Terms of Reference (TOR)

Logistics Pool Application – K-Electric

1. Background

K-Electric's fleet operations are currently managed through fragmented channels such as emails, phone calls, SharePoint portals, and spreadsheets. This decentralized approach results in limited visibility, inefficient vehicle allocation, poor logistics control, and increased downtime due to reactive maintenance.

To address these challenges, KE intends to implement an AI-enabled Logistics Pool Application that centralizes vehicle booking, allocation, tracking, maintenance, analytics, and stakeholder communication. The solution will be accessible via mobile (Android/iOS) and desktop/web portal, fully integrated with KE's enterprise systems (SAP, GPS trackers, fuel vendors, attendance systems, and analytics platforms).

2. Objective

The primary objective is to design, develop, and implement a centralized Logistics Pool Application that enhances operational transparency, efficiency, and cost optimization.

The application will support:

- End-to-end vehicle booking and allocation workflows
- Real-time vehicle tracking and monitoring
- Maintenance and complaint management
- Vendor coordination and performance monitoring
- Operational and analytical dashboards
- Integration with KE enterprise systems (SAP, Qlik Sense, Decibel, GPS vendors, fuel vendors)
- Role-based access control and compliance with KE IT security standards

3. Scope of Work

The selected vendor will be responsible for **design, development, integration, deployment, and support** of the Logistics Pool Application.

Functional Scope

- Role-based login access (KE Users, Logistics Team, Vendors, Administrators)
- Vehicle booking and allocation workflows with approval hierarchy – triparty booking acceptance
- Automatic booking cancellation for no-show scenarios
- Real-time vehicle tracking integration (location, mileage, speed, fuel, idle reporting, fence, city exit fence, parking and visits to unauthorized and authorized locations, vehicle stop time, Tracker Not Reporting)
- Vehicle complaint logging and job assignment
- Fleet and driver database integration (SAP)
- AMS and employee attendance integration (Decibel)
- Notifications and alerts (SLA breaches, delayed approvals, breakdowns, exceptions)
- Operational dashboards and analytical reports regarding utilization against allocated vs actual mileage, 0 KM mileage report, geo-fence violation, city exit alerts, vehicle visit to authorized and unauthorized locations, vehicle open, in-progress, closed and re-open complaints)
- Audit logging and activity tracking
- Use endorsement against Off-Peak Kilometers
- AKPL deduction of Fleet Vendor
- Allocation and log of replacement vehicles in case of Not Reported vehicles
- Integration of SR Portal – Spot vehicle requirement, additional vehicle requirement, annual extension and service extension requirement along with provision of document attachment
- Vehicle inspection database integration – vehicle inspection status to be updated on real-time basis
- Integration of Vehicle Rental portal
- Cost center to be incorporated against each vehicle

- Provision for emergency situations for instance rain emergency, force majeure
- Vendor performance scorecard that comprises of KPIs, complaints, attendance, inspection, HSE
- Fuel consumption to be integrated with existing SAP module
- Process for RO creation for pool/replacement vehicle
- Attendance for unallocated/idle vehicles
- Manual attendance acceptance process flow
- Highlight misuse of vehicles via development of AI based solution / AI Prompts

4. Implementation Phases

Phase 1 – Minimum Viable Product (MVP):

- Role-based user access
- Booking and allocation workflows
- Real-time tracking integration
- Complaint management
- Fleet and driver data integration
- Attendance system integration
- Core dashboards

Phase 2 – Advanced Capabilities:

- Predictive maintenance analytics
- Vendor performance scoring
- Utilization and cost analytics
- Exception monitoring and reporting
- Advanced reporting and export features
- Self-service configuration capabilities

5. Governance Structure

The project will be governed by a cross-functional steering committee comprising representatives from:

- KE Logistics
- KE IT
- KE Procurement
- KE Business Finance
- KE CHSEQ

This governance framework ensures effective oversight, vendor management, and implementation monitoring.

