Kerala State Transport Project II (KSTPII)
Terms of Reference
for
Development and Operation of Information Management System (IMS) for KSTP

1. Introduction

The Government of Kerala (GoK) has completed improvements of 1610 Km of State Highways and MDRs under Kerala State Transport Project - I (KSTP -I) financed by World Bank. On satisfactory completion of KSTPI, GoK has proposed KSTPII to improve another 363 km of State Highways and MDRs under Upgradation. As such, the GoK through Government of India (GoI) has obtained a loan from World Bank (IBRD) financial assistance for the construction cost of the KSTPII, which aims at Upgradation of 363 Km length of State Highway, along with road safety improvements and institutional strengthening of PWD. The project has three main components:

A. Road network and safety improvement;
B. Road safety management; and
C. Institutional Strengthening.

The objective of component C is to improve sustainability of the Kerala’s road network with respect to the functional adequacy, financial viability, and capacity of key state road sector institutions to deliver road infrastructure and services responsive to road user needs. Under this, the following sub components shall be financed:

a. Road sector modernization: This sub component is designed to support the strengthening of the institutional and financial capacity of Kerala PWD and related entities to efficiently develop and maintain the physical assets of the road network, and mobilize necessary financial resources for the task. The main tasks include institutional studies for future development, management and finance of state’s road network, implementation of simple maintenance management system, various aspects of e-government and capacity building and training.

b. Community engagement and road user satisfaction: This sub component will support PWD and KSTP in enhanced public outreach through a combination of measures to improve the dissemination of information, obtaining user feedback on public perception/satisfaction with road infrastructure provision, and enhanced user engagement, especially to help promote, design and monitor initiatives to improve road safety and asset management. Local partnerships may be developed with gram panchayats, faith based organizations, NGOs and extension of local initiatives such as Kudumbasree and Anganavadi.

To fulfill the project objectives specified in (b) above, KSTP wishes to develop a comprehensive Information Management System (IMS) for KSTP, with a wide range of interactive platforms for communicating with communities and stakeholders. The ultimate aim of such a system is to create a common online platform for interactive communication with all stakeholders, building upon and integrating all existing mechanisms such as the Public Information Cell (PIC).

2. Objectives

The key objectives of this assignment are:

2.1 To generate public awareness of the planning, design and implementation of all KSTP projects
through enhanced public disclosure via high quality digital delivery of accurate and reliable information.

2.2 To facilitate the public to register, track and monitor their grievances through online access and to enhance efficiency and transparency of grievance redress through effective integration of public grievances with respective divisions/units/officials in charge.

2.3 To gain stakeholder support/buy-in for the design and implementation of proposed road-sector initiatives through interactive communication channel(s).

3. Scope of Services

The Consultant should develop and/or customize a proven Commercial Off-the-shelf Software (COTS), to deliver a comprehensive solution for the KSTP Information Portal and related mobile applications in a single-phase project. The following are the main tasks for this assignment:

3.1 Task 1: Study existing mechanisms for information disclosure, grievance redress, user feedback and assess their adequacy and effectiveness in these areas

3.1.1 The Consultant will study existing mechanisms at the PWD for information disclosure, grievance redress. On information disclosure, the consultant will assess the current mechanisms/procedures for dissemination with reference to the guidelines\(^1\) provided under the Right to Information Act (RTIA, 2005).

3.1.2 The Government of Kerala has set up a Citizen's Call Centre (CCC)\(^2\) that acts as a complaint registry for senior officials/Ministers of Government Departments. It also accepts complaints under the Chief Minister's (CM) Satharya Keralam program, which are transferred electronically to the public grievance redress cell of the CM and forwards complaints regarding check posts to the Commissioner of Commercial Taxes. Presently, KSTP has a public information cell (PIC), wherein public can register complaints regarding the roads under PWD as well as KSTP through telephone. This system is manual and lacks the support of the modern day technologies that can enable proactive participation of road users in road development/maintenance and also make the authorities more accountable from a service provider standpoint. The consultant will study the functioning of all these mechanisms, analyze the trends and types of complaints received and will explore ways to enhance and integrate the role of the PIC in the overall Information Management System.

