TRANSNET

RFQ / TENDER

Tender No: HOAC18413

freight rail

Vendor No: 11001386

BOARD LIST
BOARD LIST
TRANSNET FREIGHT RAIL
PROCUREMENT DEPARTMENT
2000

Purchaser : Londiwe Shabalala
Telephone : 011 584 0669
Fax Number:

Please quote reference:
DI9/6000615149

Deliver to:
TFR Head Office
Supply Chain Services
2000 Johannesburg

Closing Date :20.07.2015
Validity Date :29.10.2015
RFQ No :6000615149

RFQ/TENDER: HOAC-HO-18413

SUPPLY AND DELIVERY OF 20 ISD DONGLE ADAPTERS

SUPPLIERS ARE HEREBY INVITED TO QUOTE AND SUBMIT QUOTATION/S AT INYANDA HOUSE 1, 21 WELLINGTON ROAD, PARKTOWN-JOHANNESBURG, NOT LATER THAN MONDAY 20 JULY 2015 AT 10:00 AM

N:B SUBMIT ISD DONGLE ADAPTER SAMPLE, COMPLETE ANNEXURE A TECHNICAL
N:B DELIVERY SCHEDULE: KINDLY STATE YOUR DELIVERY PLAN

1. **RETURN OF QUOTATION/S PLEASE EMAIL:Thuli.Mathebula@transnet.net**

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON THE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL, SUPPLY CHAIN SERVICES
GROUND FLOOR
INYANDA HOUSE 1
21 WELLINGTON ROAD
PARKTOWN
2193

2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND CONDITIONS OF CONTRACT, FORM US7(LATEST), GENERAL TENDER CONDITIONS, FORM CSS5 (LATEST) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY, IN THAT EVENT, BE DISREGARDED FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF

DATE: ..... SIGNATURE OF TENDERER(S): ....

CONTACT PERSON: ..... TEL No: .....

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FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT),VALUE ADDED TAX (VAT) MUCH BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE. TAX CLEARANCE CERTIFICATES: The Regulations in terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government GazetteNo.25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstandingtax obligations. Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender. COMPANY DETAILS: NAME OF COMPANY:_____ CONTACT PERSON:_____ TEL. No._____ FAX No._____ REG. No._____ BROAD BASE BLACK ECONOMIC EMPOWERMENT (BBBEE) Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the oppion that allSouth African Business Enterprises have an equal obligation to reddress the past. Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's- see below) to have themselves accredited by any one of the various Accredition Agencies available, who do their BBBEE ratings in accordancewith the latest Codes(i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies)-"List of Full Members" as displayed on the ABVA website (www.abva.co.za) Although no agencies have as yet, been accredited by SANAS (SA National Accredition System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies. Enterprises will be rated by such agency based on the Following: 1. Large Enterprises (i.e. annual turnover>R 35 million: "Rating level base on all seven elements of the BBBEE scorecard. 2. Qualifying Small Enterprises-(QSE)(i.e anual turnover>R5M but <R35m "Rating based on any four elements of the BBBEE scorecard. NB:

3. Emerging Micro Enterprises-(EME) (i.e anual turnover<R5m)are exemptedfrom being rated/verified: "Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition
"Black ownership>50% or Black Women ownership>30% automatically qualifies as level 3 BBBEE, i.e. 110% BBBEE recognition.
"EME's should provide certified documentary proof of anual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership>50% or Black Women ownership >30% from the EME's Auditor/ Accounting Officer.

4. In addition to the above, Tenderers who wish to enter into a Joint Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies should they be successful in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and /or sub-contractor/s, as well as a breakdown of the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the

DATE: ..... SIGNATURE OF TENDERER(S): ....

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value of the ensuing business award
(i.e.below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utillized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBE
Turnover: Kindly incicate your company's annual turnover for the past year R_____

"If anual turnover<R5m, please attach certified confirmation from your Auditor/Accounting Officer
"If anual turnover>R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

PAYMENT TERMS
The following payment terms will apply as from 1 October 2008.
"All suppliers will be paid 30 days from receipt of month and statement.
i.e. payment term F055

CONDITIONS:
This qoutation is subject to the provisions of the Standard Terms and Conditions of Contrac, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

SCHEDULE OF REQUIREMENTS
TENDERERS SHOULD INSERT THEIR PRICE/S UNDER THE APPROPRIATE HEADING HEREUNDER;
IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).
NB. TENDERERS OFFERING GOODS FROM IMPORTED SUPPLIES MUST SUBMIT THEIR PRICES ON THE DELIVERY BASIS APPEARING UNDER COLUMN (C) OF THIS SCHEDULE OF REQUIREMENTS.

TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPRAOCH AT ALL TIMES AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS /TRANSNET EMPLOYEES. IF, IN THE OPION OF TRANSNET,S CHIEF OPERATING OFFICER, A TENDERER/CONTRACTOR/SUPPLIER HAS OR CAUSED TO BE PROMISED, OFFER OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT LOAN ADVANTAGE OR OTHER CONSIDERATION,TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER/CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS.IN SUCH AN EVENT TRANSNET WILL BE ENTITLED TO PLACE ANY TENDERER/CONTRACTOR/SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED

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TENDERERS.THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUD, CORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS, AT ANY OF THE FOLLOWING ADDRESSES/ CONTACT NUMBERS:

TOLL-FREE ANONYMOUS HOTLINE-0800 003 056
EMAIL-transnet@tip-offs.com
FAX NUMBER-0800 007 788
FREEPOST DBN 298, UMHLANGA ROCKS, 4320

