

LAO PEOPLE'S DEMOCRATIC REPUBLIC
The Ministry of Public Works and Transport

Project Name: Lao Road Sector Project 2 (LRSP 2)

Loan: IDA ID No. 5920 - LA

Terms of Reference

**For Technical assistance ICT development for centralized data base for local
road asset management, e archive and Dynamic website**

(No. C2-10 Component 2)

1 Introduction and Context

The Government of Lao PDR (GoL), through the Ministry of Post, Telecommunication and Information Technology(MPTI) has established ICT policies and programs with the vision that Lao PDR will be developed with the high GDP Per Capita and released from least Developed Country Status by 2020 through administration reform, Civil service reform, and infrastructure by developing e-government initiatives for establishing sustainable national innovation system with response to rapid transformation of knowledge based socio-economy.

Scope of the e-government Action Plan

- Establish the e-Government Service Centre consisting of National e-Gov centre at MPTI, and establish e-Gov office in each ministry and provincial
- Build the National e-Government Infrastructure
- Develop e-Government Applications
- Human Resource Development for deploy e-Governance system throughout the Country
- Develop Procedures, Laws and Regulations related to the e-Government
- Develop and define the National Standard, especially for data exchange and security concern.

E-Government Reform

Civil Service Reform

Many contact points, Visits, Face-to-Face → Single contact point, No visit, Online
 Limited participation (polls) → Electronic participation (e-election), defined as G2G, G2C and G2B.

Administration Reform

Paper document → Electronic document
 Department oriented procedures → Service flow oriented procedures

Infrastructure Establishment

Separate resource management → Government-wide management
 Departmental standards → Common standards and convergence

E-Government Applications

Smart Government	Computerization of Work Process for All sector by Establishment e-Applications (e-Doc, e-archive, Residents/ Land/ Building/ Automobile, etc Local Government e-National Finance System
Customer	Citizen Portal System

Oriented Government	E-Banking System E-Taxation System Training Centre of e-Government and ICT
Secure Network Infrastructure	Broad Band Network National Security System
Legislation	e-Government/Digital Signature Laws

In line with the government’s ICT strategy, with support from World Bank through Road Maintenance Program phase 2 (RMP2), Ministry of Public Works and Transport (MPWT) has established its ICT strategic framework with a vision that the MPWT will develop its ICT capacity in manageable, sequential phases with each phase providing a foundation capacity for the Coming years. Within the 2020 timeframe for this Strategy Framework, the following broad phasing will be followed:

PHASE 1 – “FOUNDATION”

- Improving availability of and access to ICT infrastructure, equipment and services
- Developing and supporting human capacity to utilize ICT

PHASE 2 – “BUSINESS IMPROVEMENT”

- Exploiting the capacity of ICT to improve business functions and services as part of business process reform

PHASE 3 – “BUSINESS INTEGRATION”

- Exploiting the capacity of ICT to integrate business functions and services, both within and external to the MPWT

These phases will be implemented progressively across the various levels of the MPWT, generally from Department to Provincial to District level. The timing of each phase will be dependent on the elements outlined below, in particular the availability of:

1. GoL ICT network infrastructure and capacity
2. ICT training and support capacity
3. Recurrent ICT budgets

Elements

All components of the MPWT’s ICT programs will include appropriate consideration, planning and provisioning of the following elements:

Technical Capacity

- Physical networks, infrastructure, equipment
- Technical standards for interoperability
- Capacity to meet the needs of the MPWT

- Security and control over users, networks, infrastructure and equipment

People

- Sufficient numbers of training and support staff
- Technical capacity of training and support staff
- Organization of training and support staff
- Capacity of users to utilize ICT resources

Systems

- Standard applications for basic user functions, such as emails, calendar, shared storage, work processing, spreadsheets, presentations
- Business applications
- Corporate applications

Funding

- Capital investment for new systems and infrastructure
- Recurrent funding of:
 - Operations and support
 - Refresh of infrastructure and equipment
 - Additional capacity

Governance and Co-ordination

The implementation of this Strategic Framework and the MPWT's ICT programs will be governed and coordinated through the MPWT's ICT Co-ordination and Monitoring Committee (ICMC).