6. Roles and Responsibilities

Stakeholder	Role	Responsibilities
KE Logistics	Pool Management & Fleet Ops	Maintain fleet/driver data, oversee daily ops, coordinate with vendors, monitor utilization
KE IT	Technical Oversight	KE IT will facilitate technical aspects, for instance architecture, integration with SAP/ERP, ensure security compliance, provide technical support etc..
KE End User	Service Requestor	Book/cancel vehicles, provide trip details, report issues/HSE complaints
Fleet Vendor	Vehicle Provider	Ensure timely vehicle availability, maintain roadworthiness, share real-time status
Tracker Vendor	Tracking & Monitoring	Install/maintain GPS devices, provide real-time data, ensure uptime, support route optimization
KE BF	Financial Oversight	Monitor budgets, validate invoices, track cost efficiency
KE Procurement	Vendor Management	Manage contracts, negotiate pricing, ensure compliance
KE CHSEQ	Safety & Compliance	Define/enforce safety standards, conduct audits, ensure HSEQ compliance

7. Deliverables

The selected vendor must deliver:

- Solution architecture documentation
- Functional and technical specifications
- Mobile applications (Android & iOS)
- Web portal for administration and monitoring
- System integration with KE enterprise systems
- Dashboards and reporting modules
- Testing documentation (SIT, UAT)
- Training and knowledge transfer sessions
- Post-deployment support and maintenance
- Deployment of a designated Business Operations Executive (BOE) at KE Logistics Office on a permanent basis to coordinate with KE Logistics and IT teams, support operational monitoring, assist in issue resolution, and ensure smooth implementation and adoption of the Pool Application

8. Acceptance Criteria

The solution will be considered acceptable upon meeting the following conditions:

- Real-time fleet visibility available on mobile and web platforms
- Vehicle booking and allocation completed within the application without manual intervention

- Successful integration with enterprise systems (SAP, GPS, fuel vendors, AMS)
- Operational dashboards providing accurate utilization and cost metrics
- Role-based access control enforced
- System uptime ≥ 99% with SLA compliance
- UAT user satisfaction score ≥ 85%

9. Project Scale

- **Vehicles:** ~2,000 fleet vehicles (including vendor-provided)
- **Users:** ~3,000–5,000 KE employees eligible for pool app
- **Bookings:** Estimated 60,000–70,000 trips per month
- **Platforms:** Android, iOS, Windows desktop portal

10. Security & Compliance

The solution must comply with KE's cybersecurity and IT governance policies, including:

Preliminary Cyber Security Requirements

The following is a non-exhaustive list of preliminary cyber security requirements.

1. The vendor should specify clearly if this is a cloud only, on-prem or Hybrid solution

2. For cloud only and/or hybrid solution proposals, vendors should include details on

a. The Principle and brand of Cloud – MS Azure, Amazon AWS, Google GCP, AliBaba, Oracle, Others

b. Specify the primary, backup and global cloud zones and regions with clarity on resilience flows within the HL architecture document

c. Specify the Tenancy of the cloud eg. Vendor, KE or any other third party

d. Vendors should provide completed signed Cloud Control Matrix (CCM) published by Cloud Security Alliance (CSA) (www. Csa.org)

e. Clearly mark the security features within the cloud which are

i. Bundled with the proposed solution without additional first year costs

ii. Available from the vendor on the cloud for additional costs (to be negotiated separately

iii. KE has to arrange.

f. Patching of the solution platforms within the cloud and at what cost

3. Proposed solution should be independent of known bugs, errors, vulnerabilities.

4. The vendor should provide latest Pen Test and VA report (performed within the last 120 days). The reports should either be performed by well-known third party (Big 4 consulting) OR should be executed by industry standard tool.

5. Proposed solution should be able to provide logs which could be ingested and integrated by KE SIEM. KE at its discretion, may require logs for events which the solution provider must be able to develop.

6. It would be good to have feature if the proposed solution should be able to integrate critical / admin level credentials via PAM solution.

7. Vendor should ensure proposed solution should be built on well-known industry level encryption standards. This should include support for in-storage and / or in-transit encryption such as encrypted OSes, DBs, and communication channels

8. Vendor should provide details on DRP measures for the entire solution including for solutions within Cloud.

9. The proposed solution should be able to comply with CIS hardening benchmarks. In case CIS benchmarks are not available, the vendor should provide undertaking that the proposed solution will work and operate within KE server and end-point hardening environments.

10. Vendor should be able to provide third party certification for hosting and / or cloud facility. These may include ISO, and SOC 1 and SOC2 reports.

11. The proposed solution should include support and / or integration with KE credentials authentication such as AD, SAML, Auth0 etc.

12. The proposed solution should specify if it supports Federation Identity, Tokenization and API management interfaces.

13. If the proposed solution leverages certificates, the vendor should provide details on certificate management such as CA, validity, issuance, revocation and CRL listing etc.

14. The proposed solution should store passwords in encrypted formats

15. Vendor should provide the HL graphical / architectural representation of system highlighting security components

16. For simplicity and common solution, wherever possible, the application and / or its allancillary components etc should be able to leverage the Windows AD infrastructure for user credentials for authentication, and usage purposes.