ADDITIONAL INFORMATION REQUIRED:(WHERE APPLICABLE)
3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:
(A) DISCOUNT:----------
(B) SETTLEMENT DISCOUNT:----------
(C) PRICE/S FIRM:----------
(D) PRICE/S FIRM UNTIL:----------THEREAFTER SUBJECT TO REVIEW.
(E) PRICE/S NOT FIRM:----------
(F) SABS MARK:----------
(G) SABS PERMIT NO:----------
(H) BRAND/MAKE/TYPE:----------
(I) FULL NAME AND ADDRESS OF MANUFACTURER:----------

(J) FULL NAME AND ADDRESS OF INSPECTION POINT:

(K) COUNTRY OF ORIGIN:----------
(L) YEAR 2000 CONTRACT COMPLIANCE:
Vendor/proposers shall indicate their year 2000 compliance with:

A. Technology Products.
B. Equipment, products, components or parts
C. Products and Services

Non- compliance with either (A) or (B) shall result in your bid/ proposal being deemed non-responsive. Non-Compliance with (C) may cause you bid/proposal to be deemed non-responsive. If you indicate that none of the following apply, please provide a written justification for your determination. Transnet will review this justification and will make a final determination.

Year 2000 Compliance means that (A) the information Technology, (B) Equipment/Products/Components/Parts (Collectively Products) supplied.
(C) Products and Services contracted, will accurately process date and

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time data from into and between the 20th and 21th centuries. The year 1999 and 2000 and for all leap year. Process date and time includes, but is not limited to, data calculation, logistical functions, program branching, format conversion, edits and validations and the use of dates in comparasons, sorting sequencing, merging, retrieving, searching and indexing. Furthermore year 2000 compliance when (A) used in combination with other information technology, (B) used in combination with other products, (C) used in combination with their(Vendor) other date required interfaces, shall accurately process date and time data (A) if the other technology, (B) If the other products, (C) either passed to or received from their other customers/suppliers, properly exchange date and time data with it/ them.

Comply:_____ Does not Comply:_____ Not Comply:_____

Justification:----------

(M) SURPLUS MATERIAL:
TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BECOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:

(N) PAYMENT OVERSEAS:
ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:
* EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED:R 1.00 SA CURRENCY BEING EQUAL TO----------(FOREING CURRENCY).
* PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:
---
* NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:

---
* APPLICABLE DATE OF EXCHANGE RATE:
---
* BENEFICIARY'S NAME AND FULL ADDRESS:

---
* BENEFICIARY'S BANKERS AND FULL ADDRESS:

---
* APPLICABLE ACCOUNT NUMBER:

(O) DELIVERY DATE:

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TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURING PERIOD HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:
1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL.-----(DAYS)
2. MANUFACTURING PERIOD.----------(DAYS)
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION.-(DAY)

MATERIAL NO. 1.(PERIOD) 2. (PERIOD) 3. (PERIOD)

TECHNICAL 100% COMPLIANCE OF PHYSICAL SAMPLE TO SPECIFICATION 75% TECHNICAL CAPACICITYRESOURCES 15% DELIVERY SCHEDULE 10% NB! A SAMPLE OF THE ISD DONGLE ADAPTER MUST BE SUBMITTED FAILURE TO PROVIDE SAMPLE WILL LEAD TO DISQUAIFICATION. A detailed outline of the company`s technical capacity including the Organisational structure technical personnel qualifications.

COMMERCIAL SCORING=100% PRICE=90%BBBEE CERTIFICATE AND SCORECARD 10%

Item	Qty	Material	Description	
00010	420	ISD DONGLE ADAPTER		R..... Each

Delivery Date: 27.07.2015

FULL DETAILS OF DESCRIPTION

00020	1	DELIVERY		R..... Each

Delivery Date: 27.07.2015

FULL DETAILS OF DESCRIPTION

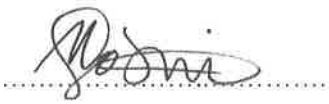
DATE: ..... SIGNATURE OF TENDERER(S): ....

TRANSNET
freight rail

TECHNOLOGY MANAGEMENT

SPECIFICATION

INTEGRATED SYSTEMS DISPLAY (ISD) DONGLE BOF CONFIGURATION

Author:	Engineer In Training Technology Management	K.C Legobe	
Authorised:	Principal Engineer Technology Management	N. Gobhozi	

Date: June 2014

Circulation Restricted To:

Transnet Freight Rail

Transnet and Relevant Third Parties

Table of Contents

1 DEFINITIONS AND ABBREVIATIONS

TFR	-	Transnet Freight Rail
ISD	-	Integrated Systems Display
DB	-	Data Base
ITP	-	Integrated Train Plan
TMS	-	Train Management Systems
CMS	-	Crew management systems
OBC	-	On-board Computer
TCS	-	Train Communication System
EoT	-	End of Train telemeter

2 SCOPE

2.1 Identification

This specification describes the requirements for the development of the Integrated System Display (ISD) user Dongle configuration system.

2.2 System overview

Transnet Freight Rail (TFR) is in the process of deploying an Integrated System Display (ISD) screen throughout its locomotive fleet, to serve the purpose of interfacing with various on-board systems such as the OBC, TCS, EoT, etc., using a single Human Machine Interface (HMI) access terminal. This enables the user to perform certain functions as explained in document BBD8649 VER 3. The ISD is also equipped with three (3) ISD Dongle ports / sockets that are used to interface with TFR custom made user Dongles.

These ISD Dongles are made up of a 2.0 USB Standard storage devices and 1-wire identification Dallas Tag device. The ISD Dongles shall be used to store/save certain files used by the ISD to perform operational tasks as well as peripheral system files used by the OBC and TCS.

