



Business Requirements

KZN Department of Transport Common Interface Specification

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1. Introduction

The KwaZulu-Natal Department of Transport (KZN DoT) is seeking to modernise its traffic law enforcement and road safety operations in the province. Central to this modernisation is the use of technology to provide better support to officers in the field, and to provide better information to management in support of decision making.

This specification forms part of an RFB issued for the Traffic Contravention Management System (TCMS) for KZN DoT. It defines the requirements for a set of common interfaces that are to be developed and implemented, and will be used by several different applications across the department. The common interfaces will also be called from outside the department by authorised applications.

Although not exhaustive, the interfaces will be utilised by:

- a) Personal Operating Devices (POD's);
- b) Fixed and Portable Remote Monitoring (Fixed monitoring at weighbridge sites and portable monitoring refers to current black-box technology);
- c) Smart Road blocks where interfaces will be called from a laptop attached to ANPR device/camera at the roadside;
- d) South African Police Station (SAPS);
- e) Traffic Contravention Management System;
- f) Accident Management System;
- g) Incident Management System;
- h) Impound System;
- i) KZN DoT Traffic Management Centre;

This approach will ensure that the department's cost and effort to developing and maintaining the interfaces are minimised as the same interfaces are required by different applications. It also caters for future applications which may be introduced at a later stage and have a need for the similar set of interfaces.

KZN DoT reserves the right to not to award this particular requirement as part of the RFB, if the existing common interface owned by the Department is adequate or award this part of the RFB to a different bidder.

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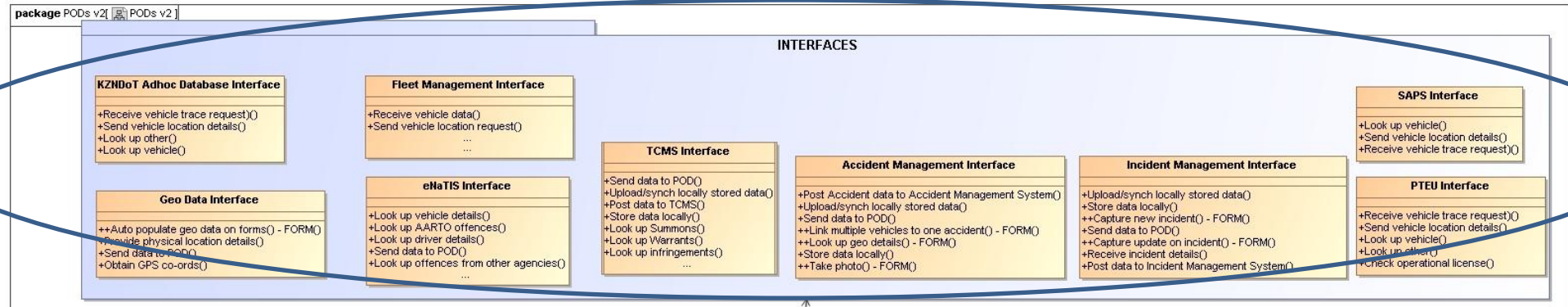


Figure 1 – Overview of Common Interfaces

2. Scope

2.1 High Level Scope

The service provider is required to develop a common set of interfaces, if required for the KZN Department of Transport, in connection with the common interface currently owned by the Department.

At a high level the scope includes:

- a) Provision of software licenses if applicable;
- b) Development and implementation of interfaces to meet business needs;
- c) Project management;
- d) User training, change management and skills transfer required to capacitate KZN DoT IT on the technologies used and to enable IT to provide support and maintenance to end-users in future; and
- e) The total contract duration is 5 (five) years as follows:
 - i. Develop and implement solution in a period not exceeding 12 months;
 - ii. Providing support and maintenance for the remaining term of the contract after go-live of the solution;
 - iii. Support and maintenance period includes the support, testing and development that may be necessary for implementation of the interfaces by different applications.

