1. Logistics Management System (LMS)

1.1 Functional Scope of Logistics Management System (LMS)

Logistics Management System (LMS) is expected to be application (standalone/ web based), which will be used to manage Sales, Transportation and Production activities at various mines of OMC. Software will manage daily IN/Out activity with proper validation before allowing vehicle for any activity, weigh bridge operation, to capture detailed vehicle movement data, keep track of daily sales data, daily production data etc. Further it will help corporation to get detailed live report instantly for further analysis. In addition to this, there shall be location specific Command Control Center which will have 24X7 CCTV Surveillance, Public Address System and Speed Violation Detection mechanism.

OMC is planning to install different servers at different locations of mines to manage its daily activity. Each mine has these important elements/ locations:

- Entry and Exit Gate
- Tare and Gross weighment at Sales weighbridges
- Tare and Gross weighment at Production weighbridges
- Stock yard
- Parking yard

Note:

- One Central Server on Meity approved Cloud has been considered which will keep different mines sales and Production data as backup at a common place and this server will be frequently synchronized (within 12 hours) with respective LMS local server at mines. The timeframe for synchronization can be mutually decided during SRS finalization.
- The Data center of the CSP (Cloud Service Provider) should be within the geographical boundary of India
- Production means Quantity shifted from Contractor location to OMC Stockyard through Production weighbridge. Weighbridge will be integrated with LMS Production module to get shifting weighment.
- In mines level individual dedicated LMS server will be installed at respective CCC along with local i3MS server under the same LAN (new Optical Fiber Cable (OFC)).
- i3MS (INTEGRATED MINES AND MINERAL MANAGEMENT SYSTEM) solution has been designed by Department of Steel & Mines, Odisha to regulate the mining activities through electronic mode.

Below table captures mine-wise count (indicative) of various key points which shall be considered as part of the project. Moreover, the details of the hardware which may be required at these points of the mines are also captured in the subsequent section.

Sl.No.	Mines	No. of IN Gate	No. of OUT Gate	No. of Prod. WB (Tare & Gross)	No. of Sales WB (Tare)	No. of Sales WB (Gross)	No. of Parking Yard	No. of Stock Yard
1.	**Kurmitar**	1	1	3	2	4	1	2
2.	**Guali**	2	2	3	3	8	0	1
3.	**Jilling**	1	1	3	2	3	0	3
4.	**Apahatu**	1	1	1	1	1	0	1
5.	**Kodingamali**	1	1	2	1	1	1	1
6.	**Dubuna**	2	2	2	2	4	1	2
7.	**Tiringpahad**	1	1	1	1	0	1	1
8.	**SouthKaliapani**	1	1	1	4	3	2	1
9.	**Uchabali**	1	1	2	1	1	1	1
10.	**Banspani**	1	1	2	1	2	1	1
11.	**Khandbandh**	1	1	2	1	2	1	1
12.	**Bangur**	1	1	0	0	1	1	2
13.	**Sukrangi**	1	1	0	0	2	0	3

Note: Activities at Apahatu to be monitor from CCC of Jilling and activities at Sukrangi & COBP to be monitored from CCC of South Kaliapani.

The table below contains indicative requirements from various modules. The detail scope shall be finalized during SRS preparation by Vendor.

#	Modules – Indicative Scope
Common modules in LMS which will be applicable for capturing activities in both Sales and Production	
1	**Mines Registration - Common** Admin shall be given option to register various mines with details will be used to get any data from these mines. For example, some of the fields related to mines for configuration are: • Mines Code/ID (Source Code) – Ex. 093013015636 • Mines Name – Ex. Kurmitar Iron Ore Mines • Region Name and Address • CIN Number, PAN Number, GSTIN Number
2	**User Authentication - Common** • Only authorized users can access LMS. Hence Individual user having approved authorization shall operate the application at IN/Out/ Other