The files contained in the ISD Dongle have to be created, read and saved. To create/read and save these files, an ISD Dongle configuration software application is needed. Such software does not currently exist. The proposal presented in this document is to develop an ISD Dongle configuration software as required by TFR.

As mentioned the ISD Dongle is also made up of a 1-wire identification Dallas tag device, which is used to uniquely identify the Dongle. This device contains a serial number, hence the ISD configuration software application shall also be able to read the Dallas tag serial number, and perform other functions as described throughout this document.

It is envisaged that the data contained in the ISD Dongle files shall be either sourced from or inserted into a database, such a database is not yet developed. Part of this document describes the requirements for the development of an ISD Dongle database to store or retrieve user data. The database shall also be accessed to retrieve this information when required.

The ISD Dongle configuration software application also needs to interface with existing TFR databases to retrieve certain information described elsewhere in this document.

The ISD Dongle connector has a six (6) pin-out connector and has to interface with a computer that has the ISD configuration software installed. Standard computers are not equipped with the similar port/connector to interface with the ISD Dongle. To interface the ISD Dongle with a standard computer, a custom adaptor has to be provided. Such an adaptor does not exist and this document describes the requirements for the development of such an adaptor.

The context diagram for the entire system is shown below. The diagram shows the major interfaces of the system as described above. Items highlighted in blue form the scope of the required system as specified in this document.

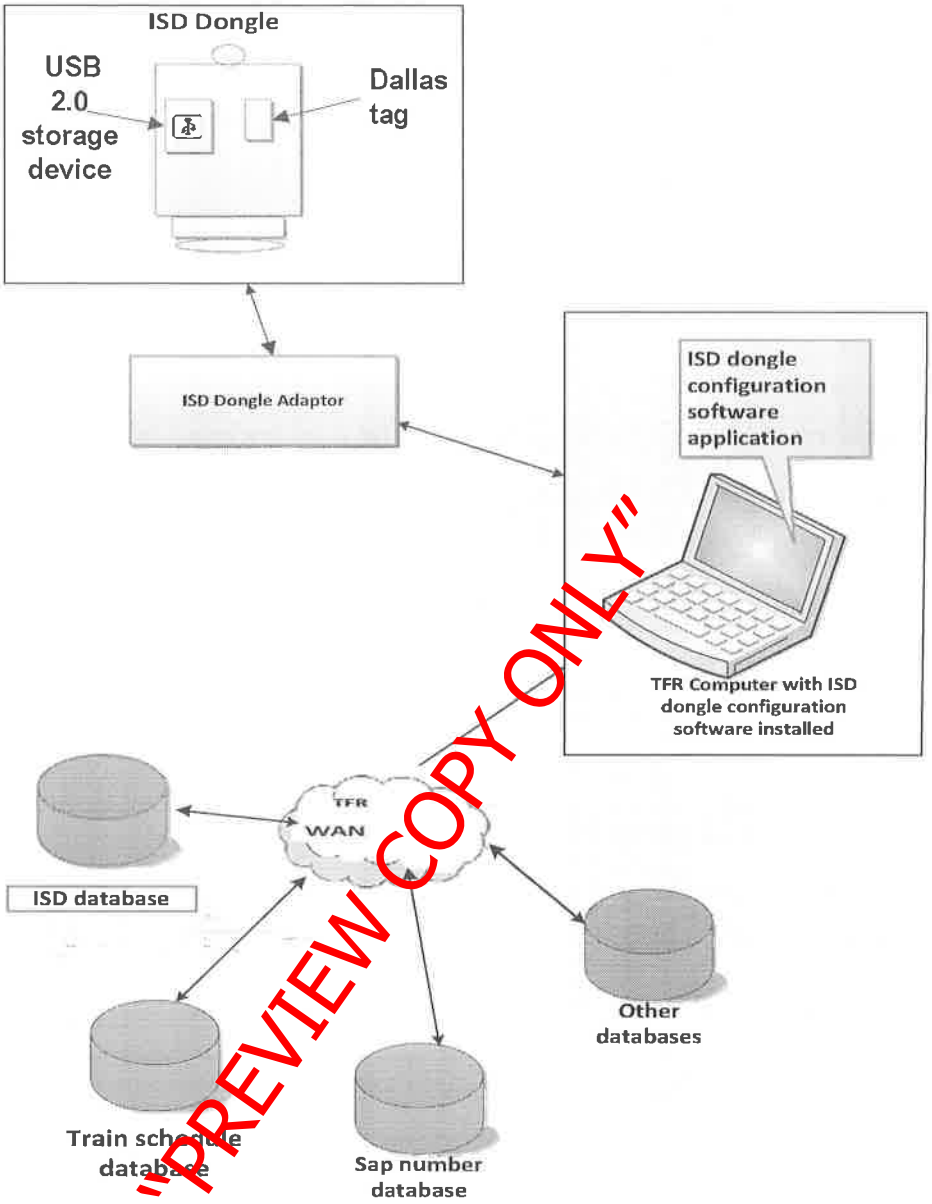


Figure 1: ISD Dongle configuration software context diagram

3 APPLICABLE DOCUMENTS

3.1 Transnet documents

Document number	Title
BBD 8639 Version 3	Transnet Freight Rail integrated system display (TFR Open Screen)

4 ISD Dongle Configuration Software Requirements

4.1 General Requirements

4.1.1 The ISD Dongle application shall be easy-to-use and easy to install on a Windows Operating System installed computer. It shall use object oriented design approach to interact with the user.

4.1.2 The application shall have the ability to easily interface with various external data stores and databases in Transnet, including but not limited to the Train schedule databases [ITP/TMS DB], SAP number database [CMS DB] and ISD Dongle Database.