3.1.3 The State of Kerala has created an integrated mobile technology platform with more than ninety Government departments to create cost effective, efficient and round the clock government information systems. This is meant to improving inter-departmental and inter-office communication, besides facilitating quick citizen feedback; for instance, the State Planning Board successfully used this system to conduct a survey of more than 25,000 citizens on their energy needs under the Sampoorna Oorja Suraksha (Total Energy Security Mission). The consultant will assess the functionality and features of this platform and explore ways to build mobile applications that can be hosted on such a platform.

3.1.4 The department is launching a range of new web based solutions for estimation and billing connecting all the offices from section to chief engineer’s office. Also, there will be a project monitoring and management software. The IMS should carry an interface to integrate these softwares so that necessary information/data can be effectively shared/exchanged.

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\(^1\) Implementation of suo motu disclosure under Section 4 of RTI Act, 2005: Issue of guidelines regarding, GOI Office Memorandum No. 1/6/2011-IR, 15 April 2013

\(^2\) It is open 24 x 7 (except on national holidays)
3.2 Task 2: Develop mechanisms for information disclosure and content management

3.2.1 The Consultant will develop an information portal in consultation with the KSTP to address the following key requirements:

- Customized content and personalized portal for improving stakeholder engagement and management
- Social collaboration and integration for productive and informed social communities
- Content, document & workflow management for stakeholder complaints/suggestions,
- Modular design creating and defining new content and new applications, and for comprehensive mobile devices support
- Promote social groups to create awareness about the need for capacity enhancement, new road policies, challenges in road sector financing etc

3.2.2 The information portal developed on a CMS (content management system) platform will have project-related information in compliance with the RTIA (2005) and the disclosure policy adopted for KSTP. The portal will have a front-end module for the public with a project-specific website, links to social media, mobile and web applications, and a backend module for use by KSTP/KPWD staff. The website will be linked from the PWD website (keralapwd.gov.in), the Kerala State government website (www.kerala.gov.in) and from the national RTI portal (www.rti.gov.in). Information published on the website will be organized in such a manner as to facilitate relevance and access to all stakeholders and should remain available online throughout the project implementation period and for at least one year after the project has been completed. The website shall be in both English and Malayalam.

3.2.3 An indicative schematic of the envisaged system is given in the following figure.

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3 In this regard, the website of the Orissa State Roads Project (osrp.gov.in) may be instructive
3.2.4 The Consultant will enable disclosure of all relevant project documents on the new project website and update them regularly as needed. These will comprise the following:

a. History of KSTP, its Mission, Vision and Objectives
b. Organization structure, departments, reporting hierarchies and functional map
c. Publications and reports including road development plans, annual reports, performance reports, plan reviews and statistical information,
d. Details of ongoing projects along with physical implementation progress of project works (with photographs/videos), related activities and any consultancy services
e. Financial progress of works
f. Procurement, environmental and social safeguard related information
g. Details of collaborating departments/organizations / Institutions and other stakeholders
h. Announcements, current and upcoming events, press releases, and other related information
i. A comprehensive grievance/feedback mechanism (see 3.2.5)
j. Analytics including RTI and complaint related statistics in terms of number and type of requests/complaints received, number of requests/complaints disposed and pending that would be required for an audit assessment.
k. User feedbacks, satisfaction surveys and analytics. There should be a provision to integrate the qualitative survey conducted in the field and the online survey data gathered through the portal and mobile application
l. Location specific information. Road maps, area specific information and contact details
m. FAQs based on issues of public interest and analytics
n. There should be a dedicated interactive feature in the IIMS to promote ‘focused discussions’ with the support of ‘opinion leaders’ on issues/topics (such as public resistance against road widening, cutting of trees, etc.) that requires public support and consensus. It should contain the following features:
o. Complete set of editing tools for posting articles by opinion leaders
p. Facilities to add links for supporting documents such as licenses/permissions/specifications/BOQ/LA & RR policies/imageries/ and anything that can be shared under the RTI Act. By clicking on the links the supporting documents can be seen (pop-up window) or downloaded.
q. Counters for opinion poll/survey on the subject/issue discussed
r. Reply features should contain complete editing tools
s. Facilities for rating the discussion
t. Facilities for social media linking/promotion
u. Facilities to link to electronic media channels and FM radio

