TATA CHEMICALS MAGADI LTD.

REQUEST FOR PROPOSAL

FOR

TRAIN MANAGEMENT SYSTEM

AUGUST,2016

1. Background

Tata Chemicals Magadi LTD (TCML) is Africa's largest soda ash manufacturer and one of Kenya's leading exporters. Formerly known as Magadi Soda Company, TCML has been ~~a~~ part of Tata Chemicals since 2005. Tata Chemicals (TCL), which is ~~a~~ part of the global Tata Group, is one of the world's leading chemical companies, with a widespread portfolio of household products, industrial chemicals and agricultural inputs. TCL's operations are located in the US, the UK, Kenya and India.
Established in 1911, TCML has been producing soda ash at Lake Magadi for ~~a~~more than 100 years. The site is situated 120km South-West of Nairobi. The company extracts trona (a naturally occurring mineral that contains sodium carbonate compounds) from one of the purest surface deposits at the base of the Rift Valley. The trona is converted into soda ash, which is transported by rail to the port of Mombasa for onward shipping to the markets.
TCML is seeking a vendor qualified to provide a rail management system for her rail operations.

2. Project Objectives

The main objective of this project is to have in place a train management system that will provide for:

a. Issuing train and rail equipment movement authorities while ensuringsafety of operations on the railway line,
b. Scheduling of trains and booking of train crews,
c. Management of Yard /shunting operations,
d. Measurement and monitoring of equipment utilization – locomotives and wagons,
e. Locomotive and wagon performance measurements,
f. Measuring train performance – load, running times, etc.
g. Real-time tracking of locomotives and trains,
h. Automation of manual, paper-based processes to increase overall efficiency and productivity with the goal being a paperless environment.
i. Improved reliability and accuracy of all data.
j. Generating detailed operational and management reports for all areas operated by TCML.

3. General Tender Requirements

Proposal responses should include:

a. A brief explanation of why the vendor's software best meets the goals and solves the critical requirements of TCML, as described in subsequent sections.
b. Point-by-point response to list of minimum and desirable features.
c. Detailed presentation of the initial and continuing costs, and terms of the acquisition of the software.
d. Recommended hardware requirements for server(s) and client(s) to support both the Live and DR sites.
e. Detailed implementation plan and schedule.
f. 3 years of audited financial income and Balance Sheet statements.
g. Atleast 3 references of organizations (together with contact persons) of similar or larger size which have used the software proposed by the vendor.
h. Manufacturer Authorization letters for items to be sourced from other vendors.
i. Organization structure and CVs of technical and project management teams.

j. Copy of company profile.

k. Support Requirements

4. **Software Installation**

Vendor software will be installed on TCML server(s) by the vendor and TCML IT Systems Administrator. Production, testing and DR environments will be established so that users will be able to test the system features now and in the future without affecting production. The software installation process and requirements will be thoroughly documented by the vendor and be available to TCML for review and acceptance prior to the actual installation. Technical and end-user administrator knowledge transfers will be performed to ensure that the TCML staff can maintain the installation or perform a re-install if necessary, and that the end-user can sufficiently maintain business operations.

5. **End user Training**

End-user training will be provided to approximately 20 people.The End-User Training should cover all aspects of the software including but not limited to data entry, querying, reporting, administrative functions. Each session shall be focused on teaching end users how to perform their specific jobs using the tools provided in the system. Hard copy and electronic reference materials summarizing basic procedures should be provided as part of the training. Training should be role specific (locomotive drivers, Rail Traffic Controllers, etc.) because each group has specific and unique needs.

6. **Administrator Training**

A separate detailed administration course for System Administrators should be provided with appropriate electronic reference materials. Additionally, knowledge transfer, including supporting reference materials, will be performed to assure that TCML IT System Administrators can adequately maintain the installation and software.

7. **Go-Live Support**

Full implementation support must be described, including the respondent's plan for on-site start-up assistance and support for the office and track applications.

8. **Post Implementation support**

The vendor will provide a post implementation review and support plan, to be conducted jointly with the TCML. Additionally, the vendor will provide a quote for annual maintenance and support of the system for 5 years following the warranty period. The vendor will itemize the terms of this maintenance and support, including but not limited to items covered by support, hours and levels of support, methods of support (i.e. Help Desk, email, on-line, on-site), guaranteed response times, and costs associated with response or development of customized solutions.