17. The application /s system should be able to support Role Based Access Controls (RBAC) for various user roles/profiles supported. (If the application / system is leveraging AD then this could be addressed from that capability.

18. The vendor should provide a simple table matrix clearly identifying the roles, summary responsibilities and access privileges (Read, Write, Modify, delete) for the roles within the application / system.

RFP IT CHECKLIST

Sr	Category	Sub Category	Description
1	**Architecture & Design**	System Architecture Diagrams	High-level visuals outlining the overall architecture of the proposed solution, including Disaster Recovery and Business Continuity.
2		End-to-End Architecture Diagram	Detailed view showing how all system components interact across the full workflow.
3		Deployment Topology	Description of physical or cloud-based deployment layout, including environments (dev/test, production), zones, nodes.
4		Data Flows	Visual or narrative representation of data movement between modules/systems, including APIs and transformations.
5		Integration requirements	Vendors should outline supported methods, data sync approaches, and any dependencies
6		Standards and Alignment	Include Cloud Strategy Alignment and Technology Stack Standards with system and deployment diagrams

7	**Technical & Performance Requirements**	Technical Requirements	Specifications for hardware, software, OS, platforms, and third-party integrations.
8		Performance Requirements	Expected performance benchmarks including system response time, uptime/availability targets, and transaction throughput.
9		Future Scalability & Flexibility	Ability to accommodate growing usage, new modules, and evolving business needs without major redesign.
10		SIT and QAT by Vendor	Vendor-led System Integration Testing (SIT) and Quality Assurance Testing (QAT) including test strategy and acceptance criteria.
11	**Support & Maintenance**	Administration Support Mechanism	User administration processes including access control, role-based permissions, and user lifecycle management.
12		Infrastructure and Network Support Mechanism	Support for servers, cloud resources, and network infrastructure where the system is hosted.
13		Support and Maintenance Offering	SLA-backed services covering issue resolution, bug fixes, upgrades, and post-deployment assistance.
14	**Implementation & Project Management**	Functional Specification (in Design phase)	Document covering detailed functional requirements, specific features, and relevant use cases.
15		High-Level Project Plan	Outline of project phases, milestones, deliverables, and dependencies.
16		Risk Management Approach	Identification of potential risks along with mitigation strategies and contingency plans.
17		Training and Knowledge Transfer Plan	Strategy to train internal teams and transfer operational knowledge, including documentation.
18		Change	Add a Change Management

		Management Plan	Plan to ensure smooth adoption
19	**Commercial & Legal**	Licensing Model	Details of the licensing structure (perpetual, subscription, user/device-based) including limitations.
20		Intellectual Property Clauses	Terms regarding ownership of code, documentation, custom developments, and IP rights transfer.
21		Payment milestones	Should be aligned with project delivery milestones
22	**Vendor Profile & Experience**	Relevant Experience and References	Past projects, case studies, or references demonstrating experience with similar systems.
23		Innovation	The vendor approach to innovation, specifically their strategy for adopting and integrating emerging technologies (e.g., AI/ML, analytics, automation) with KE's existing technology landscape
24		Vendor Team	Vendor development, planning and production support teams should be Karachi base

11. Project Timeline

The implementation will follow a phased approach with milestones:

1. Requirement finalization
2. Solution design
3. Development and integration
4. System integration testing (SIT)
5. User acceptance testing (UAT)
6. Production deployment
7. Post-implementation support

12. Approval

This TOR serves as the governing document for the Logistics Pool Application initiative and vendor engagement process. Approval will be obtained from:

- KE Logistics
- KE IT
- KE Procurement
- KE Business Finance
- KE CHSEQ

13. Requirements Incorporating AI, HSE & Offline Capabilities

13.1 AI-Enabled Functional Requirements

• Dynamic Route Optimization: The application must incorporate AI algorithms to recommend the most fuel-efficient and time-efficient routes based on real-time GPS traffic data.

• Smart Pooling: The system must use AI-based clustering to automatically group travelers with similar destinations to reduce the current estimated 60,000–70,000 monthly trips.

13.2 HSE & Emergency Protocol Integration

• In-app SOS/Panic Button: The mobile app must include an emergency SOS feature for both drivers and users. Activating SOS must instantly notify the Logistics Team and KE CHSEQ with real-time live GPS coordinates.

• Emergency Workflow: The system must generate an immediate alert, create an incident log, and trigger predefined HSE escalation protocols.

13.3 Offline Mode Capabilities

• Offline Trip Logging: Drivers must be able to start/end trips even without internet connectivity, with automatic data sync once online.