In particular, the ICMC will ensure that:

1. The Ministry's ICT investments are prioritized according to the overall needs of the MPWT
2. ICT investment proposals and ongoing operations take due account of the above elements, and in particular that:
 - Investment projects include appropriated provision for ongoing user training and technical and user support
 - Adequate support resources are in place for users and technical support
3. Performance of the MPWT's ICT operations and investment projects is monitored and meets relevant and appropriated performance criteria

The World Bank has been engaged in the transport sector in Lao PDR for two decades. Currently World Bank has provided its support to the sector development through Lao Road Sector Project (LRSP), with an objective of introduction of comprehensive approach to the development and preservation of the road networks. The Government of Lao/Ministry of Public Works and Transport (MPWT) wishes to progressively move towards the full use of country systems for the entire transport sector and the adoption of a sector wide approach.

The Institutional Strengthening-Component of the project has an important sub-component which is to build capacity in the area of Information and Communication Technology (ICT). The ICT division is under Cabinet Office (CO) is responsible for ICT development within the transport sector.

Road asset management: The road sector is under the overall jurisdiction of the Ministry of Public Works and Transport (MPWT). With the ongoing devolution of responsibilities, MPWT has progressively delegated maintenance and operational tasks for local roads (Provincial, District, and Rural roads) to the Department of Public Works and Transport (DPWT) of each province, while retaining a mandate for policy making, financing, strategic planning, oversight, and management for the road sector. Maintenance and operational tasks for National roads remain with MPWT.

2 Objectives

MPWT has been using a road management system (RMS) for National roads and a Provincial Road Maintenance and Management System (PROMMS) set up in the late 2000s for local roads. Although the system for planning and prioritization of road maintenance is in place, it has not yet been effectively implemented, as competing needs among maintenance, construction, and disaster emergency repair, coupled with low quality data, have limited its use. In this context and complementing sector policy to increase allocation to maintenance, MPWT aims to increase effective road maintenance planning, contract management and monitoring through further development of ICT platform to support planning, contract management and monitoring, e-archive and MPWT website. Under LRSP, MPWT has developed an Integrated Road Asset Management System (IRAM) for national roads. The system has been used to contract management and monitoring for national.

MPWT received further support from World Bank under Lao Road Sector Project II to further develop ICT platform for MPWT. The scope of work includes (i) expand IRAM to cover local road and adding additional features in order to capture elements necessary for effective contract management and monitoring of entire road network (IRAM2), (ii) E-archive system for MPWT, and (iii) further improve MPWT website.

2.1 IRAM 2

Existing

At the present MPWT is having a system for Monitoring a construction or Maintenance contacts for national road with is called IRAM. This allow transport sector are working on the same page as centralization information from the beginning upon complete a contract. While the provincial still using a manual system

Finally, central decision maker and local management cannot have a consistent and correct view of operation and financial cost and status.

Objective

The main objective is to extend IRAM to cover provincial roads to offer the same benefits for the management of the maintenance of provincial roads. That means:

- Ensuring homogeneity in the management of maintenance, for the establishment of same maintenance procedures for all provinces and therefore to help institutionalizing the management of local roads throughout the country.
- Facilitating and easing the maintenance work of DPWT
- Enabling central and local management to have an accurate and timely monitoring of the status of maintenance work
- Enabling central and local management to have a better maintenance costs control through reliable information.

2.2 File Archiving

Existing

Division and Department of MPWT has to produce regularly a large volume of documents (official note, law, decree, rule, report, notice, studies, business documentation, technical documentation, user guide, contract...)

Many of these documents has to be kept.

For example, a road maintenance contract may have more than 100 pages.

Division and Department of MPWT keeps their file the best they can. Premises is overwhelmed by paper file to be kept.

Electronic file is kept in each own personal computer. Paper file can be copied many times when necessary.

There is big time consuming to find document sought.

Some documents are duplicated for each new need. Some other can be lost.

There is 18 Departments, 2 Institutes, Many Business Unit within MPWT.

Among them, 6 Department are big consumers of documents. They are Cabinet Office, Department of Civil Aviation, Department of Finance, Department of Road, Department of Transport, Department of planning and cooperation and others.

