MINISTRY OF COMMUNICATION TRANSPORT POST AND CONSTRUCTION

MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

Technical Paper No 2

SEACAP 3 Dissemination: Website Recommendations

Draft for Comment

SEACAP 03

UNPUBLISHED PROJECT REPORT

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MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

Technical Paper No 2

SEACAP 3 Dissemination: Website Recommendations

by
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Prepared for: Project Record: **SEACAP 03. Mainstreaming Appropriate Local Road Standards and Developing a Strategy for the MCTPC Research Capacity**

Approvals	
Project Manager	
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Abbreviations and Acronyms

ASP   Active Server Page
CD-ROM   Compact Disk – Read Only Memory
CMS   Content Management System
DFID   Department for International Development
FTP   File Transfer Protocol
GTKP   Global Transport Knowledge Partnership
IP   Internet Protocol
IT   Information Technology
LTEC   Lao Transport Engineering Consultant
MB   Megabyte
MCTPC   Ministry of Communication Transport Post and Construction
PHP   PHP: Hypertext Preprocessor
SEACAP   South East Asia Community Access Programme
SMS   Short Message Service
SSC   SEACAP Steering Committee
SSL   Secured Socket Layer
ToR   Terms of Reference
TRL   Transport Research Laboratory
UK   United Kingdom
URL   Universal Resource Locator
USA   United States of America
USD   United States Dollar
W3C   World Wide Web Consortium

Glossary

Bug: A computer bug is an error, flaw, mistake, failure, or fault in a computer program that prevents it from working correctly or produces an incorrect result. Bugs arise from mistakes and errors made by people, in either a program's source code or its design.

Content Management System (CMS): A computer application that utilises a database and webpage coding to manage and display dynamic content. These are installed on a web server and usually include a web-browser based administration interface to allow a webmaster to add content and configure the way this content is displayed to the end user.

Open Source Software: Computer software whose source code is available under a license (or arrangement such as the public domain) that permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. It is often developed in a public, collaborative manner. It is the most prominent example of open source development and often compared to user generated content.

Patch: A software patch is code written for a specific customer to address local functionality issues not currently fixed with the latest Minor Software Upgrade.

URL: A URL is the address of a page on the World Wide Web. It stands for Universal Resource Locator. URLs look something like this: http://www.google.com.

Spam: The use of mailing lists to blanket private email boxes with indiscriminate advertising messages. t..

Dynamic Content: Term applied to website content generated by the web server from a database. Dynamic content can change to meet the user's demands.

Executive Summary

Introduction

The SEACAP 3 project is tasked with reviewing and revising Low Volume Rural Road (LVRR) Standards and Specifications for Lao PDR. As part of this project a review of the possible mechanisms for disseminating the project's findings and reports widely within Laos and the surrounding region was undertaken. One of the mechanisms identified was a project website from which internet enabled users could access the available project documentation.

This document details the various website design, technology and hosting options for establishing a SEACAP website in Lao, including recommendations as to which options should be selected based on the capabilities and capacities of the local organizations.

Providing a sustainable website requires a number of technical inputs to establish the website. In addition, the correct mechanisms and institutional arrangements need to be put in place to ensure that the website is maintained and used in the longer term.

Providing a website requires the following technical inputs:

- A website domain name (e.g. www.seacap.laopdr.com)

- Web space on a web server for hosting the website content. A web server is a computer running a web server application that is connected to the internet. Often web space is leased from dedicated hosting companies for example BluePlanet in Laos.

- The website must be designed and coded to meet the requirements of the project. Websites can either be 'static' pages or contain 'dynamic' content that is generated from a database. Dynamic websites are technically more complicated, but they can be easily updated by adding content to the database through simple administration interface that can be used by non-technical staff. Updating static websites requires the web pages to be recoded each time a change is needed.

- An agreed mechanism and protocol for managing the maintenance and updating of the site must be agreed.

For a website to be successful and sustainable it must be institutionally, financially and socially sustainable.

Lao Context

Since the project aims to review and revise country specifications it is imperative that the government of Laos, specifically the MCTPC, undertake full ownership of the project outputs. The project team has been working closely with MCTPC and they (MCTPC) are keen to take on the role of hosting the website.

The purpose of the proposed website is first and foremost to disseminate SEACAP outputs and to assist in the guidance of the research outcomes into effective practice within a decentralising rural road management system.