3.2.5 The Consultant will develop an online complaint handling module on the information portal to handle project-related complaints and make available the public interface for the same on the new project
website to enable public to register project related complaints including those on procurement, construction quality, fraud and corruption, safety, accessibility of road users or safeguard compliance issues. In addition, the module will enable public to register road condition related complaints and to provide their feedback on their perception/satisfaction of the road features. This module will be integrated with the *Grievance Redress System* described in Task 3.3.

3.2.6 The consultant will develop a **content management tool** that would provide real-time alerts about various media/news reports in the cyber world and discussions in social-media on the key-words/titles and searches set by the content manager. The social media engagement strategy should:

- Optimize social sharing from KSTP Information portal - provide information to search engines and social websites to improve search ranking and social engagement on Facebook, Google+, Twitter, Pinterest, and other popular social media platforms
- Customize and implement full-fledged, community management and locally-driven, social-networking capabilities for KSTP Information Portal users
- Enable portal users to create their own communities (like affected road users along a specific, defined stretch of KSTP road), user groups, customizable individual profiles, events, photos, videos, alerts, user blogs, activity streams etc.

3.3 **Task 3: Creation, Operation and Management of Comprehensive Grievance Redress/user feedback System.**

3.3.1 The consultant shall develop a comprehensive **Grievance redress/User Feedback system**, integrating all existing grievance handling mechanisms such as the existing PIC, CCC hotline and the complaint handling module on the information portal and those received through other proposed media (such as mobiles) into a single system for better monitoring, routing and redress. The consultant will upgrade existing PIC/CCC functionality with “Automatic Call Distributors” including desktop integration, Interactive Voice Response (IVR) use, call recording, productivity monitoring and call quality feedback mechanisms and link it to KSTP information portal described earlier. The backend of the system should be capable of electronically routing and tracking the status of the complaint and should include appropriate alerts to KSTP officials for complaints that are pending for *inordinate amounts of time* (as defined by the PWD procedures and/or the Complaint Handling Policy). The official mobiles for the field engineers can be connected through WhatsApp facility for alert mechanism and linked with the complaint handling register kept electronically in various offices.

3.3.2 The consultant will also oversee the populating of the system with all complaints recorded by the PIC in the complaint register and those received by regular mail, email or walk-in since project start.

3.4 **Task 4: Creation of mechanisms to enable active user/community engagement in road safety and asset maintenance**

3.4.1 To facilitate monitoring and evaluation, the Consultant will develop a multi-platform mobile application/tool/system to enable road incident/crash reporting by the public. The backend of this system should enable:

- Automatic SOS alerts to rescue agencies/highway patrol/Police etc in cases of accidents.
- Presentation and analysis of incidents and crashes on GIS maps on KSTP portal
- KSTP staff/designated officers to moderate and validate reported data by public
• Integration with the existing accident data recording system of the Kerala Police
• Gathering and analyzing of road accidents data, traffic data, geographical information and related data for identifying frequent accident spots to facilitate treatment of such location to minimize social and economic cost.
• Provision of a comprehensive, dynamic road safety countermeasures library showing accident patterns, collision types, possible causes and general countermeasures for use by road safety officials at local, Panchayat and state levels.