4.1.3 The application shall be able to send standard SQL queries to an Oracle relational database to retrieve information.

4.1.4 The software application specified shall be licensed to support the latest releases of any of the following operating systems on appropriate hardware in any combination.

- Microsoft Windows XP Professional
- Microsoft Vista (Enterprise, Business, Ultimate editions)
- Microsoft Windows 2003 and 2008 Server
- Microsoft Windows 7
- Microsoft Windows 2008 Server R2

4.1.5 The software shall be fully compatible with the latest versions of Oracle and PostgreSQL databases.

4.1.6 With the exception of Windows CE, both 32-bit and 64-bit versions of the operating systems shall be supported.

4.1.7 The ISD Dongle application shall be capable of running on commercially available computer systems running a supported operating system.

4.1.8 In the case of later releases of the operating system, the vendor shall have a defined statement and roadmap for support of that operating system.

4.2 External Interfaces

4.2.1 Interface to ISD Dongle through ISD Dongle adaptor.

4.2.1.1 The application shall be able to read ISD Dongle Dallas tag serial number.

4.2.1.1.1 Dallas Tag is an electronic serial number used to uniquely identify each ISD Dongle, this serial number is stored in ***Dallas*** electronic identification semiconductor devices, which can interface with host devices [i.e. computers] using 1-wire protocol data communication standard.

4.2.1.1.2 The Dallas tag electronic device consists of a factory-lasered, 64-bit ROM that includes a unique ***48-bit serial number [Dallas tag serial number]***, an 8-bit CRC, and an 8-bit Family Code (01h). Data is transferred serially via the 1-Wire protocol that requires only a single data lead and a ground return.1-wire protocol is a standard developed by Dallas/Maxim co-operation. For more information

consult the Dallas/maxim silicon serial number 1-wire protocol specification/datasheet.

4.2.1.2 The application shall be able to read, create, edit and store files on the ISD Dongle's mass storage USB device. These files shall be:

4.2.1.2.1 **Sapno.taf file**

The Sapno.taf file shall be populated as follows :< SAP number> ;< User Type><CR>LF>

Where:

- SAP number is the standard TFR seven (7) digit SAP number, e.g. 0012345
- User Type is either 'Driver' (standard train operator), 'Technician' (system installer or maintainer), 'Section Manager' (driver supervisor and driver) or 'Engineer' (unlimited access user)

4.2.1.2.2 **Trainno.taf file**

This file shall be populated as follows :< Train number> ;<Date Time><CR>LF>

Where:

- Train number is the standard TFR (SPRINT) sixteen (16) digit Train Number e.g. X7X7001460301013
- Date Time is the computer date and time that the Trainno.taf file was created (dd/mm/yyyy hh:mm:ss).

4.2.1.2.3 **Ohmi.taf file**

This file contains a technician authentication key saved as a plain text 32 - character string. The specification of this key is presented on this document.

4.2.1.2.4 **UserName.taf file**

The file shall be populated as follows: <name> ;< surname> ;< CR><LF>

4.2.1.2.5 **TaskObservation.taf file**

This file shall be populated as follows:

Date <delimiter> starttime <delimiter> StartGPSLat <delimiter> StartGPSLong <delimiter> loconum <delimiter> mainDongle1 <delimiter> Dongle2 <delimiter> Dongle3 <delimiter> stoptime <delimiter> StopGPSLat <delimiter> StopGPSLong <CR><LF>

Where:

- <delimiter> = 0x3B (;)
- date = year/month/day,
- Time = hour:min:sec
- StartGPSLat = GPS Latitude coordinate where the 'start' button is pressed
- StartGPSLong = GPS Longitude coordinate where the 'start' button is pressed
- Loconum = ISD Programmed Loconumber

- MainDongle = Main Dongle Dallas tag serial number as selected
- Dongle2/3 = Other Dongles Dallas tag serial numbers. This can be null.
- StopGPSLat = GPS Latitude coordinate where the 'stop' button is pressed
- StopGPSLong = GPS Longitude coordinate where the 'stop' button is pressed
- <CR> = 0x13
- <LF> = 0x0A

4.2.2 Interface to TFR Train schedule database [ITP/TMS]

4.2.2.1 The application shall be able to access the TFR train schedule from an Oracle / PostgreSQL database in-order to obtain/confirm planned train numbers.

4.2.2.2 Train schedule database accepts standard Oracle query commands, the query structure, format and properties of the database shall be provided to a successful bidder.

4.2.3 Interface to TFR SAP number database [Crew Management systems DB]

4.2.3.1 The application shall be able to access TFR SAP numbers stored in an Oracle database in order to obtain/confirm train driver SAP numbers.

4.2.3.2 This database accepts standard Oracle query commands for retrieving information, the query structure, format and properties of the database shall be provided to a successful bidder.

4.2.4 Interface to ISD Dongle database

This section describes the development/design of the ISD Dongle database and shall be delivered together with the ISD Dongle configuration application software. Hardware to install/configure the database shall be provided by TFR.

4.2.5 ISD Dongle Database Requirements:

4.2.5.1 The database design shall apply relational Oracle database server principles.

4.2.5.2 It shall be adopt client/server architecture in-order to allow remote clients access to the database and use standard Oracle queries to retrieve information.

4.2.5.3 The database shall store the SAP number of a user as saved on the Sapno.taf file.

4.2.5.4 The database shall store the *user Type* as stored on the *Sapno.taf* file.

4.2.5.5 The database shall store the user name and surname of the ISD Dongle user as stored on the *UserName.taf* file.

4.2.5.6 The database shall store the TRAIN number as created on the Trainno.taf before train departure. It should also indicate if it was scheduled or unscheduled train.