At present the MCTPC lacks the necessary capacity to host a proposed rural road t website, although this is likely to change once they have revamped their web server and the ministries website itself. LTEC do not have their own web server, but they do have IT technicians available to carry out website maintenance and updates. Currently their website which is hosted by BluePlanet functions well.

Keeping costs to a minimum is important. However, there is a need to look beyond the scope of the project to ensure that the whole life cost of providing the website is minimised, if this entails a slightly higher up front costs then this will be desirable in the long-term. Funding for regular website maintenance may need to be sought depending on the final hosting arrangement.

It is desirable for the new website to be operational as soon as possible.

Recommendations

The principal function of the proposed website should be to impart locally relevant information to a local audience. Links to larger regional or international websites would provide additional benefit, but are not its prime aim.

Initially it is recommended that LTEC with support from SEACAP 3 arrange for the website to be hosted with BluePlanet. This arrangement will enable rapid development of the site and easy updating for the remainder of the SEACAP3 project. LTEC should be custodians of the site until the MCTPC are in a position to host the site on their own server, at which point the site will transfer to the MCTPC server and future management of the site agreed between LTEC, MCTPC and the SSC. Due to the high costs charged by BluePlanet, large documents could be hosted away from the main site on free resources such as the transport-links website this will significantly reduce the required space and the annual charges.

For the design, a dynamic content management system (CMS) solution should be deployed as this meets many of the website criteria, being that it is easily updatable, configurable, and maintainable, with minimal cost and contains many desirable features and customizations. If a CMS solution is deemed to be too challenging technically by the project team then a series of linked static pages could be used although this will make future updating more difficult.

The IT department at LTEC should be charged with maintaining the site until such a time as the MCTPC are ready to take over the management and maintenance role. As a result, it may be necessary for the LTEC team to continue maintaining the website beyond the close of the SEACAP 3 project. This would necessitate a small additional maintenance contract with LTEC based on one person's time for three days per month. There should be no additional hosting charges as these will have been paid for upfront.

Conclusion

The key requirements of the SEACAP 3 project are to draft LVRR Standards and Specifications and assist the MCTPC in their dissemination and mainstreaming. A Lao based locally run Rural Road website with a significant information exchange capacity for use at province and district levels should play a major role in achieving this.

The recommendations given in this report need to be taken into consideration as soon as possible so that development of an appropriate Lao PDR SEACAP or Rural Road website can begin in earnest. If these recommendations are taken forward in full, further work will be required to successfully transfer the website to the MCTPC web server when it is operational. This almost certainly will fall outside of the existing project's timeframe. Should LTEC and MCTPC require technical assistance during the later transfer of the website to MCTPC, this can be provided by TRL.

1.   Introduction

The SEACAP 3 project is tasked with reviewing and revising Low Volume Rural Road (LVRR) Standards and Specifications for Lao PDR. As part of this project a review of the possible mechanisms for disseminating the project's findings and reports widely within Laos and the surrounding region was undertaken. One of the mechanisms identified was a website from which internet enabled users could access and comment upon the available project documentation.

A rural road oriented website could also include materials produced under a number of other SEACAP; projects that are also based in Laos as well as materials from other related projects not directly part of the SEACAP programme, for example :

- SEACAP 21 (Slope Stabilisation) – Scott Wilson

- SEACAP 20 (Local Equipment) – IT Transport

- SEACAP 17 (Road Trials) – Roughtons

- LSRPS- III Basic Access Component – SIDA

- Maintenance Management – SweRoad

- Village Based Maintenance - KfW

This document details the various website design, technology and hosting options for establishing a website in Laos, including recommendations as to which options should be selected based on the capabilities and capacities of the available local organisations i.e. LTEC and MCTPC. Local ownership is vitally important for sustainability; therefore the recommendations herein are not intended to be absolute but are presented as basis for discussion on the way forward.. Ultimately it may fall to the SEACAP Coordination Committee or the DoR as the key stakeholders to make the final decision as to the way forward after the SEACAP 3 project finishes in February 2008.

For a dissemination strategy to be fully effective other mechanisms should also be explored, including the use of other electronic media, multimedia and the distribution of documents and reports in hardcopy. Some commentary on other dissemination mechanisms is provided in Annex A.

2.   Background

Providing a sustainable website requires a number of technical inputs that are essential to its effective establishment. In addition, the correct mechanisms and institutional arrangements need to be put in place to ensure that the website is maintained and used in the longer term.

Providing a website requires the following technical inputs:

- For the website to be fully autonomous, a website name (domain name) must be registered. For example, the website www.google.com has the domain name 'google.com'. If the website is affiliated with an existing website then it is possible for it to be hosted as a sub-site without registering a unique domain name.