#	Modules – Indicative Scope
	locations. • For users at various designated locations, a dedicated user- interface for Login shall be given. • User validation using User ID/Name or Email • Forgot Password/ User ID
3	**Registration Management - Common** • Vehicle and RFID • Driver, • Material, • Weighbridge, • Loading point (Sales) • Unloading point (Production)
Sales Dispatch Management: The web-application will manage daily IN/Out vehicle activity with proper validation before allowing vehicle to stockyard and parking space, weigh bridge operation, capturing detailed vehicle movement, keeping track of daily sales data etc. Further it will help corporation to get detailed live report instantly for further analysis.	
1	**Trip Scheduling** • Buyer wise and permit wise trip allocation for each Sales Order (SO) and Delivery Order (DO) which will be interfaced from SAP. • Permit integration with i3MS (Real time approved permit details will be interfaced to LMS) • LMS integration with SAP (for fetching SO, DO details) • Access to buyer for loading slip printing, which may be printed using thermal printers. The format of the loading slip to be decided during the SRS discussion.
2	**Vehicle Entry Management** • Validation of vehicles using Fixed Long Range UHF RFID Reader (Fixed/ Handheld) • Provision for scanning of QR Code through scanner using loading slip to map the permit details with validated vehicle details. • Vehicle tagging validation in i3MS through integration • Driver detail entry, validation & displaying photograph of driver from driver master • Boom barrier opens based on validation • DO Balance quantity checking and vehicle entry clearance • Integration with Boom barrier & Traffic light • Blacklisting of Driver and Vehicle • Integration with Vehicle Inspection System to allow or disallow vehicles Note: Please refer the process flow for more details

#	Modules – Indicative Scope
3	**Tare Weighment Automation (Unmanned WB)** • Precondition: Successful validation at Gate entry point • Automatic capture of Vehicle information through RFID (Primary) • Provision for scanning of QR Code through scanner using loading slip (Alternate) • Integration with Boom barrier, traffic light, Positioning sensors • Weighbridge Integration with i3MS to store Tare weight detail after conformation from LMS • Tare weighments capture in LMS through i3MS • LED display during weighment • Boom barrier opens/ closes on confirmation in LMS • LMS to guide PA (Public Addressal) System for the correct positioning of the vehicle for weighment, weighment details and then exit from the location • Integration with Vehicle Inspection System to allow or disallow vehicles (if the inspection is not done at the entry gate) Note: Please refer the process flow for more details
4	**Stockyard Management** • Precondition: Tare weighment shall be complete • Validation of Vehicle, Material, Grade and Stockyard name using handheld device • Loading supervisor shall accept or reject the trip based on the data displayed in handheld terminal
5	**Gross Weighment Automation (Unmanned WB)** • Precondition: Tare weighment shall be complete & stockyard conformation • Automatic capture of Vehicle information through RFID (Primary) • Provision for scanning of QR Code through scanner using loading slip (Alternate) • Integration with Boom barrier, traffic light, Positioning sensors • Weighbridge Integration with i3MS to store gross weighment after conformation from LMS • Gross weighments capture in LMS through i3MS • LED display during weighment • Boom barrier opens/ closes on confirmation in LMS • LMS to guide PA (Public Addressal) System for the correct positioning of the vehicle for weighment, weighment details and then exit from the location • Note: Please refer the process flow for more details
6	**Exit Management**