3. Primary Business Requirements

3.1 Interfaces

The interfaces mentioned below are to be packaged into a re-usable set of Service-Oriented Architecture (SOA) interfaces that will be exposed for utilisation by any application within KZN DoT.

3.1.1 Geo Data Interface

Description	Functional Requirement
● Obtain GPS co-ords	Obtain current GPS co-ordinates from the geo solution; or allow user to correct current location on a map and then request GPS co-ordinates (for case where the current location is not correct and does not reflect where the user is physically)
● Provide physical location details	Obtain current physical location details such as suburb, street name, town etc. from the geo solution
● Send data to POD	Send the GPS and physical location details to the POD
● +Auto populate geo data on forms() - FORM	When geo data is sent to the POD, it should be auto-populated onto the correct fields depending on which form the user is completing at the moment
Integration mechanism	Web Service
Notes	Any existing geo solution may be utilised for purposes of providing accurate geo data to the POD. Where there are license costs associated with the geo solution, then the service provider must include such costs into overall cost of POD.

3.1.2 eNaTIS Interface

Description	Functional Requirement
● Look up vehicle details	Search for vehicle on eNaTIS and retrieve details
● Look up driver details	Search for driver details on eNaTIS and retrieve details
● Look up offences from other agencies	Search for any existing offences on eNaTIS from other agencies (e.g. other provinces) and retrieve details, where such offences exist
● Look up AARTO offences	Search for AARTO offences on eNaTIS and retrieve details
● Send data to POD	Send data retrieved from eNaTIS to the POD, for purposes of displaying to the POD end user
Integration mechanism	Integrate via approved eNaTIS mechanisms only
Notes	Existing National DOT application

3.1.3 TCMS Interface

Description	Functional Requirement
● Look up infringements	Search for any existing infringement on TCMS against the driver's ID number and/or vehicle registration
● Look up Summons	Search for any existing summons on TCMS against the driver's ID number and/or vehicle registration. Also identify any infringements for which summonses may be issued.
● Look up Warrants	Search for any existing warrants on TCMS against the driver's ID number and/or vehicle registration. Warrants will be scanned copies signed by magistrate.

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Description	Functional Requirement
● Post data to TCMS	Data received from the POD to TCMS Interface must be updated onto the TCMS system
● Store data locally	If connection cannot be established or data postage to TCMS fails, then data to be stored locally until posting can be performed
● Upload/synch locally stored data	When connection is made with TCMS, all locally stored data to be synchronised and uploaded onto the TCMS
● Send data to POD	Send data retrieved from TCMS to the POD, for purposes of displaying to the POD end user
Integration mechanism	Web Service
Notes	Future application to be implemented in KZN DOT


3.1.4 Accident Management Interface

Description	Functional Requirement
● +Take photo() - FORM	The form on POD for accident management should enable the user to take photos which can be linked to the accident. The photo is then sent to the Accident Management Interface for uploading to the Accident Management System.
● +Look up geo details() - FORM	The form on POD for accident management should enable the user to lookup the necessary geo-details by calling the interface for Geo Data
● +Link multiple vehicles to one accident() - FORM	The form on POD for accident management should enable the user to link multiple vehicles to one accident, for cases where multiple vehicles are involved in one accident. When the data is posted to Accident Management System then it is done as a collective update.
● Post Accident data to Accident Management System	Data received from the POD to Accident Management Interface must be updated onto the Accident Management system
● Store data locally	If connection cannot be established or data postage to Accident Management fails, then data to be stored locally until posting can be performed
● Upload/synch locally stored data	When connection is made with Accident Management, all locally stored data to be synchronised and uploaded onto the Accident Management
● Send data to POD	Send data retrieved from Accident Management to the POD, for purposes of displaying to the POD end user
Integration mechanism	Web Service
Notes	Future application to be implemented in KZN DOT