Objective

The objective is to enable to all these Division and Department of MPWT to deal with:

Backup issue:

- Able to save their electronic file in a safe storage place for better backup and thus avoid losing their data definitively
- Able to locate saved file easily and retrieve instantly it when needed

And Archive issue:

- Able to save file that's no longer being used in an electronic format and in a centralized and safe storage place for a long-term preservation, for future reference and for regulatory compliance.
File must be saved and indexed following business field rules
- Able to locate saved file easily and retrieve instantly it when needed
- Able to allow user to get file wherever and whenever he need
- Able to share information within transport sector.
- Able to significantly reduce paper copies

2.3 MPWT's Website

Existing

Transport sector disseminates its activities, regulations and projects progress implementation on MPWT's website. On others hand citizens also proposed their need and request through MPWT's mail box.

Division of ICT under cabinet office plays a focal point to manage information mentioned above. Division of ICT has to find out the reasons or answers from department concerned and then provides answers to concerned people and public on MPWT's website.

MPWT's website is set up in 2012. Its technical environment based on JOMLA, Apache, PHP 1.7 need to be upgraded.

Objective

The objective is to enable administrator to do following tasks:

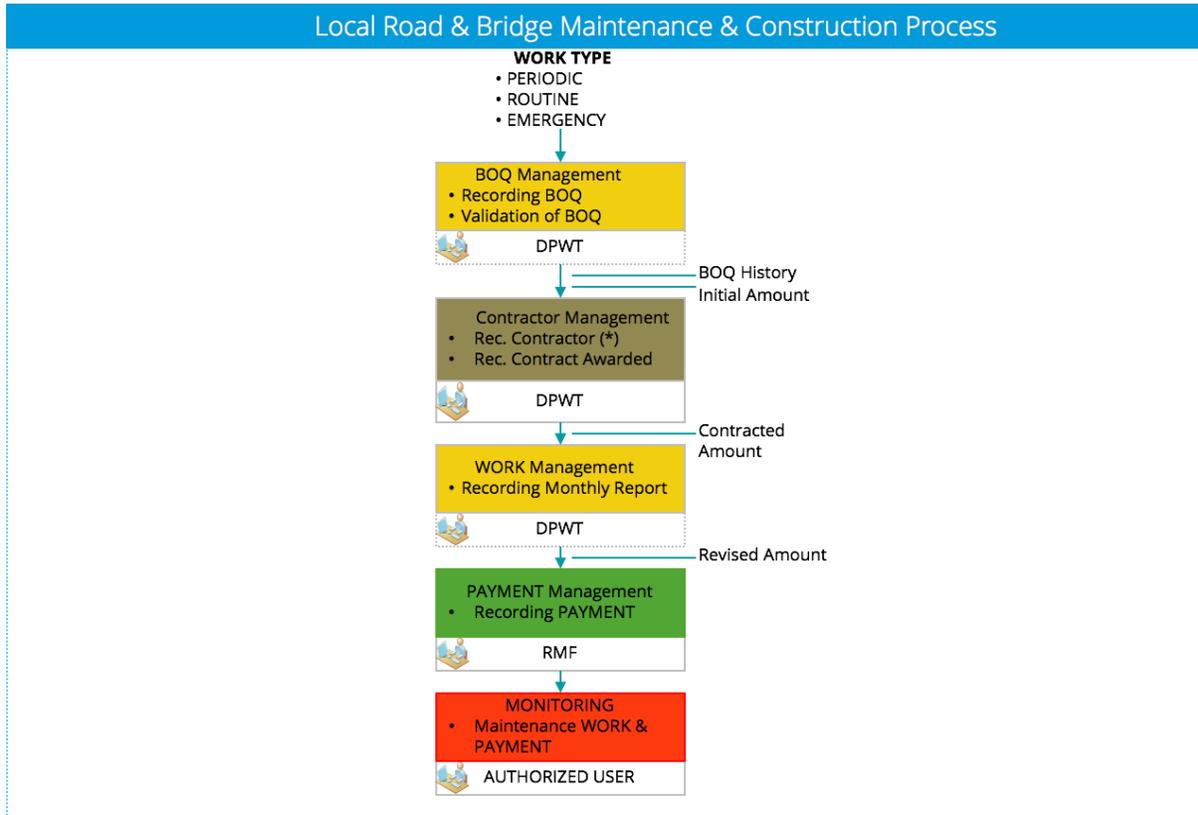
- Add new functions following their needs
- Disclose procurements and bidding regulations
- Disclose procurements and bidding documents in friendly manner
- Allow citizen and departments of MPWT to interact on public concerns through MPWT's website
- Provide grievance mechanism for the effected people related to road works

Upgrade version of MPWT's website framework from 1.7 version to latest version to support more efficiently the administrator's task:

- Consistent with Web hosting
- Consistent with new mail system
- Able to add more requirement function and so on.