3.4.2 The consultant will also develop a mobile and web-enabled road user feedback and perception/satisfaction surveys application (attached to the KSTP portal) for the conduct and analysis of quick surveys to obtain road user feedback on select issues of interest to the KSTP (such as effectiveness of information disclosure and complaint handling mechanisms, road condition, road safety etc. along project roads).

3.4.3 The mobile application should have features such as; PWD/KSTP related information and news alerts, location specific information such as: the name of the locality, distance to nearby towns, tourist information such as: brief profile of the area, taxi & tour operators, hotels and restaurants, toilets/rest rooms, shopping, emergency contact/ambulance operators, nearest road safety/post-crash volunteer groups, contact details of panchayat/local governments, NGOs, CBOs, religious places, gender based organizations, police, hospitals, fire & rescue, etc. The consultants should develop a revenue model for the mobile application by incorporating provisions for advertisements/contents of sponsored information.

The location specific information should be gathered through ‘crowd sourcing’. This will encourage the local communities/stakeholders to participate in the information development and publicizing about their locality. There should be a facility for the user to rate an information that was useful during his travel.

3.4.4 There should be an additional feature for ‘Gamification’. This facility is for future integration of road safety games, puzzles, quiz etc.

3.5 Task 5: Media Management Tool. The Consultant will develop a media management tool for tracking media news related to KSTP/PWD on the basis of keyword search and archiving them into topic/category-wise folders. This program should include the following features:

- Facilities to add notes to each report
- Database of email address, mobile numbers of reporters/editors, letter/email to editors of major news media
- There should be facilities for sending reply against a news item/press releases and alerts to media
- SMS alert to news reporters

3.6 Task 6: Community outreach through Social Media. The Consultant will develop the following social media platforms for effectively interacting with the communities/stakeholders:

a) YouTube Channel for posting videos of roads/bridges, construction activities, road safety interventions, community participatory programs, PSAs etc.
b) Google Hangout for PWD Executive engineers at division level for interacting with public on a weekly basis. One or two hours of interaction on every Saturday afternoon or a convenient day and time as decided by the PMT/PWD can create a great public image for the department. Such interactions will be a morale boost and recognition to the Officers. This will also develop their contact with communities, commitment and accountability.

c) Facebook page for dissemination of information by means of sharing, photos, information links, YouTube videos, Google Hangout, etc.

3.7 **Task 7: Multi-Sector Information gathering and sharing system.** The consultant will develop a database for gathering and sharing of information with other stakeholders. This will be an interface, where multiple departments can share/exchange data for research, enforcement, service deliveries, etc. Crash reporting, road safety violations, SOS alerts are some of the features that will be routed in real-time with other sectors such as: local police, highway patrol, MVD, hospitals/emergency services, fire & rescue services, etc.

3.8 **Task 8: Integration of all mechanisms described in 3.2 to 3.7 above into a single Information Management System**

3.8.1 The Consultant will integrate all the modules developed into a comprehensive information management system with an Omni Help Desk. The consultant should keep in mind intellectual property issues and modular development to facilitate future add-ons for the sustainability of the system. Other pertinent issues such as cell phone usage of drivers while driving, protecting privacy of the users, related data security and marketing of the system to users should also be considered.

3.8.2 The system will also have a *data analytics tool* to provide detailed analytics on user feedback/grievances/complaints that could then be routed to respective officers for identifying and rectifying any systemic deficiencies in the development and management of roads in the project and the state. Analytics will include key performance indicators/parameters to measure effectiveness of the grievance management system, and project management of KTSP projects that will be presented as graphical charts and dashboards.

3.8.3 The Consultant will also develop a plan to get the KSTP Information Management System certified for ISO 9001/ ISO 27005 or similar quality certifications.

3.9 **Task 9: Operations and Training**

3.9.1 The consultant operate the system for 12 months and will train the PIC staff and/or any other designated users in use of the entire Information Management System.