4.2.5.7 The database shall store the TRAIN number as saved on the Trainno.taf after train arrival.

4.2.5.8 The database shall store date and time of when the Dongle file parameters where loaded/created.

4.2.5.9 The database shall store all the details stored in the *TaskObservation.taf* file.

4.2.5.10 Data shall be grouped and saved as indicated below in the database.

4.2.5.11 All data contained in *ohmi.taf.sapno.taf, trainno.taf*, and *UserName.taf* files shall be saved in one table as shown below.

4.2.5.11.1 **DongleInformation** (Dongle serial number, user sap no, user name and surname, user type, train number, scheduled train[Y/N], unscheduled train[Y/N],date, time)

- Date Time is the computer date and time that the files were created (dd/mm/yyyy hh:mm:ss).

4.2.5.12 All data contained in TaskObservation.taf file shall be saved in one table as shown below.

4.2.5.12.1 **TaskObservation** (date, Time StartGPSLat, StartGPSLong, Loconum, StopGPSLong, Dongle2/3, StopGPSLat, MainDongle)

5 ISD Dongle configuration software: Functional Requirements

5.1 Database connection settings

5.1.1 The application shall have a window were a user can enter standard Oracle database settings used to connect to the TFR databases described in the section above. Database settings to be provided to successful bidder.
5.1.2 The user shall insert these settings once, during application installation on user desktop.
5.1.3 The windows shall have *connect* and *disconnect* buttons that the user clicks to connect or disconnect to the particular database. Once configured, the application shall connect to the database on start-up by default.
5.1.4 When the connection is successful the application shall have a status message for that particular database: *e.g. ISD Dongle DB: connected.*
5.1.5 When the connection is unsuccessful the status message shall be: *connection failed.*
5.1.6 When the connection is disconnected the status message shall be: *disconnected*
5.1.7 The connection status message shall be continuously displayed for each particular database.
5.1.8 When connection failed to any of the databases, the application shall continuously try to re-establish connection to the Database.

5.2 ISB Dongle communication port

5.2.1 The application shall have a drop down list control where a user can select from a list of connected USB devices a communication port where the ISD Dongle is inserted into.
5.2.2 When the ISD Dongle is connected, the ISD application shall have an ISD Dongle status message, Dongle connected: **Y or N.**

5.3 ISD Dongle Dallas tag Serial number

5.3.1 The application shall be able to read the Dallas tag serial number.
5.3.2 The application shall have a textbox where the ISD Dongle Dallas tag serial number is automatically populated when an ISD Dongle is connected and status reflected as Y.
5.3.3 When the Dongle is not connected, the textbox shall be empty and inactive.
5.3.4 When the Dallas tag serial number is not available/ inaccessible inside the ISD Dongle, the text box shall be populated with wording: ***unknown.***
5.3.5 This Dallas tag serial number shall be saved on the ISD Dongle database.
5.3.6 A user shall not be able to edit the contents of the text box.

5.4 ISD Dongle User Type and Sap number

5.4.1 The application shall have a user type text box labelled ***current user***, this text box shall be populated with the user type read from the Sapno.taf file saved in the ISD Dongle. This shall be populated when the Dongle status is reflected as connected.

5.4.1.1 If ISD Dongle does not contain such a file, the text box shall be populated with unknown.

5.4.1.2 In order to create a user type, the process described below shall be followed:

5.4.1.2.1 The application shall have a user type combo box control labelled *create user,* where a user can select from a drop down list ISD Dongle user type.

Where user type list shall be as follows:

- Driver
- Technician
- Engineer
- Section manager

5.4.1.2.2 Once a user type is created, the user type textbox shall be populated with the created user type information.

5.4.2 The application shall have a text box labelled ***sap number***, this text box shall be populated with the SAP number read from the Sapno.taf file saved in the ISD Dongle. This shall be populated when the Dongle status is reflected as connected.

5.4.3 If an ISD Dongle does not contain such a file, the text box shall be populated with wording: ***unknown***.

5.4.3.1 The user shall be able to edit the sap number text box fields in order to enter sap number.

5.4.3.2 The application shall have a button labelled confirm, when this button is clicked, the application shall access the sap number Oracle database with TFR sap numbers to confirm if the sap number reflected/entered in the textbox is correct.

5.4.3.3 This button is only active when user type: ***driver*** is selected.

5.4.3.4 If the sap number is correct the application shall have status message: sap number correct.

5.4.3.5 If the sap number is incorrect, the application shall have status message: sap number incorrect.

5.4.3.6 If there is no connection to the database, the application shall have status message, no connection to database. The application shall then continuously try to reconnect to the database in-order to confirm the sap number even when ISD Dongle has been removed.

5.4.3.7 When SAP number is confirmed it shall save it to ISD Dongle database.

5.4.4 Information entered above shall be used to create the *Sapno.taf* file.

5.5 Train number

5.5.1 There shall be two options for train number entering, scheduled train number and unscheduled train number; the two cannot be selected at the same time.

5.5.2 The application shall have a text box labelled ***unscheduled train number***, where a user can enter a 16 digit Train number; this train number is used to create and populate the *Trainno.taf* file described above. This text box is only active when the following condition is true

5.5.2.1 Check box control next to the text box labelled: *unscheduled train number*, has been checked to true, when the check box is not checked the textbox is inactive.