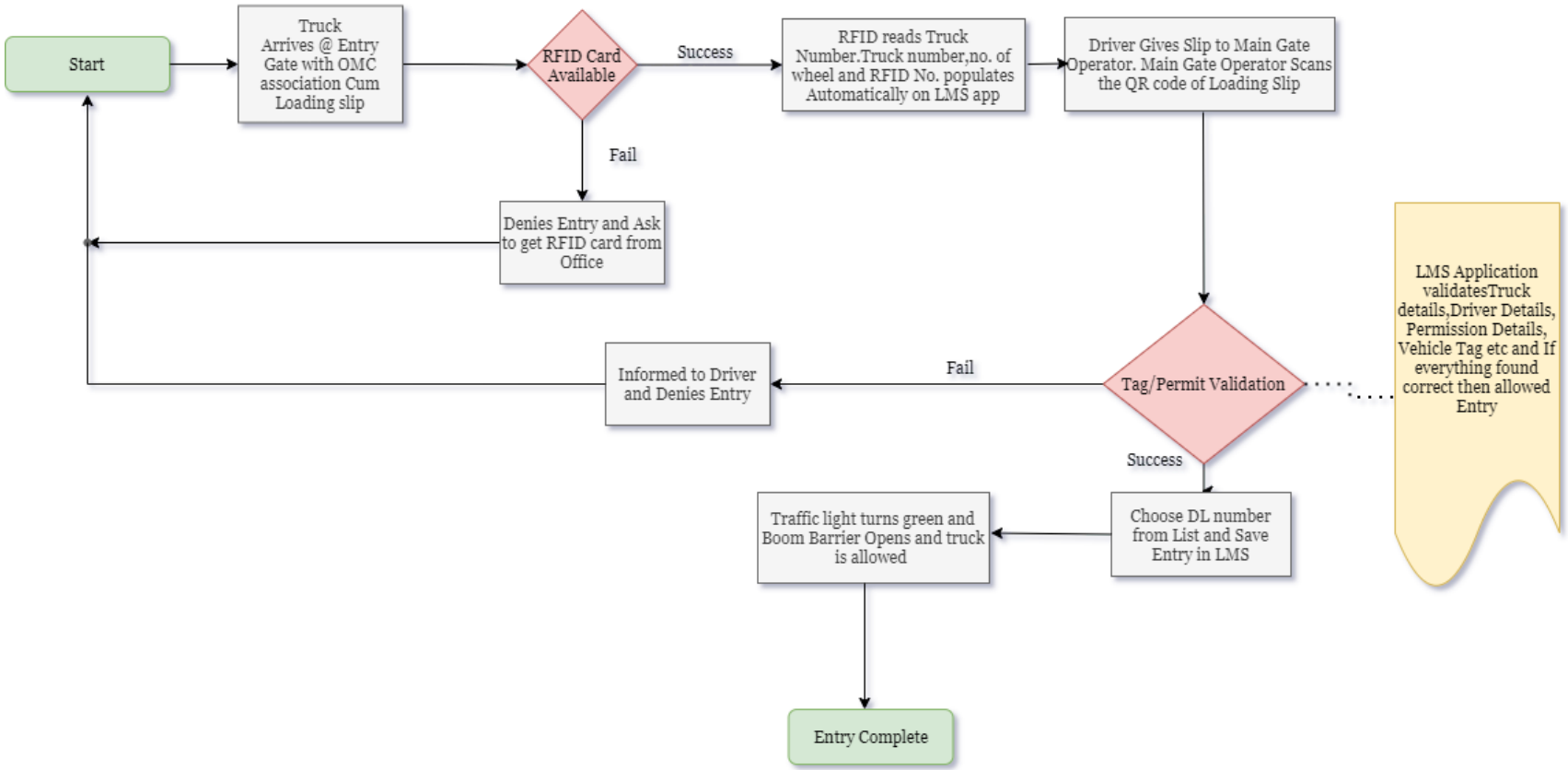
#	Modules – Indicative Scope
	• Precondition: Gross weighment before exit (positive flow) • Validation at the exit gate through LMS • Integration with I3MS for TP Generation. • TP Printing from I3MS through RFID reading /Manual TP Printing using Vehicle number • Provision for scanning of QR Code through scanner using loading slip for TP Printing (Alternate) • Exit time stamp storing in LMS after TP generation. • DO wise Sales data integration with SAP through batch mode/schedule job Note: Please refer the process flow for more details
7	**Vehicle Blacklisting** • Manage Blacklist/ Un-blacklist vehicle with reason • Count of black-listed vehicles shall be captured in the database for later analysis • Once vehicle is blacklisted it is not allowed to enter mines and will be restricted at the gate entry.
8	**Driver Blacklisting** • Manage Blacklist/ Un-blacklist driver with reason • Count of black-listed drivers shall be captured in the database for later analysis • Once the driver is blacklisted it is not allowed to enter mines and will be restricted at the gate entry.
9	**Parking Management** • Validates the vehicles at the entry and exit point • Allows the vehicle into the parking based on the available capacity • The vehicles shall be allowed using Fist IN First OUT method and related information shall be displayed on the LED screen. • Control in the movement at the Parking IN and OUT using boom barrier
10	**Shift Allocation** • Create/ Update /Delete shift duty for Driver/Vehicle • Options to be given to assign time which can be used for validation at the entry gate
11	**Buyer's Module** • Option to the buyers to view the schedule • Real time status of the lifting and remaining quantity of Ores as per the permit

#	Modules – Indicative Scope
	• Ability to generate chalan/ entry pass from the buyer's end
12	**Capture of data for Rail evacuation** • Trip wise Vehicle data capture from stockyard to railway siding in LMS • Automatic tare & gross weighment capture • Vehicle wise TP generation from I3MS • Conformation from railway siding using handheld device by scanning the TP in LMS • Note: If the railway siding is inside the mines lease area, then i3MS integration is not required only the Vehicle details, weighment details, buyer information & railway siding information to be captured in LMS.
Production Material Transfer: The web-application will manage daily vehicle activity with proper validation before allowing vehicle to mines, weighbridge operation, there by capturing detailed vehicle movement, keeping track of daily production data etc. Further it will help corporation to get detailed live report instantly for further analysis.	
1	**Tare and Gross Weighment** • Tare Weighment shall be done once in every shift. • The process is mostly similar to Sales Dispatch Management (no i3ms integration) • Scheduling of vehicles in advance • Validation of vehicles using RFID • LED display during weighment • Boom barrier opens based on confirmation
2	**Gross Weighment and Material Transfer** • Precondition: Tare weighment shall be completed • Vehicle information through RFID • Integration with SAP • Contractor code, material code etc. shall be interfaced with LMS (from SAP) before the weighment • WB integration with LMS for gross weighment capture. • Contractor, Day and Material-wise daily posting in SAP
3	**Unloading of Materials** • Validation at unloading point through application • Unloading time stamp capture through RFID/ handheld device