3.9.2 The consultant will develop an operation manual for the IMS.

3.9.2 The Consultant will be expected to deliver the following output as per the schedule and timeline given below:

4. **Key Outputs and Timeline**
<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description</th>
<th>Timeline from the date of commencement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Study existing mechanisms for information disclosure, grievance redress, user feedback and assess their adequacy and effectiveness in these areas</td>
<td>By the end of 1st month</td>
</tr>
<tr>
<td>2</td>
<td>Develop mechanisms for information disclosure and content management</td>
<td>By the end of 3rd month</td>
</tr>
<tr>
<td>3</td>
<td>Creation, Operation and Management of Comprehensive Grievance Redress/user feedback System.</td>
<td>By the end of 4th month</td>
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<tr>
<td>4</td>
<td>Creation of mechanisms to enable active user/community engagement in road safety and asset maintenance</td>
<td>By the end of 4th month</td>
</tr>
<tr>
<td>5</td>
<td>Media Management Tool</td>
<td>By the end of 5th month</td>
</tr>
<tr>
<td>6</td>
<td>Community outreach through Social Media</td>
<td>By the end of 5th month</td>
</tr>
<tr>
<td>7</td>
<td>Multi-Sector Information gathering and sharing system</td>
<td>By the end of 5th month</td>
</tr>
<tr>
<td>8</td>
<td>Integration of all mechanisms described in 3.2 to 3.7 above into a single Information Management System</td>
<td>By the end of 6th month</td>
</tr>
<tr>
<td>9</td>
<td>Operations and Training</td>
<td>7th to 12th month</td>
</tr>
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</table>

5. **Data, Services and Facilities to be provided by the Client**

The Consultant’s technical response and methodology should include detailed functional and system architecture including software requirements, product implementation methodology, schedule and project management aspects. Required computer infrastructure should also be specified by the consultants.

KSTP/PWD, both at HQ and at lower levels, shall provide all available information, including hierarchy and functioning of different levels of officers, available reports, digital maps, complaint handling/disclosure policies, RTIA requests/complaints received periodically on the project, and functioning of the PIC and the CCC. The Consultant shall be responsible for any translation of documents and for processing of data. The IT cell under PWD will provide necessary technical support regarding the mobile governance platform, any specifications of software, hardware/networking system and relevant data. Any needed associated hardware such as computers and additional digital maps\(^4\) will be procured by KSTP.

\(^4\) Procurement of these maps will be done in consultation with the consultant’s software development team during project execution.
6. Covenant

Towards the end of the contract period, the Consultant should hand over all softwares, source codes, and programs or tools in original, used for the development of IMS to the designated officer of the KSTP along with a certificate of license duly signed by the authorized person of the Consultant.

7. Key deliverables

<table>
<thead>
<tr>
<th>S No.</th>
<th>Deliverable</th>
<th>Number of copies</th>
<th>Timeline (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inception Report</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Report on As-is system and proposed mechanisms</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>Report on overall system architecture/specifications</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>User Manuals on Information Management System</td>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>5</td>
<td>Draft Final Report</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>6</td>
<td>Final Report</td>
<td>3</td>
<td>330</td>
</tr>
</tbody>
</table>

8. Requirements of Consulting Firm and Key Staff

8.1 Requirements of Consulting Firm

The selected international consulting firm should have experience in implementing modern, large-scale, successful projects of this scale and should have road safety specialists, communication specialist and statistician/data analyst on its team.