9. **Documentation**

The vendor shall provide user documentation, including, but not limited to:

a. Detailed system training manuals which thoroughly explain setup, use, and maintenance of the system.
b. Procedural definitions of system user identity and access management.
c. Planning and installation documentation for product upgrades.

d. A detailed system configuration design.
e. A detailed description of system installation, configuration and integration documentation.
f. Installation instructions for all software components, including client computers, network servers, peripheral devices, instrumentation, databases, and any other vendor supplied utilities or existing customer assets which are required for the software to be implemented and supported by TCML's Systems Administrator.
g. Record layouts for all files and database tables used in the system.
h. Any special backup, restore, and/or recovery procedures.
i. At least one thoroughly documented application example, if the vendor supplies an application-programming interface.
j. Access to a vendor supported Web site containing documentation enhancements, bug reports, patches, etc.

10. Software Warranty and Maintenance

The vendor must provide TCML with at least one (1) year warranty, which will begin when the system is accepted by TCML. The vendor shall warrant all software provided to be free of defects during this warranty period. Any repairs or "bug fixes" required during this period will be made at no expense to TCML.

11. Application Software Requirements

(a)Security Requirements

i. Each user must gain access to the application through the use of a Log-In and password or biometric authentication.
ii. The delivered application shall provide configurable role-based security for all users of the application, whether internal to TCML, or external.
iii. Based upon the user's role, the application shall control which menus, screens, and functions within screens and data are available in Read-Only or Edit capacities for that specific role.
iv. User security shall be configurable by TCML's System Administrators.
v. The application must contain an audit trail to trace all changed transactions and events.
vi. The application will have a utility to view/report audit trail transactions/events; the audit trail must be secure.

(b)IT Technical Requirements

i. The proposed system must run on the TCML's existing TCP/IP network.
ii. TCML will prefer all software in the proposed system to run on an industry standard platforms based on Intel architecture with support for virtualized environments based on Microsoft Hyper V and VMware.
iii. The vendor must provide a detailed specification list for all hardware and third party software/ platforms required for successful implementation. TCML will use the recommended specifications to source for the appropriate platforms/hardware/software.
iv. The system should suffer no degradation of service during system back-up and maintenance functions.
v. The system must work in SAN environment and replicate data to DR site.
vi. The system must be capable of importing and exporting data files in a non-propriety, industry standard format such as ASCII, CSV, XML, or Access.

12. Functional Requirements

Item	Information	Description / Software System Requirements
1.	**Train Movement Authority**Warranty or Clearance	The most important aspect of the train management system is to ensure safety of trains operating over the line and safety of permanent way maintenance personnel. The system offered to TCML must therefore be with a proven safety record. It should generate Train Movement Authority/Warranty/Clearance while guaranteeing – (a) Protection against conflicting movements or movements in the same direction in a given Block Section, (b) Protection for track maintenance personnel.
2.	Identification and Tracking of activities on line	There is need for real-time identification and tracking of trains, locomotives and track maintenance teams on line.
3.	Train Load	The software offered should work out: (a) Gross load for each train and match it with locomotive load for the route, (b) Train length; raise red flag if in excess of maximum permissible length for the route, (c) Gross-tonne-kilometres, (d) Train-kilometres.
4.	Train Management	The train management system shall provide Rail Traffic Controllers with tools for: (a) Preparing Train Journal/Manifest, (b) Train formation, (c) Wagon shunting and train scheduling, (d) Yard management at Magadi, Kajiado and Mombasa, (e) Scheduling the working of mainline train crews, (f) Train Scheduling and preparation of Train Charts. (g) Generate Warning Orders.
5.	Volume of products transported.	(a) The system shall be required to give a summary of products moved by train daily, weekly and monthly. (b) The report shall categorise the products into four main classes of Soda Ash, CRS, Salt and Fuel. (c) In addition, the system shall capture product destination.
6.	Train Transit Times	The line over which TCML runs its trains is divided into three main blocks of Magadi - Kajiado, Kajiado - Konza and Konza - Mombasa.