5.5.3 The application shall have a scheduled train number combo box labelled ***scheduled train***

number; this combox shall contain a list of all the scheduled trains for that section. The user shall then select from the list which Train number s/he is looking for. This combox shall be populated as follows:

5.5.3.1 The user shall check a checkbox labelled, ***scheduled train number*** next to the combo box. As soon as the user starts typing into the combobox, the list shall be reordered to display only the train numbers containing the characters typed, if they exist. If this is not possible as a result of TFR infrastructure constraints, the user shall be able to click a button labelled ***search train***. When this button is clicked the following shall happen:

5.5.3.1.1 The application shall access/query the train schedule Oracle database for a list of scheduled trains, when this list is obtained, the combo box shall be populated with this list.

5.5.3.1.2 When the list is not available, the application shall have a status message, *trains not available*, and the combo box shall be empty.

5.5.3.1.3 When the check box is unchecked, the combo box and search train button shall be inactive.

5.5.3.1.4 The query time out interval shall be 60 seconds, when this time out has been reached there shall be status message: train query not successful.

5.5.3.1.5 When there is no connection to database the application shall have status message, no connection to database.

5.5.4 Information entered above shall be used to create the *Trainno.taf* file.

5.6 Name and Surname

5.6.1 The application shall have user name and surname textboxes.

5.6.2 A user shall be able to enter/edit name and surname on these textboxes.

5.6.3 This information shall be used to create UserName.taf file.

5.6.4 When *UserName.taf* file is not available in the Dongle, the textboxes shall be populated with unknown.

5.6.5 When *UserName.taf* file is available in the Dongle, the textboxes shall be populated with the details.

5.7 Technician/Engineer Authentication

5.7.1 The application shall be able to authenticate ISD Dongle so that when it is inserted on any of the ISD Dongle ports, it shall unlock the configuration of certain parameters, authentication process is described below.

5.7.2 The application shall have a button labelled ***authenticate Dongle***; the user shall click this button in order to authenticate the ISD Dongle as described below.

5.7.2.1 The authentication process, shall work by reading the serial number of a USB mass storage device, ensuring it is a 32-character hex string (128-bit), and doing calculations against a master key for a new 128-bit key. This key shall then be written in a file hosted in the root of the mass storage device, named *"Ohmi.taf"*. This file is normally hidden.

5.7.2.2 The process makes use of two 128-bit keys:

- Master key : AFBF13371E2E455E7B4701218192A00E
- Secondary key : 1805F53D01B77A335D301284FFD84CE1

5.7.2.3 The process to generate a key shall be:

1. Read the hardware serial key from the USB mass storage device (this is *not* the volume serial number).
2. Standards indicate that the key should be a 32-character hexadecimal string, but this practise is not followed by all manufacturers, and the key could be longer, shorter, and contain any other character. A key following the convention is generated as such:

    a. Iterate through each character. If the character is a valid hexadecimal value, keep it as is. If not, then insert a character from the same index of the secondary key. For instance, if the character lying at position 6 in the string is a 'Z', then we replace it with a '3' from element 6 in the secondary key string (zero-indexed).

3. If the serial number is longer than 32 characters, all characters after the 32nd are ignored.
4. If the serial number is shorter than 32 characters, it is left-padded with zeroes.
5. Having many consecutive zeroes can give away the value of the keys used. Once again iterate through the current 32-character string, and replace each element with a value of '0' with an element of the secondary key in the following manner:

    a. Calculate and index value with initial value of 32 minus the original length of the serial number (before it was padded with zeroes).
    b. Each time an element has a value of '0', we replace it with a value from the secondary key at the calculate index, and increment the current index value. If the current index value is 32, we reset it to 0.

6. There should now be a serial key with a variety of hexadecimal characters. Next is to calculate the authentication key.
7. The authentication key generation then follows. Each character pair in the 32-character string forms one byte. Through iteration, each byte pair in the serial key is XOR'd with a corresponding indexed byte pair of the master key. The resulting 32-character string (or 128-bit value) is the authentication string.
8. The *'Ohmi.taf'* file, located in the root directory of the USB mass storage device, contains the previously generated authentication key. It is written as a plain text 32-character string.

5.7.3 The authenticate button is only active when user type *technician/engineer* is selected.

5.7.4 The generated key shall be saved in the *Ohmi.taf* file.

5.8 Save All

5.8.1 The application shall have button labelled ***save all***. When clicked, this button shall create and save all the files as described above on the ISD Dongle.

5.8.2 The button shall also save all the details on the created files to the ISD Dongle database.

5.8.3 The details shall be saved on the database tables as described on section 4.2.4 above.

5.9 User Log in

5.9.1 The application shall use the log-on credentials that the user enters when logging into his/her computer.

5.10 Task observation file

5.10.1 The application shall have a button labelled ***task observation***, when clicked; the application shall access the *TaskObservation.taf* file from the ISD Dongle and save all the details in the ISD Dongle database.

5.10.2 When the file is not available inside the Dongle, the application shall display status message, ISD Dongle not available.

5.11 Viewing ISD Dongle database information

5.11.1 The application shall have a window when selected; all the previously saved ISD Dongle information shall be displayed.

5.11.2 The user shall be able to select whether he/she wants to view *Dongleinformation* or *taskobservation* files as explained in section 4.2.4.

5.11.3 The ISD user shall be able to sort the list by date, and display only the ISD Dongle information that was saved for that particular time frame.

5.12 Temporary storage of ISD Dongle files

5.12.1 When there is no connection to the ISD database, the application shall store ISD Dongle files created on a temporary location on the computer that the application is installed on.

5.12.2 When a connection is re-established, the application shall save the files in the ISD Dongle database and delete the information from the temporary location.

5.13 Reading files in the Dongle

5.13.1 Once the ISD Dongle connection status is reflected as Y, the application shall read all the files contained in the Dongle and update the various application control fields described above.

