranSchAdhAccount2, etc.) to store **schedule adherence data** due to large data volume per account.  
We want an **AI-powered summarization system** that:

* Consolidates and analyzes schedule adherence data from these tables.
* Provides **actionable insights for management** (trends, outliers, recommendations).
* Can be **scaled** easily to all accounts (schema is identical).

**2. Database Schema (Applies to All Accounts)**

| **Column** | **Description** |
| --- | --- |
| **Id** | Unique record identifier (PK). |
| **Month** | Month name of the record date (e.g., August). |
| **WeekBegin** | Start date of the week this record falls in. |
| **Date** | Actual date of the schedule. |
| **empId** | Employee unique identifier. |
| **TV\_ID** | Internal employee tracking ID. |
| **Name** | Employee name. |
| **Supervisor** | Supervisor responsible for the employee. |
| **Trainer** | Trainer responsible for training this employee (if applicable). |
| **Role** | Employee role (Agent, Team Lead, etc.). |
| **Production Status** | Status indicating if employee is in production or not. |
| **Roster Status** | Indicates if the employee was rostered (scheduled to work). |
| **Location** | Geographical location (city, country, etc.). |
| **Site** | Site/campus name. |
| **LOB** | Line of Business. |
| **Scheduled\_From** | Scheduled shift start time. |
| **Scheduled\_To** | Scheduled shift end time. |
| **Schedule\_Activity** | Type of scheduled activity (Training, Production, Meeting, etc.). |
| **Scheduled\_Duration** | Scheduled shift duration in hours or minutes. |
| **Actual\_Duration** | Actual time worked by the employee. |
| **Wave** | Shift or wave ID (morning, evening, etc.). |
| **Start Date** | Date when employee joined organization or team. |
| **Nesting Date** | Date when employee entered nesting stage (if applicable). |
| **GoLive Date** | Date when employee went live on production. |
| **CreatedOn** | Record creation timestamp. |
| **ReportMonth** | Numeric month used for reporting. |
| **ReportYear** | Reporting year. |
| **MonthDate** | First date of the reporting month. |

**3. Summarization Objectives**

AI summarization must provide:

* **Quick insights for management**
* **Granular breakdown for operations**
* **Automated text summaries with visuals**

**4. Key Metrics to Compute**

| **Metric Name** | **Formula / Definition** | **Why It’s Important** |
| --- | --- | --- |
| **Schedule Adherence %** | (SUM(Actual\_Duration) / SUM(Scheduled\_Duration)) \* 100 | Core KPI for adherence. |
| **Variance (hrs)** | SUM(Scheduled\_Duration - Actual\_Duration) | Shows scheduling gaps. |
| **Total Scheduled Hours** | SUM(Scheduled\_Duration) | Workforce planning measure. |
| **Total Actual Hours** | SUM(Actual\_Duration) | Actual hours worked. |
| **Rostered Agents** | COUNT(DISTINCT empId WHERE Roster Status = 'Rostered') | Workforce size per period. |
| **Non-Production Time %** | (Non-Production Hours / Total Hours) \* 100 | Efficiency indicator. |
| **LOB-Level Adherence** | Group by LOB and calculate adherence. | LOB performance. |
| **Site-Level Adherence** | Group by Site and calculate adherence. | Location insights. |
| **Supervisor-Level Adherence** | Group by Supervisor to track coaching needs. | Leadership performance. |
| **Trend Over Time** | Weekly/monthly adherence % trend. | Identifies improvement or decline. |
| **Wave/Shift Adherence** | Adherence comparison by shift. | Workforce scheduling optimization. |
| **Agent Outliers** | Employees with adherence <80% or >110%. | Focus areas for coaching. |

**5. Dimensions (Groupings)**

Summaries should be generated **by these groupings**:

* **Time:** Day, Week (WeekBegin), Month (ReportMonth), Year (ReportYear)
* **Organization:** LOB, Site, Location, Supervisor, Trainer, Role
* **Operations:** Wave, Production Status, Roster Status, Schedule Activity
* **Employee:** empId, Name

**6. AI Summary Deliverables**

AI output should include:

1. **Executive Summary (Monthly/Weekly):**
   * Overall adherence %, variance from previous period.
   * Best and worst performing sites/LOBs.
   * Workforce highlights (e.g., number of rostered agents).
   * Recommendations (reduce overtime, adjust staffing in low adherence waves).
2. **LOB/Site/Supervisor Drilldown:**
   * Top/bottom 3 LOBs by adherence %.
   * Supervisors or teams needing coaching.
   * Regional or site-specific trends.
3. **Trend Analysis:**
   * Charts showing adherence changes week-over-week or month-over-month.
4. **Agent-Level Outlier Report:**
   * Highlight agents consistently missing adherence targets.
5. **Visuals (Optional):**
   * Bar/line charts for adherence trends.
   * Heatmap of adherence by site/LOB.
   * Table of top/bottom agents.

**7. Sample AI Summary Output**

**August 2025 Summary – Account 1**

* Overall schedule adherence: **92.5%** (↓1.8% vs July).
* **Top LOB:** LOB-A at **95.3%**.
* **Lowest LOB:** LOB-C at **88.1%** – needs review.
* **Site Insights:** Mumbai exceeded scheduled hours by **3%**, indicating possible overstaffing.
* **Supervisor Watchlist:** 3 supervisors have team adherence <85%.
* Evening Wave adherence is trending **downward** (↓3% MoM).
* Recommendation: Adjust scheduling for evening waves, provide training refreshers to low-adherence teams.

**8. Technical Requirements for AI Team**

* AI summarization system should:  
  ✅ Fetch data from all per-account tables with **same schema**.  
  ✅ Run aggregations (KPIs listed above) **weekly & monthly**.  
  ✅ Generate **natural language summaries** and **charts** for dashboards.  
  ✅ Support **drill-downs** (LOB → Site → Supervisor → Employee).  
  ✅ Be scalable for **large volumes**.