		The train management system is required to capture train running times over these blocks. Train running times will therefore be required for - **UP** direction: MSA-KZA, KZA-KAJ, KAJ-MGD. **DOWN** direction: MGD-KAJ, KAJ-KZA, KZA-MSA.
7.	Train Delays& Line Blockages	To generate reports on time lost through: (a) Train delays on Magadi line, (b) Train delays on RVR line, (c) Line blockages on Magadi Line, (d) Line blockages on RVR system.
8.	Running Line Derailments	We shall require a summary of derailments and incidents affecting running of TCML trains.
9	**Locomotives**	**(a) Cycles** **TCML** operates trains between Magadi and Mombasa, with an intermediate Depot at Kajiado. It is therefore required to measure the round • Kajiado - Magadi - Kajiado, and • Kajiado - Mombasa - Kajiado. **(b) Dwell Times** • The train management system offered shall be capable of working out locomotive dwell times at Magadi, Kajiado and Mombasa. • The system shall give dwell times for individual locos and fleet average Dwell time at a designated location is the time a loco take from **Arrival** at, to **Departure** from, that location. **(c) Fuel Consumption** The software offered shall have capacity/capability to • Measure locomotive fuel consumption, • Calculate fuel consumption rate in terms of litres per 1,000 gross tone-km. **(d) Data bank on Locos** The system shall maintain a data bank on each loco covering Type/Make, Length over couplers, Weight, Power rating, etc. This data will be used when carrying out **Train Formation** as required elsewhere in this document. **(e) Locomotive-kilometres,**

		(Loco-km • The system shall capture distance covered by each locomotive daily. • The system will use the above data to work out monthly cumulative **loco-km** for the fleet of locomotives. **(f) Locomotive failures** The train management system will be required to capture and store data on locomotive failures. A locomotive **failure** is defined as breakdown of a locomotive while in train service **(g) Loco Reliability,** **Mainline Locomot**ives Locomotive reliability is defined as the mean distance covered between breakdowns, expressed as **kilometres per failure**. The train management software will thus be required to in Items 1 and 2 above to calculate: • Locomotive reliability for each individual locomotive, • Average reliability for the fleet. **(h) Loco motive Reliability,** **Shunting Locomotives** For shunting locomotives, reliability is measured in terms of mean days between failures. The system offered should thus give monthly shunting locomotive reliability by dividing the number of days in the month with the total number of failures suffered by the loco over the same period. **(i) Locomotive Availability** This is the number of hours a locomotive is available for service (*downtime taken out*) as a percentage of loco-hours in the month. The train management software is expected to work out: • Locomotive availability for individual locomotives, • Average availability for the mainline locomotive fleet, • Average availability for shunting locomotives. **(J) Locomotive Utilisation** This is to be presented as the number of hours a locomotive is in **active service** as a percentage of the total time the locomotive is available. Measurements for individual locos to generate average **UTILISATION** level for the fleet.

10	**Wagons**	**(a) Cycles** TCML has three (3) categories of wagons which require cycle times to be measured by the train management system as shown below: • Hopper wagons (CSHB): Magadi - Mombasa - Magadi, • TANK wagons: Magadi – Mombasa - Magadi, • COVERED wagons: Magadi – Kajiado – Magadi **(b) Availability** Wagon availability is calculated as the number of wagons out of service (for whatever reason) as a percentage of the total wagon fleet. The system will be required to calculate daily and monthly wagon availability. (c)**Dwell Times** The train management system offered shall be capable of working out rolling stock dwell times at Magadi, Kajiado and Mombasa, in both Loaded and Empty conditions. Dwell time at a designated location is the time a wagon takes from **Arrival** at, to **Departure** from, that location. The system will need to go farther to determine time taken to load and discharge product (c) **Dwell Times** The train management system offered shall be capable of working out rolling stock dwell times at Magadi, Kajiado and Mombasa, in both Loaded and Empty conditions. Dwell time at a designated location is the time a wagon takes from **Arrival** at, to **Departure** from, that location. The system will need to go farther to determine time taken to load and discharge product. **(d) Wagon Load** This data is necessary for determination of train-load and wagon utilization. **(e) Wagon – Kilometres** This information is necessary for planning of maintenance

		(f) Data Bank on wagons The system shall maintain a data bank on each wagon including wagon code and number, length over couplers, tare weight, gross weight, and load capacity. (g) Wagon Movement / Location It is necessary to track wagon movements to minimize chances of rolling stock staying idle for long periods. **TCML** wishes to have a train management system that will track wagon movements and trigger an alert of any wagon staying in one location for a longer period than that specified in the system. (h) Wagons Out of Service / sick Wagons The train management software will be required to generate reports on defective wagons; such reports to include • Classification of wagons out of service by cause, e.g. scheduled maintenance, defective brakes, wheels, springs/suspension, accident, couplers, etc. • The period each defective wagonhas been out of service
11	***Others***	***System vendor to specify any additional features of the system which have not been covered above.***

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