8.2 Key Professionals required

The team should include the following local key professionals

1. Team Leader & IT Specialist (9 mm)
2. Systems Specialist (8 mm)
3. IT Project Manager (8 m)

Sub Professionals

4. Software Engineer – Web applications (6 mm)
5. IT Database Specialist (6 mm)
6. Senior Road Safety &Data Specialist (2 mm)
7. Communication Specialist (2 mm)
8. Statistician (1 mm)

All personnel should be stationed in Trivandrum during the entire delivery phase. The time input shall spread over the entire 12 month for all key professionals from sl no 1 to 5. Total key professional input is 25 man months. The CVs of sub professionals shall not be evaluated but have to be provided while signing the contract.
<table>
<thead>
<tr>
<th>Position</th>
<th>Minimum Qualifications</th>
</tr>
</thead>
</table>
| **Team Leader/ IT Specialist** | • A Post Graduate Degree in Computer Science/ IT Engineering or Systems Engineering. He/she must be a IT Project Leader with at least 12 years of software development and delivery experience. International experience will be an added advantage.  
  • Prior proven experience in working for Government IT projects, in India and internationally. Local experience would be an added advantage  
  • Experienced in delivering GIS based road projects for government authorities in India and internationally |
| **Systems Specialist**        | • A Graduate Degree in Computer Science/ IT Engineering or Systems Engineering.  
  • Minimum overall experience of 5 years in implementing large-scale, web-based IT projects globally AND regionally within the Indian subcontinent.  
  • Minimum experience of 4 years in software development industry working with large, global IT companies.  
  • Minimum experience of 5 years in implementing GIS based IT projects and Managing Information system for the Road Safety/Transportation sector.  
  • Have implemented a minimum of 3 GIS-based IT projects  
  • Experience in implementing large scale, web-based accident data systems in rapidly motorizing countries or low and middle income countries (LMIC)s. |
| **IT Project Manager**        | • Should be a university graduate with a minimum experience of 10 years in managing large scale IT projects of similar nature.  
  • Past experience in delivering IT projects to similar Government authorities is desirable.  
  • Should have delivered at least 3 road related system projects. |
<table>
<thead>
<tr>
<th>Position</th>
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</tr>
</thead>
</table>
| **Software Engineer – Web Applications** | • Should be a university graduate in Computer Science & Engineering/Information Technology  
• Must have minimum 7 years of experience in Web development and implementation.  
• Should be proficient in Open Source Web technologies like PHP/MySQL or JSP/Servlet or Microsoft .NET Technologies (in the case of latter, a relevant Microsoft certification would be preferable).  
• Should be proficient in JavaScript, and have minimum 2 years of proven hands-on experience in JQuery and JSON programming.  
• Proven experience in responsive Web design would be an advantage. Candidate should be well-versed in responsive Web design. |
| **Senior Road Safety & Data Analyst** | • Should have a Masters Degree or above in road safety or related fields. A PhD degree would be desirable.  
• Should have minimum experience of 15 years in the use of road crash and other data to identify road safety problems and to identify remedial measures. Knowledge of economic appraisal and evaluation of roads safety schemes and treatments would be an advantage.  
• Should have similar specific experience similar in the country or at least in the region.  
• Should have delivered at least 5 similar projects in LMICs.  
• Should have experience in general road safety and also crash data system installation and use  
• Should have experience of knowledge transfer and training of staff and local counter-parts in LMICs |
| **IT Database Specialist**      | • Should be a university graduate in Computer Science & Engineering/Information Technology  
• Must have minimum 15 years of experience in database development and implementation.  
• Should have minimum 12 years of proven hands-on experience in Industrial RDBMS like MS SQL Server, Oracle, Postgres etc.  
• Should have experience in similar projects and experience in working in developed/developing countries |
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication/Media Specialist</strong></td>
<td>• Should be a post graduate in journalism with minimum 15 years of total experience with 10 years in journalism and minimum 5 years in communication/media management experience in Kerala</td>
</tr>
<tr>
<td><strong>Statistician/Data Analyst</strong></td>
<td>• Should be a post graduate in statistics or Data Management with minimum 15 years of experience in the field of statistics or Data Analytics. Experience in social sector/community projects will be advantageous.</td>
</tr>
</tbody>
</table>