- A physical host must be found for the website files. This will be a computer running a web server application that is permanently connected to the internet. It will need to be

maintained by an organisation and/or individual(s) who will be responsible for applying any patches and upgrades to the server, its operating system and applications.

▪ The website database and/or code must be created. For an interactive website, with regularly changing content (dynamic content) it is desirable to build the site around a database, and code the web pages to manipulate and display the data contained within the database in an attractive format. Increasingly this is achieved by the use of free open source applications called content management systems (CMS). Alternatively a static website can be built that does not require a database to function.

▪ A mechanism for managing the site contents must be agreed upon and then implemented once the site has been launched. A website maintenance procedure will need to be agreed, so that a person or group of people are responsible for updating the website, responding to emails from users, making backups and other general tasks related to keeping the website operational.

2.1   Website Sustainability

In order for the website to be sustainable three key 'dimensions' of sustainability must be in place, if one is missing the website will 'fall' as illustrated by the three legged stool analogy shown in Figure 1.
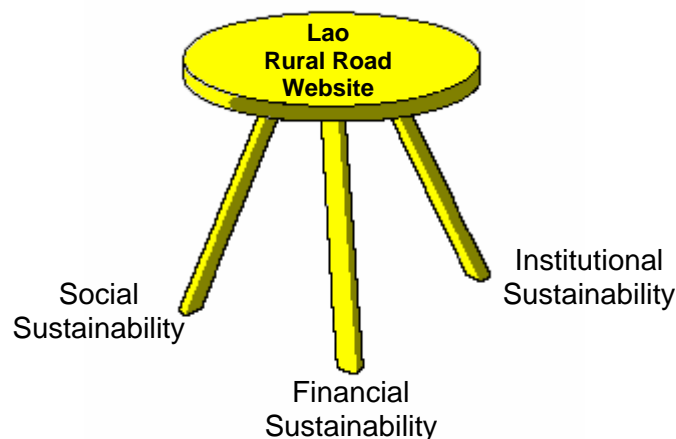

Figure 1: Dimensions of Sustainability Required for a Sustainable Website

Institutional Sustainability
The organisation responsible for maintaining the website must have sufficient human resources to assign to the task of maintaining the website. These resources must be allowed to have dedicated time set aside for maintenance activities, which will most likely be viewed as secondary to more pressing tasks. Maintenance activities should be carried out and understood by a small team of people, so that no interruption in work occurs should someone leave the institution or become incapacitated. Therefore the responsible institution must be committed to the task, have a stable staff group and a sound management structure.

Financial Sustainability
Operating and maintaining a website requires finance. There are fixed annual costs such as the registration of the domain name and hosting costs as well as variable costs which need to

be budgeted for. These arise from possible additional charges from the hosting company based on the amount of information being downloaded, as well as the cost of employing administrators, translators and IT specialists to establish the website and maintain and update it. Therefore sustainable finance is crucially important.

Social Sustainability
The purpose of the proposed website is first and foremost to disseminate SEACAP outputs and to assist in the guidance of the research outcomes into effective practice within a decentralising rural road management system. . However, for it to be a useful resource in the future it will need to attract and retain an audience. Maintaining a readership is often challenging, especially with a website which contains highly specialised content. Arguably the most important thing is to provide high quality content in a format the readership wants and couple this with tools whereby the readership can engage with each other in discussion. This latter objective can be accomplished through a questions and answers facility or through use of an online forum.

3.   Website Provision Requirements and Options

The SEACAP initiative in Lao PDR in general, and SEACAP 3 in particular have certain clear requirements for the website which will need to be met by whatever decisions are taken for its design and maintenance. These requirements are outlined in this section and a number of appropriate options are discussed.

3.1   Hosting and Domain Name

It is vitally important that the mechanisms for hosting and maintaining the website are sustainable in the long-term, after the SEACAP program in Laos has come to an end. A variety of suitable hosting options are available for the website, with corresponding advantages and disadvantages, shown in Table 3-1.