6 ISD Dongle Adaptor Requirements

ISD Dongle adaptor context diagram is as shown in figure below.

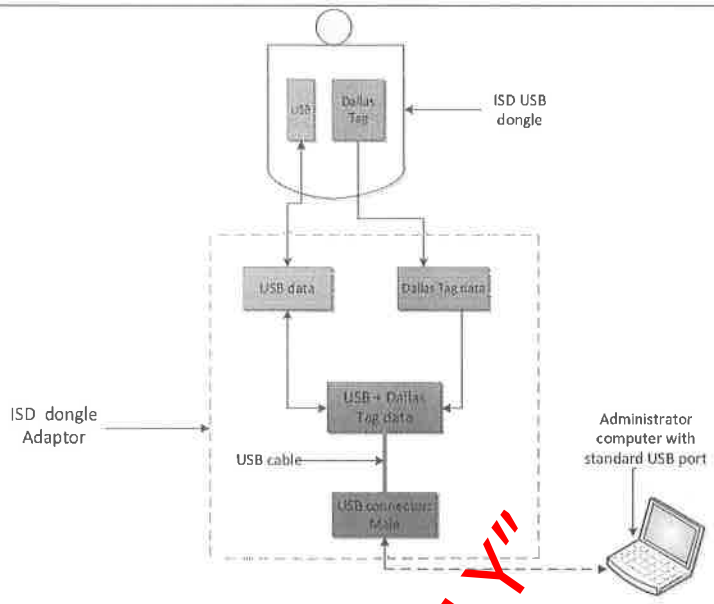


Figure 2: ISD Dongle adaptor

6.1 General requirements

6.1.1 The ISD Dongle adaptor shall have a connector compatible with the ISD Dongle pin-outs. The pin-outs are as described in the table below. Female pins shall be used for the adaptor connector.

6.1.2 The adaptor connector part number is: FDBA 50-10-6 SW

ISD Dongle Connector Pin	USB / Dallas Tag Pin	Name	Description
A	1	VBUS	+5 VDC
B	2	D-	Data -
C	3	D+	Data +
D	4	GND	Ground
E	Data	ID Tag Data	Dallas ID Tag Data
F	Ground	ID Tag Ground	Dallas ID Tag Ground

Table 1: ISD Dongle pin-outs

6.1.3 The ISD adaptor shall be a link between a computer installed with the ISD configuration software application and ISD Dongle [figure 2].

6.1.4 A user shall only be required to connect the ISD Dongle on the adaptor without configuring the adaptor in any way.

6.1.5 The adaptor shall enable the ISD configuration software to access the ISD Dongle mass storage devices in order to read/ create ISD Dongle files through USB interface

6.1.6 The adaptor shall enable the ISD configuration software to access the Dallas tag identification device in-order to read Dallas tag serial.

6.1.7 It shall have a male USB Series A connector to interface to a computer USB port.

6.1.8 It shall have a USB cable not longer than 1.5 metres.

6.1.9 It shall have a power indication LED.

6.1.10 It shall accommodate one USB Dongle at a time.

6.2 ISD Dongle Adaptor interfaces

6.2.1 The ISD Dongle adaptor shall interface with an ISD Dongle depicted in figure 3 below with the pin-outs described in table 1.

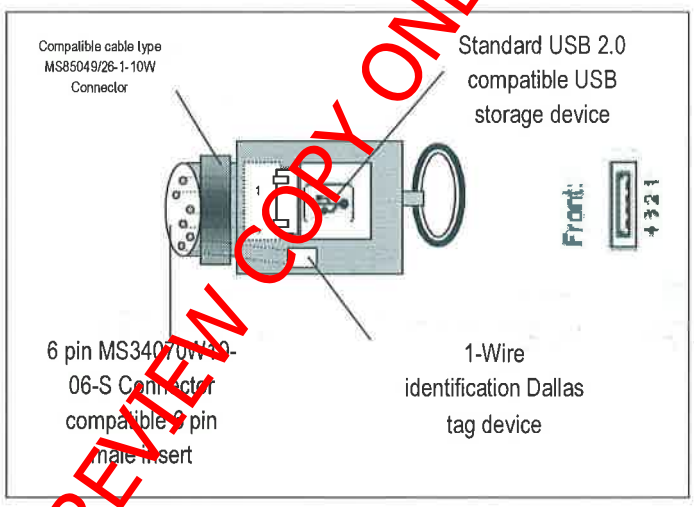


Figure 3: ISD USB Dongle

6.2.2 The ISD Dongle has 6 pins. 4 pins are used for a standard USB 2.0 and 2 pins are for a 1-Wire identification Dallas tag [table1].