3 Overview of the System and stakeholders of the project

IRAM 2

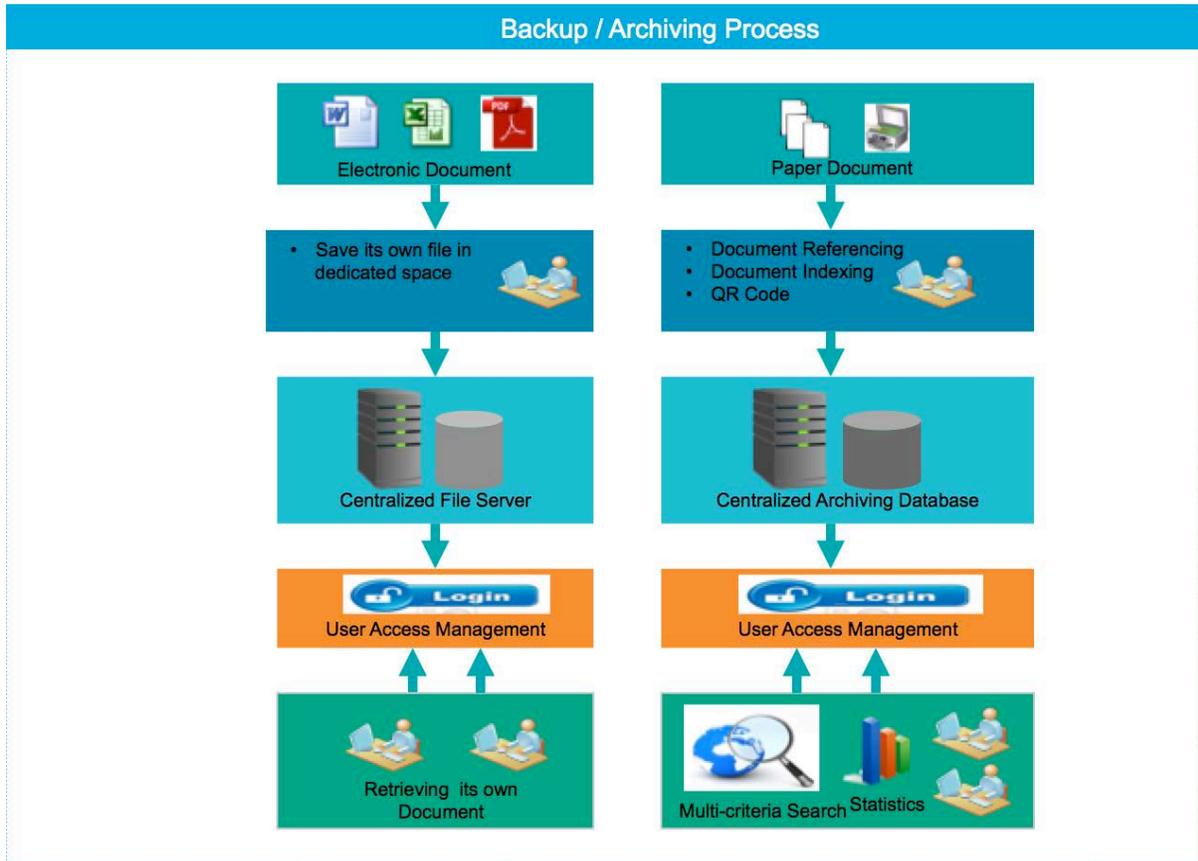


Contractor (*): can be DPWT for Routine by Labor

04/03/2016

Stakeholders	Role
• Division of Public Work & Transport (DPWT)	Operator
• Department of Finance	Operator
• Department of Road (DOR)	Monitor
• Minister level	Monitor
• Cabinet Office, Information & Communication Technology Division (ICT)	System Manager System Administrator