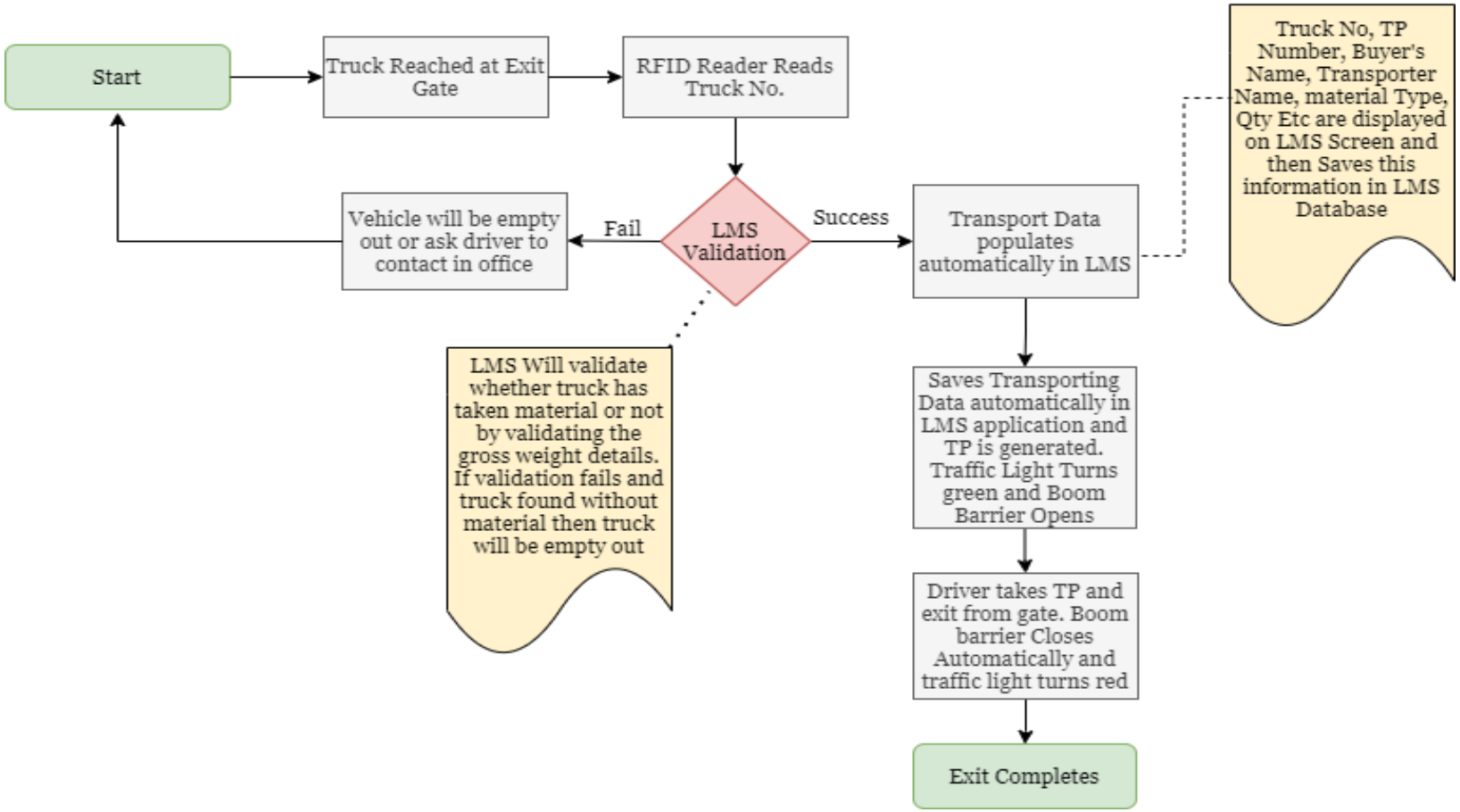
Note: Indicative i3MS integration flow for LMS is attached in Annexure.