3.1.5 Incident Management Interface

Description	Functional Requirement
● +Capture new incident() - FORM	Form must enable user to populate details of an incident
● +Capture update on incident() - FORM	For existing incident, allow user on scene to send an update to the Incident Management System
● Post data to Incident Management System	Data received from the POD to Incident Management Interface must be updated onto the Incident Management system
● Receive incident details	The Incident Management system must be able to "push" details of incidents to users who can then respond to the scene
● Store data locally	If connection cannot be established or data postage to Incident Management System fails, then data to be stored locally until posting can be performed
● Upload/synch locally	When connection is made with Incident Management System, all






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Description	Functional Requirement
stored data	locally stored data to be synchronised and uploaded onto the Incident Management System
 Send data to POD	Send data retrieved from Incident Management System to the POD, for purposes of displaying to the POD end user
Integration mechanism	Web Service
Notes	Future application to be implemented in KZN DOT


3.1.6 SAPS Interface

Description	Functional Requirement
 Look-up vehicle	Send details to SAPS to check if there are any infringements/offences listed against the vehicle's registration number e.g. stolen vehicle check
 Receive vehicle trace request	Receive request from SAPS to enquire whether a particular vehicle can be traced on KZN DOT's databases. This query will possibly be sent to the Camera Network Management system/database which would contain real-time images of all vehicles as picked up from the various RTI camera's across the province.
 Send vehicle location request	Respond to SAPS with details of where a particular vehicle can be traced.
Notes	Future potential interface to be implemented between KZN DOT/SAPS




3.1.7 PTEU Interface

Description	Functional Requirement
 Look-up vehicle	Send a request to PTEU to enquire if a particular vehicle exists on their systems by searching on vehicle registration number. Receive details from PTEU and send to calling system to display to user.
 Look-up other	Send a request to PTEU to enquire if a particular vehicle exists on their systems by searching on other details such as chassis number. Receive details from PTEU and send to calling system to display to user.
 Check operational license	Send a request to PTEU to check the operational license on their systems for a particular vehicle. Receive details from PTEU and send to calling system to display to user.
 Receive vehicle trace request	Receive request from PTEU to enquire whether a particular vehicle can be traced on KZN DOT's databases. This query will possibly be sent to the Camera Network Management system/database which would contain real-time images of all vehicles as picked up from the various RTI camera's across the province.
 Send vehicle location request	Respond to PTEU with details of where a particular vehicle can be traced.
Notes	The system currently in use by PTEU is called Legitimate.



3.1.8 Ad-hoc Query Database Interface

Description	Functional Requirement
 Look-up vehicle	Submit a request from the Ad-hoc Query database to search for a particular vehicle using vehicle registration number i.e. whether the vehicle has been spotted on the camera network within a defined search period such as within the last two days.


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Description	Functional Requirement
 Look-up other	Submit a request from the Ad-hoc Query database to search for a particular vehicle using other search criteria such as chassis number i.e. whether the vehicle has been spotted on the camera network within a defined search period such as within the last two days.
 Receive vehicle trace request	<p>Receive a request to enquire whether a particular vehicle can be traced in the KZNDOT Ad-hoc Query database and execute a search in the Ad-hoc Query database using the search criteria supplier.</p> <p>This query will possibly be received from POD's in the field where the officer needs to check if a vehicle is in the ad-hoc database. However the query can also be called from any other valid source and not only from a POD.</p>
 Send vehicle location request	Respond to the call with details of whether a particular vehicle can be traced in the ad-hoc database.
Notes	<p>The service provider is required to establish a standard database with different categories of vehicles, and an import facility to upload the data from spreadsheets (provided in a pre-defined format) into this database.</p> <p>There should be a web-based front-end facility to the database to facilitate the upload from spreadsheets, maintain the uploaded data in the database e.g. edit data on specific vehicles (e.g. correct registration numbers, add or delete vehicles etc.), add or remove vehicle categories.</p> <p>This Ad-hoc database front-end facility should also enable the submission of queries to search for, locate and receive details of where a particular vehicle has been spotted using the data from the camera network.</p>

3.1.9 Fleet Management Interface

Description	Functional Requirement
 Receive vehicle data	The vehicle is fitted with a device that communicates applicable data to the Fleet Management system for storage and processing. This includes amongst others, the current vehicle GPS location,
 Send vehicle location request	A system should be able to send a query to the Fleet Management system to enquire about the current location of a particular vehicle i.e. real-time feedback provided on the vehicles whereabouts

3.1.10 Other Interface

Description	Functional Requirement
 Develop and implement other interface	Make provision for developing 2 additional interfaces over the contract duration.