E-archive



Stakeholders	Role
<ul style="list-style-type: none"> Whole Departments, Institute, DWPT and Business Unit of MPWT (18 entities to this day) 	Operator, User
<ul style="list-style-type: none"> Cabinet Office 	System Manager
<ul style="list-style-type: none"> Information & Communication Technology Division(ICT) 	System Manager System Administrator

4 Scope of Services

The Consultant firm will provide the following services:

Assisting the ICT division of Cabinet Office, MPWT to prepare specification of appropriate hardware to support the systems

IRAM 2

- ✓ **Assisting the ICT division to prepare standard of operating procedures (SoP) for IRAM2**
 - Review existing maintenance and construction procedures and identify gap to be further addressed under IRAM2.
- ✓ **Prepare and consult with DPWT and DOR the Sop Making detailed Functional and Technical Specification and Development of IRAM2.**

It shall include following features:

 - Management of Bill of Quantities (work, task, MAC to do and cost) by DPWT
 - Management of Work, work progress and contract by DPWT
 - Management of Payment to contractors by DPWT
 - Monitoring of contract implementation including progress of work, environmental and social aspects, and quality of works, variation orders, contract price and payments at both individual contract and aggregate levels.
 - Reporting system with photos before and after work done with geo-spatial data.

 - Develop application for mobile phone for IRAM and IRAM2
 - System for backup and enhance data security
 - Friendly use for access to the system for both providing data and generate reports from the system.
 - Transfer IRAM 2 issues from DPWT to MPWT ICT
- ✓ **Carry out User Acceptance Test**
- ✓ **Establishing required documentation (User guide, Administrator manual)**
- ✓ **Assisting MPWT to prepare and conduct training plan related to new system**
- ✓ **Participating in Data Migration from old tool to IRAM 2 and inversely**
- ✓ **Assisting ICT for starting operation of IRAM 2**

E-Archive

- ✓ **Reviewing existing organization and process of archiving documents**
- Definition and Implementation of file backup and archiving policy of MPWT:**
- ✓ Write the detailed ToR and present it to DPWT and DOR for validation
- ✓ Which file can be backup
- ✓ Who can do
- ✓ Space allocated for backup
- ✓ Which files are archived - Classification of data to archive based on business rule of each business field (Finance, Road Maintenance, Construction...)
- ✓ How files are stored
- ✓ Where files are stored
- ✓ How long files are stored
- ✓ What are user archive access and activity rights
- ✓ **Detailed Functional and Technical Specification of the MPWT Backup-Archiving system:**
- It must include at least following features:
- ✓ File Classification
- ✓ Develop a mobile version for
- ✓ Policy based archiving
- ✓ File Tagging
- ✓ File Indexing
- ✓ On Line archiving
- ✓ File Version Control
- ✓ Web access
- ✓ User Access Management
- ✓ Logs of actions
- ✓ Statistics, reports
- ✓ Selection and adaptation of an open source archiving core system
- ✓ Development of additional functions in order to meet MPWT needs.

- ✓ **Selection and adaptation of the archiving core system**

- ✓ **Development of additional functions** (specific right access, specific file searching and viewing, specific report)
- ✓ **Doing Project Management and coordination**
- ✓ **Assisting MPWT for doing User Acceptance Test**
- ✓ **Establishing required documentation (User guide, Administrator manual)**
- ✓ **Assisting MPWT to prepare and conduct training plan related to new system**
- ✓ **Assisting MPWT for preparing archiving file**
- ✓ **Assisting ICT for starting operation of the new archiving system**

MPWT's website

- **Assisting the project owner to prepare a comprehensive Terms of Request:**
- Review existing and improve website to support e procurement, information disclosure and grievance mechanism.
- Review existing version and propose new version of the website.
- Review existing and design security and safety of the website.
- **Making detailed Functional and Technical Specification and Development of MPWT's website.**
- It shall include following features:**
- Design homepage to support main menu such as regular news, special news and Project's activities.
- Disclosure and Monitoring the process of project' s procurements and bidding
- Disclose procurements and bidding regulations
- Design grievance mechanism to allow citizen and departments of MPWT to interact and address complaints through MPWT's website
- **Develop a mobile version**
- **Doing Project Management and coordination**
- **Assisting MPWT for doing User Acceptance Test**

- **Establishing required documentation (User guide, Administrator manual)**
- **Assisting MPWT to prepare and conduct training plan related to new system**

5 Qualification Requirements for the Assignment

- The consultant firm is required to complete the project within a period of 36 months.