• Offline Maintenance/Complaint Logging: The mobile app must allow issue reporting offline with queued synchronization.

14. Advanced AI-Driven Operational Optimization (User Cases)

14.1 Meter Reading Operations

The Logistics Pool Application shall be extensible to support Meter Reading Operations optimization, including integration with meter reader mobile applications and GIS systems.

• Dynamic route optimization for meter readers using real-time traffic data and geographic clustering.

• Power outage and load-shedding awareness to automatically adjust and reschedule meter reading routes.

• AI-based bias-free assignment of meter reading tasks considering proximity, workload balance, and historical performance.

• Performance analytics covering time-per-meter, productivity benchmarks, GPS movement analysis, and incentive enablement.

14.2 Predictive Vehicle Positioning & Staging

The system shall incorporate ML models to proactively recommend optimal parking and staging locations of fleet vehicles during idle or low-demand periods.

• Analysis based on historical fault data, time-of-day, day-of-week, weather conditions, and geographic hotspots.

• Objective to reduce fuel consumption, response time, and vehicle wear and tear.

14.3 Centralized Fleet Command & Control Dashboard

A centralized operational command dashboard shall be provided for OCR and management teams.

• Real-time live visibility of all vehicles with availability status, workload, ETA, and capability tier.

• Unified view integrating GPS, SCADA, KE Live App, and 118 helpline fault feeds.

14.4 Intelligent Fault-to-Vehicle Assignment Engine

The platform shall support AI-powered fault-to-vehicle assignment logic.

• Automated ranking of vehicles based on proximity, availability, capability tier, workload, and ETA.

• Improved first-time fault resolution and optimized dispatch outcomes.

14.5 Dynamic Priority-Based Route Reconfiguration

Vehicle routes shall be dynamically recalculated when fault priorities change.

• Live route updates pushed to in-dash units and mobile applications.

• Re-optimization based on current vehicle position and updated urgency.

14.6 Advanced Fleet Analytics & Optimization

Advanced analytics shall be implemented to enable continuous operational optimization.

• Fault-level fuel consumption metrics, MTTR trends, seasonal analysis, and team benchmarking.

• Predictive insights and recommendations for strategic resource planning.

14.7 AI/ML Model Governance

The vendor shall define AI/ML model governance mechanisms including accuracy measurement, retraining cycles, explainability, and data quality controls.

14.8 AI Based Solution for highlighting misuse of hired vehicles

AI Prompts Sample:

- Highlight vehicles that were parked at **unidentified/non-KE location/non-vendor location** for more than **X** minutes during peak hours in the last **X days**
- Share the list of vehicles which was parked at non-KE location for more than 15 minutes in the last 3 days
- Share the list of vehicles that travelled out of Karachi & triggered **city fence exit alert** for the last **X days**
- Share list of vehicles & hours spent at **specific workshops** (Filter – date/time range)
- Share list of vehicles that have **exhausted daily km** benchmark during last **X** days
- Vehicles exceeding **speed limit (70 km/hr)** during peak hours + **bad safety track record**

- Share list of vehicles that have Abnormal fuel consumption patter vs their past month average / their previous **X** months
- Share list of vehicles that were idle or unutilized for greater than **X%** of duty hours in their previous **X days**

Note: X denotes the input value that would be customized by KE as per our data analysis requirement.

Distribution AOC Project (In-Dash Unit)

14.8 Location Visibility of Vehicle

- **Responsive GIS Technical Map:** Visibility that includes our technical network layers.
- **Location Visibility to Faults:** Integration of real-time fault locations/DTS location via PINPOINT / PIN Location to optimize vehicle dispatch.
- **Fleet Health & Replacement Plan:** System-based tracking of vehicle aging and health to automate replacement cycles.

14.9 Operational Controls & Automation

- **Automated Maintenance Requests:** System-validated checklists enablement automatically route service requests to the concerned vendor/fleet upon failure.(Good to have: if we could develop an AI based image processing solution for filling of checklist)
- **Integrated Pool Driver/vehicle Module:** A dedicated "Pool Window" within the app to eliminate manual coordination (emails/calls).
- **Route Compliance & Geofencing:** Real-time alerts for unauthorized AOC or Cluster boundary deviations only allow after approval mandate through Pool App.
- **Multi-Level Dashboards:** Role-based visibility for **AOCs, Regional Offices, Clusters, and the CDO Office.**
- **Driver Profiling:** A centralized database for performance, safety, and licensing records with driver ratings.