4. Examples of planned interface implementations

This section describes some of the envisaged implementations of the interfaces and is provided for context and background purposes only.

4.1 Smart Road Block Requirements

4.1.1 Mobile ANPR

The existing interfaces as defined in section 3.1 will be utilised for purposes of a Smart Road Block. In this case a Mobile Automated Number Plate Recognition (ANPR) camera/device will be set-up and communicates to a laptop in the field. See Figure 2 below, the operations will be similar except that a mobile ANPR camera/device will be used instead of a fixed ANPR camera.

Refer to Camera Network Specification for detailed requirements on the Smart Road Block.

4.1.2 Submit Query

The number plates are sent from the ANPR device/camera to the laptop; the laptop will then call the relevant interfaces (eNatis and/or TCMS) to determine if the identified number plate has outstanding infringements.

Thus existing functionality is utilised for purposes of a Smart Road Block, with the laptop simply being treated as another system calling the interfaces. The data is returned to the laptop and displayed on screen to the user.

4.1.3 Send notification to Road Block officials

Once a "hit" is found i.e. the vehicle has outstanding infringements or other reasons for pulling the vehicle over are identified, the officer manning the laptop will send a notification upstream to another officer. This notification will be done through the radio network.

The officer upstream pulls the vehicle over, and follows the standard process to check vehicle and driver's license details on his/her device and acts upon the results of the check as required.

4.2 Fixed and Portable Remote Monitoring Requirements

4.2.1 Fixed and Portable Remote Monitoring Systems

The existing interfaces as defined in section 3.1 for devices will be utilised for purposes of a Fixed and Portable Remote Monitoring, as shown in Figure 2 below.