6.2.3 It shall also interface with a standard computer through a USB interface.

6.2.4 Proposed ISD Dongle Adaptor hardware Design

6.2.5 The Dongle adaptor shall be designed as shown in the figure below:

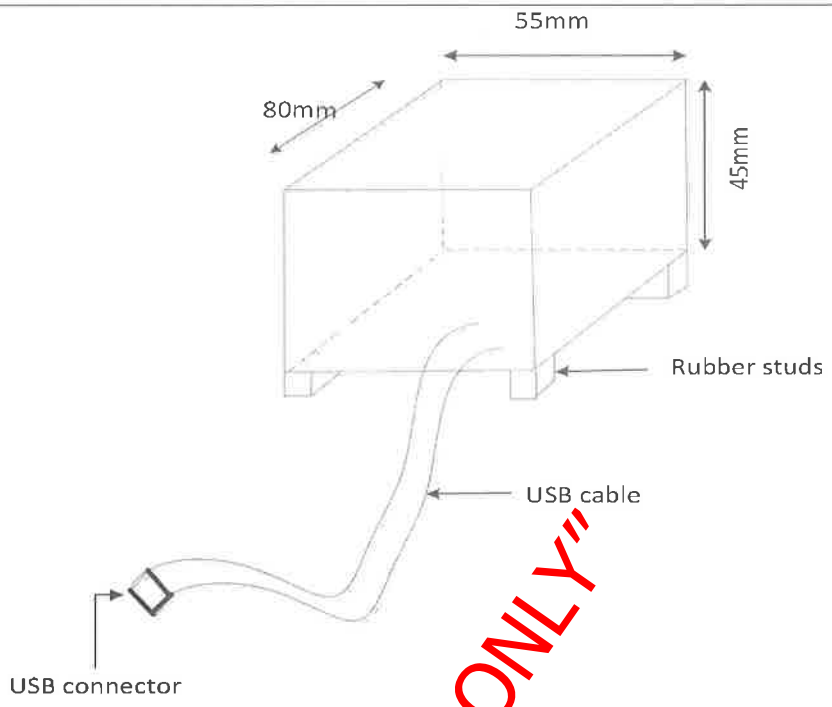


Figure 4: Proposed ISD Dongle adaptor

6.2.6 The adaptor hardware shall consist of:

6.2.6.1 A container to house the connector, LED and any electronic circuits used. The dimensions are as shown in figure 4.

6.2.6.2 A USB cable with a USB connector as shown.

6.2.6.3 The container shall have four rubber studs at the bottom.

6.2.6.4 The top view shall be as shown in figure 5 below.

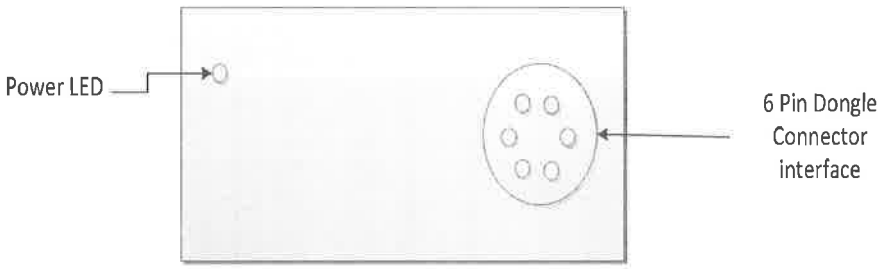


Figure 5: top view of USB adaptor

6.2.7 The adaptor shall use a durable material for housing, suitable for electronic devices and shall not have sharp edges.

6.2.8 The weight or footprint of the adaptor shall be such that the unit does not require external support when placed on a flat surface while users plug in and unplug ISD Dongles.

7 User Interfaces

This section specifies the different types of envisaged TFR users' types that will use the ISD Dongle configuration system

7.1 Section managers/ISD Dongle technical users

7.1.1 Users responsible for performing the tasks as described in section 4, they are responsible for issuing and maintenance of ISD Dongles to the relevant user types. The users are computer literate, and familiar with basic windows applications.

7.2 ISD Dongle Software installers

7.2.1 Personnel responsible for installing and configuring the software on the computers of the users described above. They shall configure the application with correct database settings.

7.3 ISD Dongle server administrators

7.3.1 Personnel responsible for the maintenance and configuration of the ISD Dongle server.

8 Quality Assurance

The contractor shall provide a comprehensive Quality Assurance plan and submit this to TFR for approval before full deployment of the system commences.

8.1 Responsibility for tests

The contractors shall be responsible for the execution of the tests. The tests shall verify the correct functionality of the software and hardware as required.

8.2 Tests and examinations

The contractor shall be responsible to draft a complete Acceptance Test Procedure (ATP) and submit this to Transnet Freight Rail for Approval. The tests shall be executed according to the ATP in order to test the functionality of the complete system using a holistic approach.

9 Software and hardware Warranty, Maintenance and Support

9.1 Warranty Support

9.1.1 The software vendor shall warrant the products for a period of 1 year after delivery. During the warranty period, the vendor shall offer complete technical support. All software defects shall be resolved in a timely manner.

9.2 Maintenance

9.2.1 The system shall require minimum maintenance from user; it shall not have any parts that need regular replacements

10 Training

10.1 During commissioning the supplier shall provide hands-on training in all aspects of operation

and configuration of the system to a core group. Course duration shall not be more than 2 days.

10.2 During commissioning the supplier shall provide extensive theoretical and hands-on training covering the entire functionality of the software to a group of third line administrative and technical users

10.3 The supplier shall submit the course material for approval by Transnet Freight Rail. Follow-up training covering most of the above aspects will be required from time to time to train new personnel and shall be made available by the supplier on request from TFR at market related cost.

11 Documentation

11.1 All software and hardware used by the system to be fully documented, unless it is off the shelve software or the information deemed propriety. The documents shall include user manuals and maintenance manuals.

11.2 The software shall be supplied with the source code and all the compiling software required to produce executable system software unless it is off the shelve software.

11.3 All code and compiling software (if applicable) shall become the property of Transnet Freight Rail, unless it is of the shelve software.

SPEC : BBG 2309 VERSI	
Compliance evaluation	
	Description
1	Requirement
1.1.	sample supplied and full compliance to specification BBG 2309 VERSION 1
1.2.	sample supplied and full compliance to Figure 2 to figure 5 : ISD Dongle adaptor, page 15 to 17 of BBG 2309 VERSION 1
1.3.	sample supplied and full compliance to 6.1 to 6.2, page 15 to 17 of BBG 2309 VERSION 1 specification.

ON 1	
Tenderer Name:	
Compliant or non compliant	Substantive evidence (Reference to the supporting documents)