5.1 The following requirements shall apply to the firms to qualify for the assignment:

- Be a legal entity acceptable to stage organization of Lao PDR
- At least 15 years of general experience implementing management contracts worldwide and specifically in developing countries; experience in ASEAN is an advantage;
- At least 3 years of specific experience in providing similar services in developing countries, under WB project;
- Proven record on successful completion of at least 5 assignments related to ICT Development for government project ;

5.2 Required Characteristics of Proposed Staff Members

Profile	Tasks	Qualifications	Estimated Task Duration (In Man/Months)
Project Manager	<ul style="list-style-type: none"> - Establishing and updating Project Planning - Organizing and coordinating tasks - Organizing and conducting Project meetings - Monitoring project progress - Arbitrating and resolving problems that may arise during the project - Reporting status of the project to all concern stakeholders - Managing staff - Responsible for implementing the quality assurance plan - Responsible for the ownership of the new system by the users 	<ul style="list-style-type: none"> - Master degree in IT or relevant field - 15 years' experience - Experiences of Organizational method and IT International best practice - Experiences in management of web oriented project - Good understanding of Road Maintenance management and File Archiving - Good interpersonal and communication skills, ability to deal with people at all levels - Working experiences with Lao Ministry - Working experiences with Lao MPWT will be highly appreciated 	11

		<ul style="list-style-type: none"> - English proficiency - Working knowledge in Lao is desirable 	
Senior Business Analyst	<ul style="list-style-type: none"> - Visit various DPWT Studying existing local road maintenance management process and system - Collecting DPWT needs - Making proposal for harmonization of local road maintenance and file achieve process and norm - Making proposal for a new unique web system aimed at managing local road construction, maintenance file achieve and website - Writing General and detailed specifications - Assisting Senior IT Engineer in taking into account the specifications - Writing Test plan for UAT - Assisting the building phase and Validating the system implemented - Assisting MPWT to use the system during the UAT phase, collecting bug and dispatch to Senior IT Engineer for fixing. - Making recommendation on institutional arrangement in using the new system 	<ul style="list-style-type: none"> - Master Degree in IT or relevant field - At least 10 years' experience of studies and specifications in the field of Road maintenance; file archiving - Good IT skills - Experiences of high level design and specifications for web oriented system - Good interpersonal and communication skills, ability to deal with people at all levels - Working experiences with Lao Ministry - Working experiences with Lao MPWT will be highly appreciated - English proficiency - Working knowledge in Lao is desirable 	14
Senior IT Engineer	<ul style="list-style-type: none"> - Designing architecture of the system - Selecting and installing of appropriate web technologies, tools, database - Defining Chart graphic - Defining coding norm - Taking into account specifications and translate requirements into program specifications for coding - Writing and testing computer programs for assigned projects - Doing integration test - Ensuring quality assurance - Overseeing Software Development Engineer works - Training and assisting ICT for all IT issues 	<ul style="list-style-type: none"> - IT Master degree - 10 years' experience of design and build corporate web oriented system - Experiences of IT International best practice - Expert in new technologies (development tools, object oriented languages, database, network, security and encryption) - Good interpersonal and communication skills, ability to deal with people at all levels especially in Lao PDR working environment - Ability to work under pressure and assiduously to meet deadlines - Ability to work closely with management team and evaluate 	16

	<ul style="list-style-type: none"> - Writing User Guide, Administrator, Technical Manual - Preparing Test Platform and Production Platform - Installing software and integrating with existing systems. - Assisting MPWT during the UAT phase in fixing bug. 	<p>current systems and making decisions on future development</p> <ul style="list-style-type: none"> - Ability to teach or instruct co-workers - English proficiency - Working experiences with Lao PDR Administration. - Good practices of following languages and tools: Node JS, PostGre, Linux, GitHub, SQL 	
IT Engineer	<ul style="list-style-type: none"> - Writing and testing computer programs for assigned projects - Documenting code regularly during the development - Writing User Guide, Administrator, Technical Manual - Preparing Test Platform and Production Platform - Installing software and integrating with existing systems. 	<ul style="list-style-type: none"> - IT Master degree - At least 5 years' experience of designing and building web applications - Expert knowledge of object oriented languages, database, network, operating system - Expert knowledge of computer logic and flow-charting, computer program design methods and techniques - Ability to learn new programming languages quickly - Ability to write and debug complicated programs to meet required deadline - Good practices of following languages and tools: Node JS, PostGre, Linux, GitHub, SQL 	13