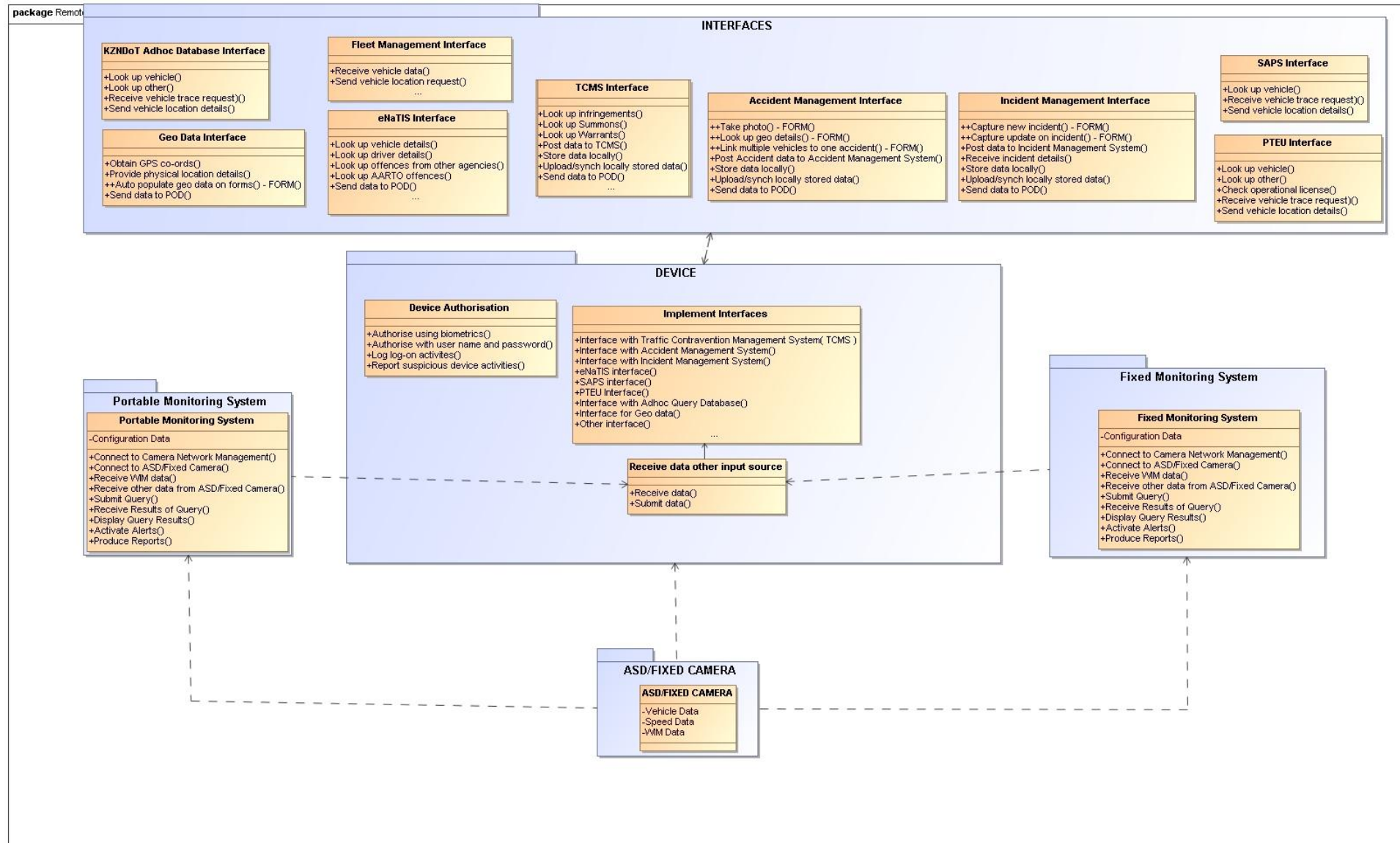


Figure 2 – Fixed and Portable Monitoring Systems

The Fixed Remote Monitoring Systems consist of a computer and screen or similar arrangement with remote communications to the Traffic Management Centre, located at a weighbridge site where overloading information is relayed from selectable ASD sites linked to weigh-in-motion data on a route. This information is then used to deploy traffic officers to intercept potentially overloaded heavy vehicles.

The Portable Remote Monitoring Systems consist of portable computer or similar system with remote communications to the Traffic Management Centre. Traffic officers can configure the remote systems to be site specific to receive various forms of violation information ranging from potential overloaded vehicles, outstanding traffic violations and warrants, licencing and roadworthy violations thereby providing an intelligent roadblock.

Refer to Camera Network Specification for detailed requirements on these Fixed and Portable Remote Monitoring Systems.

4.2.2 Submit Query

The relevant data is sent from the fixed/remote monitoring system which will then call the relevant interfaces (eNatis and/or TCMS and/or SAPS) and make the necessary queries.

Thus existing functionality is utilised for purposes of a Fixed and Portable Remote Monitoring, with the information relayed from selectable ASD sites (Fixed Monitoring) or the data from the portable computer or similar system simply being treated as another system calling the interfaces. The data is returned to on screen to the user via the Fixed/Portable Remote Monitoring system.

4.3 Smart Device Interfacing

4.3.1 Enhanced Portable Remote Monitoring Systems

Similar to Portable Remote Monitoring, as shown in Figure 2 above, the existing interfaces per section 3.1 will be utilised for purposes of "Enhanced Portable Remote Monitoring Systems".