Primary Functional Flow Diagrams (indicative)

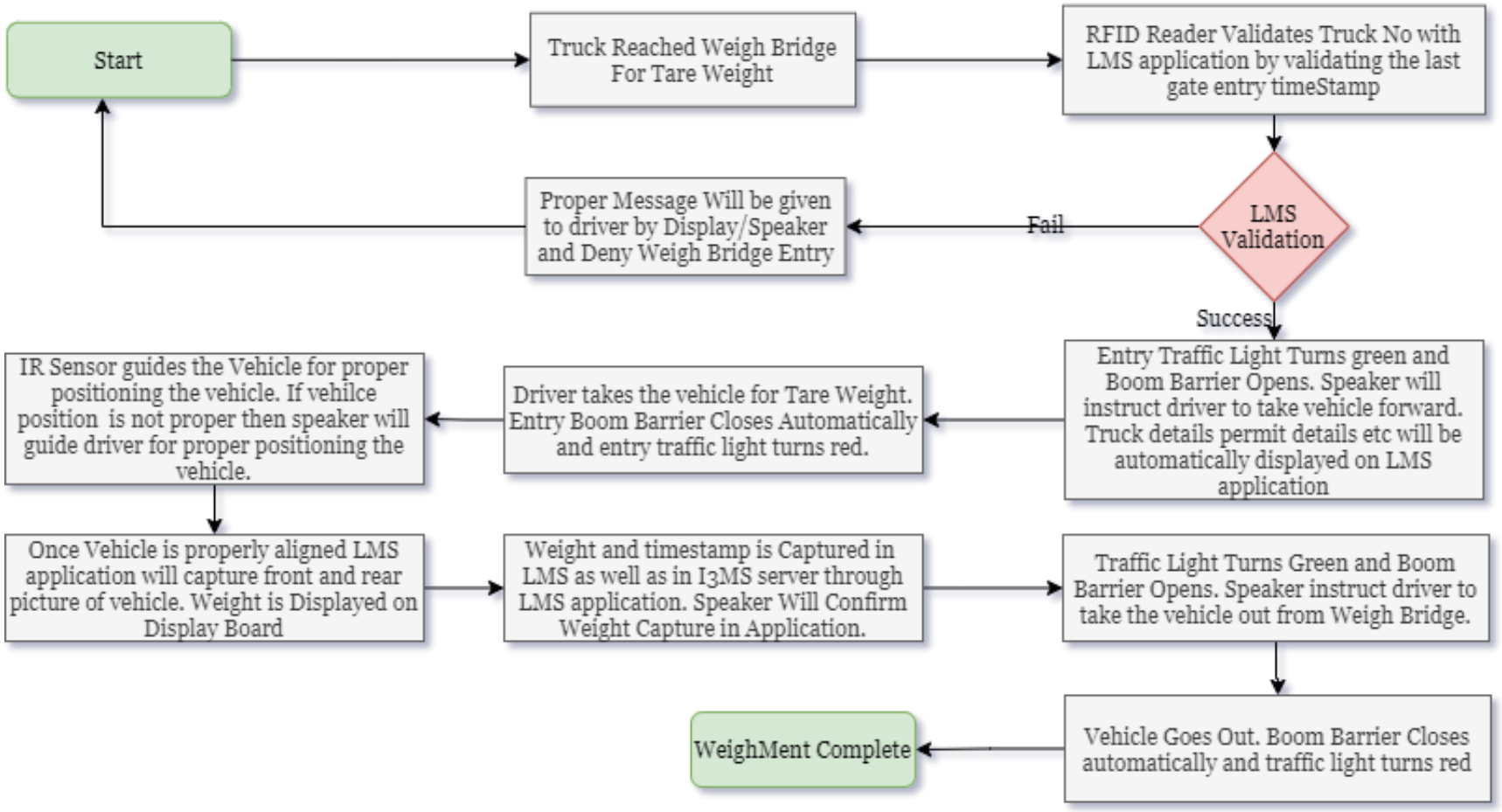
Entry Management:



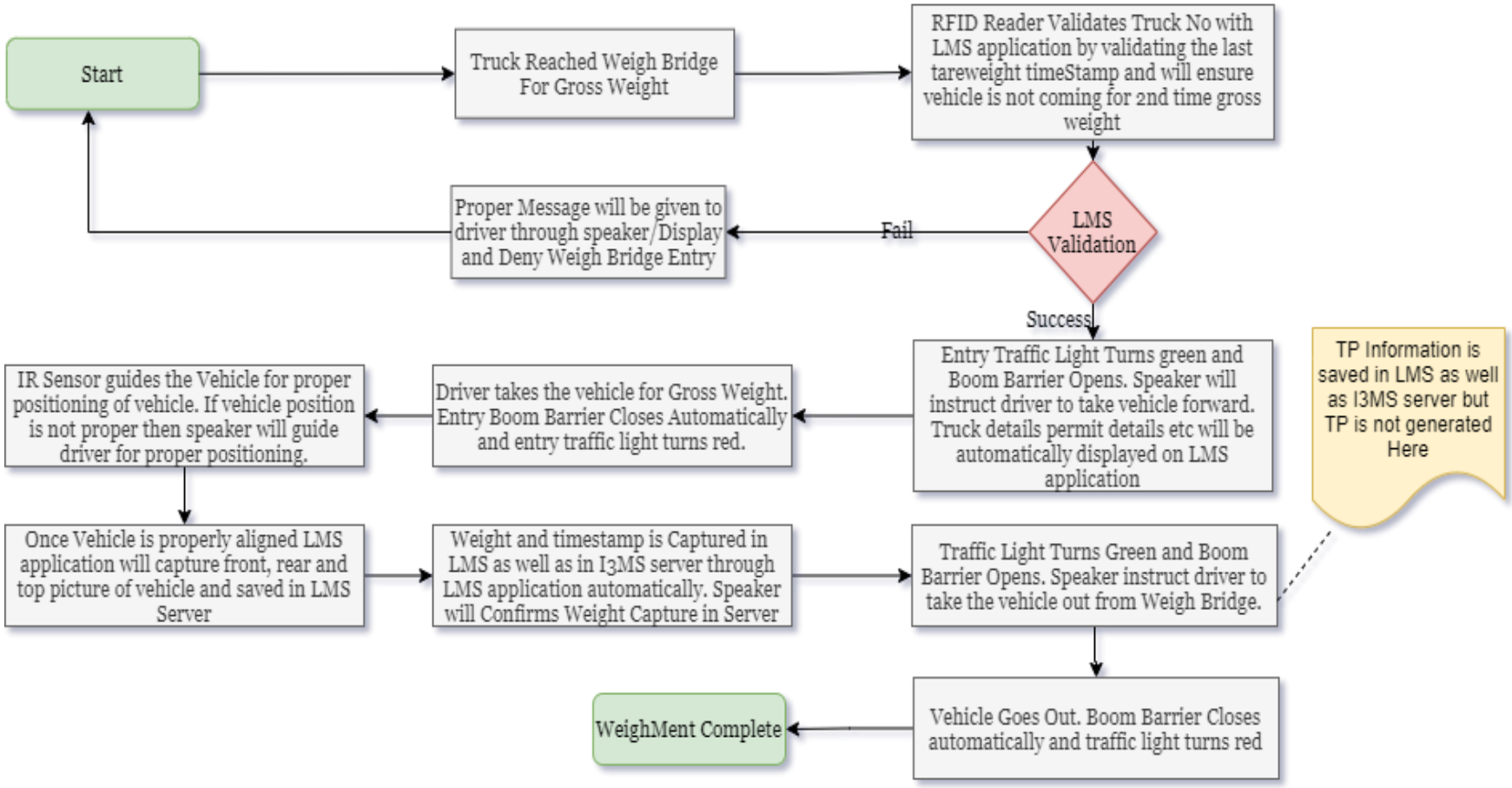
Vehicle Exit Management



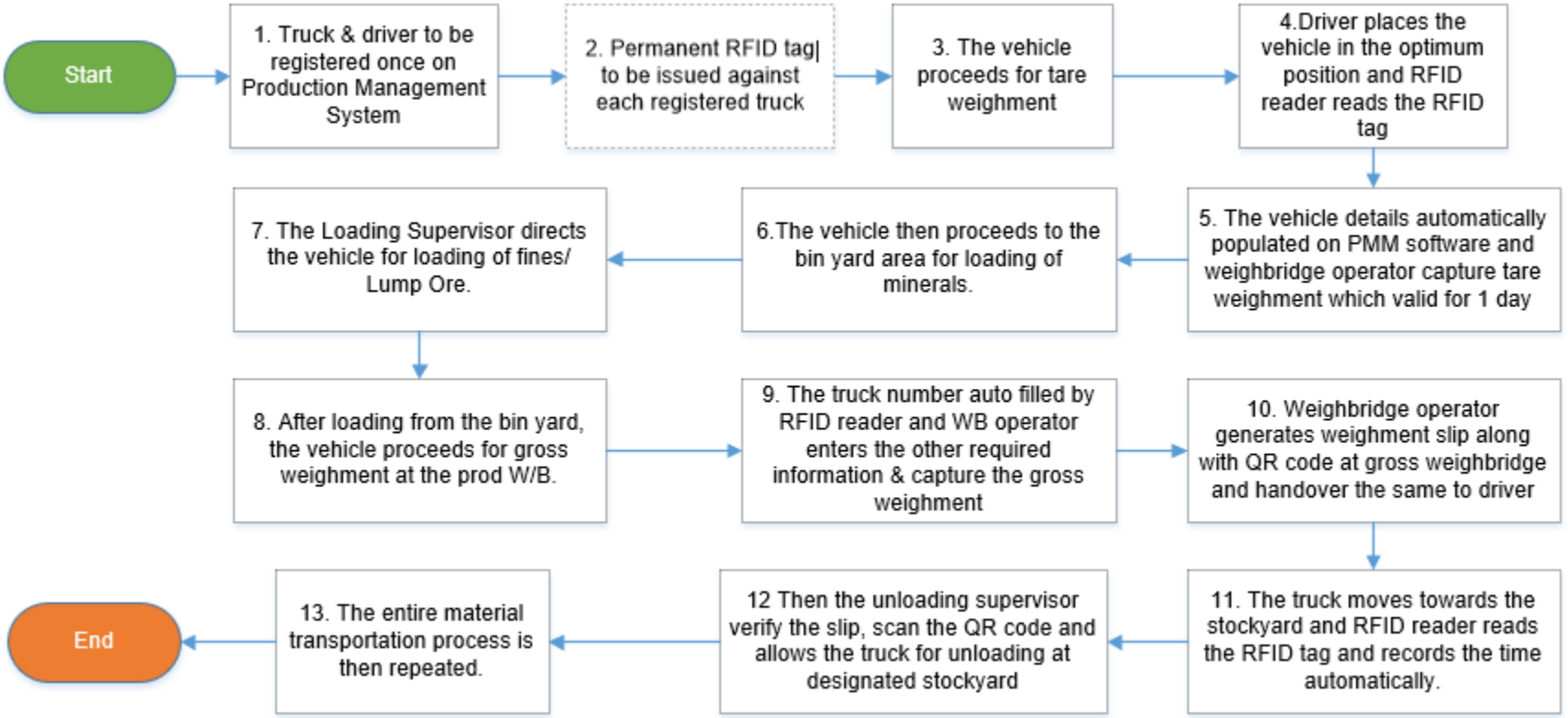
Tare Weighment



Gross Weighment



Production Material Transfer



1.2 Technical features of Logistics Management System

The Logistics Management System is expected to have features as captured in the below tables. The Agency is required to develop/ customize and configure the requirements for OMC.

- **Technical features (indicative) of the Logistics Management System**

#	Description	Req. Type
1	**User Dashboard:** • A user specific single view dashboard to capture critical KPIs based on access control by fetching the data from local and/or central back-up server.	Must Have
2	**Alerts and escalation management** • Automated reminders to required users/ task owners • Escalation mechanism using auto trigger • Field User – Mines Manager – Regional Manager – HoD	Must have
3	**Document storage and Archive management** • To customize, share, secure, authenticate and also manage versions of the documents. • Secure and centralized document storage • Easy search of the uploaded documents (based on projects, users, period etc.) • Storage of all project and task related checklists, scanned supporting approvals, site photos and videos etc. • A well-defined and configurable archival mechanism for artefacts • Artefacts to be archived after one year with exceptions	Must have
4	**Audit Trail management** • Audit trails management to be made available at least to the administrator/ master user • User/ Location/ Activity-wise audit trail history • Audit trail history captures the business username, status, remark & updated document, date and time etc.	Must have
5	**MIS reports** • Automatic generation of report weekly/ monthly/ quarterly / yearly to the respective users • Customization of report as per OMC Limited format (if any) specified • The MIS reports generated must be downloadable in at least .csv, .xls,	Must have