6 Deliverables

Component	Deliverables
IRAM 2	<ul style="list-style-type: none"> - Standard of operating procedures for IRAM2 - General Functional Description - Detailed Functional and Technical Description - New system components including programs installed, database installed, server configured - Test Plan - User guide - System Administrator Manual - System Technical Manual
E-ARCHIVE	<ul style="list-style-type: none"> - Description of existing organization and process of archiving documents - Archiving policy of MPWT - Functional and Technical Specification of the MPWT Backup-Archiving system - Archiving system meeting the needs of MPWT - Test Plan - User guide - System Administrator Manual - System Technical Manual
WEBSITE	<ul style="list-style-type: none"> - Updated Procedures or infrastructure of MPWT's website - General Functional Description - Detailed Functional and Technical Description - New system components including programs installed, database installed, server configured - Test Plan - User guide - System Administrator Manual - System Technical Manual

7 Implementation Schedule

It is anticipated that the services would commence in January, 2017

For the purposes of preparing a proposal for this Package, consultant is to adopt the following implementation schedule – *this is subject to change as project preparation and procurement proceed:*

Consultant's contract signed	Jul, 2017.
Consultant's commencement of services	Jul, 2017.
Consultant's services completed	Jul, 2019.

8 Reports

The Consultant will prepare the following reports and distribute them in the number of copies indicated below, to MPWT and WB: The format and content of each report will generally be acceptable to the MPWT and WB. For each report submitted an electronic copy will be provided. Electronic copies will be in the format used in their preparation will all links, formulas, and fields active. For all reports an executive summary will be included.

	MPWT	WB
Inception report	5	1
Quarterly Progress report (subsequent to Inception Report)	5	1
Project completion report	5	1

Inception Report

The Consultant shall, within 5 weeks of Commencement of Services, submit an Inception Report (5 copies to MPWT, and 1 copies each to WB) setting out the parameters of the consulting services including the program of works, the Consultant 's manning schedule, and an updated methodology for the services. The Report shall also give the progress of the work to-date and a schedule of certified payments, if any.

Progress Reports

The consultant shall, subsequent to the Inception Report, prepare and submit progress reports (5 copies to MPWT, and 1 copies each to WB), reflecting the progress of the work during the reporting period. One progress report will be prepared for every month.

Completion Report

At the end of the service prepare and submit a Completion (5 copies to MPWT and 1 copy to WB) in a manner satisfactory to MPWT including:

- a summary report of the activities the covered;

- the relative successes (problems) and lessons learned in the implementation of the Services;
- the extent to which the targets agreed have been achieved, together with a analysis of any variance from agreed targets;
- Detailed terms of reference, including budgets, schedules and implementation arrangements, for follow on work to these services.

9 Payment Schedules

Payment will be made according to the following schedule:

- 10% of the total contract price, as advance payment on commencement date, against bank guarantee for the same amount,
- 10% of the total contract price shall be paid on the submission of the inception report (four weeks from the commencement date)
- A payment of 20% of the total price, after delivery of Functional Detailed Specifications,
- A payment of 30% of the total price, after delivery of the systems,
- A payment of 10% of the total price, after User Acceptance Test,
- A payment of 10% of the total price, after Training provided.
- 10% of the contract price shall be paid on the submission of final report

10 Facilities and Equipment

MPWT will provide i) office space and basic office furniture including photocopier and telephone landline., ii) technical counterparts, and iii) basic office assistance and documents concern during stay in Laos.

The consultant will be responsible of other services that may be needed, including:

1. Translation of the reports in Lao language;
2. Local transport;
3. International telecommunication;
4. Organization of the workshops;
5. Other means required for performing the services.