"Enhanced Portable Remote Monitoring Systems" consists of an officer's POD connecting directly to an ASD camera. Traffic officers can configure the POD to be site and search type specific: to receive at a particular site various forms of violation information ranging from potential overloaded vehicles, outstanding traffic violations and warrants, licencing and roadworthy violations thereby providing an intelligent roadblock.

In this case the ASD camera sends the vehicle number plate to the officer's POD, the POD connects to the interface and makes the necessary queries (as per search criteria configure by the officer) and results of the query are displayed to the officer directly on their POD. Thus instead of the officer scanning a vehicle registration number on the POD and sending a query, the vehicle registration number is relayed from the ASD camera to the POD and the query is thereafter executed in the same way as if the vehicle registration number was scanned by the POD.

Refer to Camera Network Specification for detailed requirements on the Enhanced Portable Remote Monitoring Systems.

4.3.2 Submit Query

The relevant data is sent from the ASD camera to the POD, and the POD which will then call the relevant interfaces (eNatis and/or TCMS and/or SAPS) and make the necessary queries.

Thus existing functionality is utilised for purposes of a "Enhanced Portable Remote Monitoring Systems", with the information relayed from selectable ASD sites simply being treated as another input data source (see 3.2.4). The data is returned to on screen to the user via the POD.

5. Non-functional requirements

5.1.1 Deployment

The interfaces and database will be centrally deployed at KZN DoT.

5.1.2 Interface implementation

Provision must be made in the scope of work for support and maintenance to include support, development and testing for implementing the common interfaces across the following applications/technologies:

- a) Personal Operating Devices (POD's);
- b) Fixed and Portable Remote Monitoring (Fixed monitoring at weighbridge sites and portable monitoring refers to current black-box technology);
- c) Smart Road blocks where interfaces will be called from a laptop attached to ANPR device/camera at the roadside;
- d) South African Police Station (SAPS);
- e) Traffic Contravention Management System;
- f) Accident Management System;
- g) Incident Management System;
- h) Impound System;
- i) KZN DoT Traffic Management Centre;

5.1.3 Timescales

The implementation of the interface solution should be in place within a period not exceeding 12 months.

There will however be a need to develop the design specifications for all the interfaces within a period of 2 months so that other solution components (refer TCMS RFB document) that are dependent on these interfaces can continue with development whilst the interface development continues in parallel.

5.1.4 Training, change management and skills transfer

Training	Skills Transfer
Administrator Training: 5	IT super user: 2

6. Technical requirements

6.1.1 Hardware

All hardware will be provided by KZN DoT.

6.1.2 Server Operating System

The solution should be capable of running on Windows Servers 2012 R2 Standard. Operating system licenses will be provided by KZN DoT.

6.1.3 Database

The solution should run on Oracle or MS-SQL. Database licenses will be provided by KZN DoT.

6.1.4 Application/Middleware technology

There is no particular requirement on the platform the interface is developed in as long as it supports the business requirements. Any costs associated with the common interface application/middleware technology must be included in overall costs.

6.1.5 Network

The interface will be called across a wide area network which could be cellular based or other.

6.1.6 Support and Maintenance

Support and maintenance are to be included for a after go-live, limited to 5 year total contract duration. This includes support on the interfaces and technical platform as per below:

Support and Maintenance Consideration	Support and Maintenance Requirements
Type of support and maintenance requirements post go-live	<p>A full end-to-end Service Level Agreement (SLA) will be required which includes application support and maintenance, as well as support and maintenance of all elements of the solution platform and interfaces described earlier and the devices.</p> <p>Provision must be made in the scope of work for support and maintenance to include support, development and testing for implementing the common interfaces across the defined applications/technologies.</p> <p>This includes the development and test environments; IDE environment; database and any other products included in the software stack of the solution.</p> <p>KZN DoT will ensure back-ups are conducted, however service provider will be expected to plan for and conduct two DR tests on the application per annum. Full results of the DR tests are to be documented; the SLA must also include provision of services to assist with recovery in the event of an actual disaster.</p>
Exclusions	The support and maintenance SLA does not cover hardware and networking as this will be addressed in a separate SLA.
Geographical requirements of support personnel	Although KZN DoT will accept resourcing from outside the province, the service provider must have KZN-based resources who will participate in the project and who will be available to provide support services post-go live. i.e. under no circumstances can there be an exclusive reliance on