	.xlsx, .pdf formats.	
6	**SMS & Email Management** • Automated email triggers to be enabled • Enable facility for the administrator/user to send adhoc email and SMS through official email id and mobile number respectively. • OMC is responsible for the procuring SMS & e-Mail gateways.	Must have
7	**Integration with SAP, Active Directory, Outlook, and other 3rd party application(s) like i3MS, Vehicle Inspection System etc.** • System should have the provision to integrate with OMC's ERP (SAP), Active Directory System, Outlook, and other 3rd Party applications like i3MS, Vehicle Inspection System, etc.	Must have
8	**Web Application** • A device agnostic (desktop, tablet and mobile) application to be enabled for users to monitor all relevant parameters, activities etc. • The application is expected to be responsive and be accessible seamlessly from various user devices like desktop, mobile etc.	Must have
9	**Functional and Technical Support** • A prompt user support on functional (like feature understanding etc.) and technical matters (like system errors, bugs etc.) resulting in uninterrupted use of the product	Should have
10	**Access Control** • A custom defined role-based access control mechanism	Must have
11	**Search** • Search for objects like document, tasks etc.	Should have
12	**Export and Import** • The product shall have the capabilities to export the data on to file (.csv and .pdf) • The product shall have the capabilities to import the data from to external file (.csv and .pdf) as bulk upload.	Must have
13	**User Management** • User can be created, modified and viewed by the admin or concerned user	Must have

Note:

- All software licenses (e.g. Database license), if required, to be used shall be procured by the bidder in the name of Odisha Mining Corporation.
- Proposed Databases should be of Enterprise Edition and not open source.