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Support and Maintenance Consideration	Support and Maintenance Requirements
	resource from outside the province.
Onsite support requirements	A full time on site support resource must be available for a period of 12 months after go-live. This support will include day to day operational support, user hand-holding and mentorship, skills development and skills transfer, and daily/weekly/monthly system health checks.
Offsite support requirements	First line may be provided telephonically and through e-mail. Remote support must be catered for. Service provider to provide a facility to log user requests, incidents, faults etc.; report on turnaround times against the SLA.
Site visits	After the 12 month on site support, provision must be made for 1 site visit per month.
User groups	Formal user groups are to be constituted and convened quarterly.
Planned releases	2 planned releases are to be scheduled per annum.
Adhoc training	Provision to be 1 adhoc training session per annum.
Adhoc support and maintenance on T&M basis	Provision to be made for 160 hours of adhoc support and maintenance per annum, to be used as per plan agreed with the department and billed only on actual time utilised.
SLA metrics	See Annex B.

Annex A : Abbreviations and Definitions

A.1 Abbreviations

ANPR	Automated Number Plate Recognition
DoT	Department of Transport
KZN	KwaZulu-Natal
POD	Personal Operating Device
RTI	Road Traffic Inspectorate
SITA	State Information Technology Agency

Annex B : Service Level Metrics

The following table lists the service elements and service levels applicable to this requirement:

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Service Elements and deliverables	Response time	Measurement criteria / Target	Service Category / Priority	Required resource/s
<p>Provide Incident Management services – records an event that has an impact on delivery of the service and is used to track the incident from the logging of the call through to resolution.</p> <p>Provide Problem Management services – identification, investigation, diagnostics and classification of problems as a proactive attempt to prevent future occurrences of these types of incidents.</p> <p>Change Management – assessment of the impact, obtaining of approval for the change, and monitoring the change from change request to completion.</p> <p>Service Level Management – the design and monitoring of agreed service delivery targets and resources used and reporting thereof</p> <p>Reporting on incidents, problems and SLA management</p> <p>Provide day-to-day user support</p> <p>Application maintenance</p> <p>Installation and operational support procedures will be provided as part of the information required for the DRP documentation. DR testing to be conducted and support services to be provided for recovery and resumption during an actual disaster.</p>	Technical response within one hour, together with confirmation that the fault has been assigned to an appropriate expert and the likely timescale for fixing the fault where this timescale shall not exceed 8 hours.	A total loss of use of the installed software products; and the software product installation is mission critical.	Severity 1	Technical and Applications support personnel
	Technical response within two hours, together with confirmation that the fault has been assigned to an appropriate expert and the likely timescale for fixing the fault where this timescale shall not exceed 24 hours	Some operations can continue in a highly restricted fashion but there is some severe and critical loss of use and the affected software product(s) is/are mission critical.	Severity 2	Technical and Applications support personnel
	Technical response within two days. Fault resolution times are four weeks	The software product(s) can be used with some restrictions but some do not function correctly and there are no alternative features available to achieve equivalent functionality.	Severity 3	Technical and Applications support personnel
	Technical response within five days. Severity 4 faults are resolved by the next maintenance or enhancement release.	The software product(s) can be used with some inconvenience because some features do not function correctly. Users can work around the problem or may use alternative features in the standard software product(s) to achieve equivalent functionality.	Severity 4	Technical and Applications support personnel
	Technical response within five days. Severity 5 faults are resolved by the next major release.	The standard software product(s) contains a minor or cosmetic error, which does not materially impede use.	Severity 5	Technical and Applications support personnel

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