1.3 Indicative List of Hardware (Module Wise)

#	Indicative list of hardware (module wise) to be installed at various locations of mines
1	**Entry Management:** • 8 Port L2 PoE + Switch • Networking components viz. UTP Cable, LIU, Patch Panel, Faceplate, Patch chord etc. • Electrical components such as Electrical Cables, HDPE Duct, JB's etc. • Outdoor Junction Box with required accessories • Public Address System Components • Electrical Distribution system inside cabins/rooms • Network Distribution system inside cabins/rooms for IP connectivity • Dome Camera • Bullet Camera • 2 KVA UPS • Fixed Long Range UHF RFID Reader and accessories • Traffic Light • Boom Barrier and accessories • Controller • LED Display (only production site) • Protection components such as SPD's, Earthing, Lightning Arrestors etc.
2	**Weighbridge Automation** • 8 Port L2 PoE + Switch • Networking components viz. UTP Cable, LIU, Patch Panel, Faceplate, Patch chord etc. • Electrical components such as Electrical Cables, HDPE Duct, JB's etc. • Outdoor Junction Box with required accessories • Public Address System Components • Electrical Distribution system inside cabins/rooms • Network Distribution system inside cabins/rooms for IP connectivity • Dome Camera • Bullet Camera • 2 KVA UPS

	• Fixed Long Range UHF RFID Reader and accessories • Traffic Light • Boom Barrier and accessories • Controller • LED Display • WB Automation with required accessories (IR/ Ultrasonic Sensors, Poles, PLC etc.) & Integration • Protection components such as SPD's, Earthing, Lightning Arrestors etc.
3	**Parking Management** • 8 Port L2 PoE + Switch • UTP Cable Networking components viz. UTP Cable, LIU, Patch Panel etc. • Electrical components such as Electrical Cables, HDPE Duct, JB's etc. • Outdoor Junction Box with required accessories • PTZ Camera • Boom Barrier • Junction Box • 2 KVA UPS • Protection components such as SPD's, Earthing, Lightning Arrestors etc.
4	**Stockyard Management** •8 Port L2 PoE + Switch •Networking components viz. UTP Cable, LIU, Patch Panel etc. •Electrical components such as Electrical Cables, HDPE Duct, JB's etc. •Outdoor Junction Box with required accessories •PTZ Camera •Junction Box •2 KVA UPS •Protection components such as SPD's, Earthing, Lightning Arrestors etc.
5	**Exit Management** •Similar to Entry Management
6	**LMS Common IT Network Upgradation** •24 Port L3 Switch •1G SFP Module 10KM (part of switch OEM) •SM Fibre Patchcord •24C SM Fibre Cable •24 Port LIU •42U Rack •10 KVA UPS

	•Number of Poles for OFC cable laying •Redundant Fiber Ring Network Architecture to each WBs, IN/OUT Gate & CCC

Note: Details of Technical Specifications of Equipment has been captured in subsequent section in this document for reference.

OMC already has few boom barriers across locations as mentioned in the table below. These boom barriers (primarily at Entry and Exit gate) shall be included as part of the LMS implementations. However, the Bidder is expected to include O&M of 5 years for all the mentioned boom barriers.

Mines	**No. of boom barrier**	**Details**
Guali (A & B)	6	Guali A (Entry Gate - 2 and Exit Gate – 2), Guali B (Entry Gate – 1, Exit Gate – 1)
Jilling	2	Entry Gate – 1, Exit Gate – 1
Apahatu	2	Entry Gate – 1, Exit Gate – 1
Kurmitar	2	Entry Gate – 1, Exit Gate – 1
Tiringpahad	1	Entry Gate – 1
South Kaliapani	4	Entry Gate – 1, Exit Gate – 1, Parking entry – 1, Parking exit – 1
Sukrangi	2	Entry Gate – 1, Exit Gate – 1
Kodingamali	2	Entry Gate – 1, Exit Gate – 1
Bangur	1	Entry Gate – 1

Note:

Product Name: ALASKA Drop Arm Barrier (Boom Barrier), As Per MHA QR for Drop Arm Barrier (Boom Barrier

Brand: ALASKA,

Under warranty period: Yes