Hosting	Advantages	Disadvantages
1. MCTPC Have their own dedicated web server and their own domain, but their static website is currently unreliable and still under construction. A project to improve the ministry website using a Linux web server and database is due to start shortly	Key stakeholder in the project Has it's own servers, domain name and allocated IP addresses Non-commercial Low additional cost	Possible restrictions on access Possible restrictions on website content Existing MCTPC website unreliable
2. BluePlanet (LTEC) LTEC do not have their own dedicated server for their website. They use a Lao based hosting company (BluePlanet). The LTEC website has a sub domain under the laopdr top level domain. Their website is comprised of static html pages.	Key stakeholder in SEACAPs 3 and 17 Access for updating easier as project office based in LTEC.	Recurrent annual hosting costs
3. National University of Laos The university has its own website, which works well. Whether this is hosted by the university itself or an external company is not known.	They already have a website and IT team with the necessary skills Likely to be inexpensive (possibly free)	They aren't one of the main project stakeholders Not directly controllable by the MCTPC
4. New dedicated server SEACAP could purchase a computer to use as a dedicated web server.	Ultimate flexibility	Expensive Difficult to setup without experience Recurrent server maintenance is an issue

Table 3-1: Assessment of hosting options for a Lao rural road oriented website

3.2   Website Design

The design of the website should facilitate easy administration, ideally by a non-technical person, but if this proves to be prohibitively difficult then an administration of the website by a technically competent webmaster will be sufficient.

The contents of the website may include but not be limited to:

- Project Reports
- Presentations
- Practical guidance on research into practice
- Photographs
- Articles
- Notification of upcoming workshops and events
- Project news and progress
- Links to other relevant sources of information
- Contact details of project coordinators

The design should function adequately on the major web browser applications. These include Internet Explorer, Mozilla Firefox, Opera and Apple Safari. In an ideal world all of these browsers should be World Wide Web Consortium (W3C) standards compliant, but unfortunately vendors sometimes add features to their browsers which contravene these standards. Microsoft's Internet Explorer is arguably the worst proponent of this. The result is that some web pages might render perfectly in one browser whilst exhibiting formatting problems in another. Keeping the web pages relatively simple will avoid most of these problems, but formatting and functionality should still be checked using the browsers listed above.

Ideally the site would support both Lao and English languages for ease of use by the target audience. Implementing this can to be difficult as it requires documents to be translated and Lao writing requires significantly more page space compared with English. Some CMS applications have language packs that can be installed to modify the language on buttons and menu items at the users' request, but not the actual website content

Technical Design
The most important technical consideration will be whether the site is designed to be static or dynamic and whether or not a content management system will be used to build the website. The implications of each of these options are discussed in more detail below.

- **Option 1**. Static html. - The current LTEC website utilises static pages of html code. This is the simplest form of language used in the development of web-pages. Their website is well laid out utilising a number of frames and navigation buttons, demonstrating that the LTEC IT department are highly proficient in this type of web development. There is no doubt that the proposed website could be designed in a similar fashion to the existing LTEC website and be perfectly usable as an information resource. The only downside of using static html is that updates to the site will need to be carried out by someone who is familiar with html.

- **Option 2**. Dynamic using CMS. - There are a number of free open source content management systems available, which can greatly speed up the development of a website by providing a basic layout engine for displaying dynamic content that can be customized and configured through a web interface. The big advantage of this approach is that it speeds up development time as the database structure and the basic page layouts come pre-packaged. However there are usually a considerable number of adjustments and changes that have to be made to the basic designs to obtain the desired end result. Setting up a CMS can be technically demanding, however once the infrastructure is in place updating content becomes relatively straight forward even for non technical staff.

- **Option 3**. Dynamic, build from scratch - the third option is to build a specific database and web-code. Obviously this provides the most flexible method, however development

time is considerable and a high level of expertise is required to develop such a site. This does not match well with the timescale and requirements of the SEACAP 3 project.

3.3   Maintenance, Monitoring and Security

Ensuring the availability of the website and its contents is vitally important. Users expect to have access to the information they want, when they want and failure to deliver on this can disenchant users and result in a feeling of negativity towards the project as a whole. There are a number of measures that can be used to ensure the availability of the website; these are discussed in more detail below

1. Local mirroring: The web-server containing the data for the site should be mirrored locally to protect against hard drive failure. Hard drive mirroring can be easily accomplished through the use of RAID arrays and all hosting companies will almost certainly be employing some form of mirroring as standard. If an option is selected whereby the project elects to purchase its own dedicated server then it will be important to ensure that this includes support for RAID arrays. Local mirroring will not protect against other hardware failures, power cuts, and traffic routing problems

2. Remote mirroring: In the event the web server becomes unavailable to service requests it is possible to configure a remote mirror as a fallback. For example, the Lao SEACAP website could be mirrored at TRL in the UK so that if the primary server based in Lao becomes unavailable for whatever reason requests are automatically redirected to the mirror site at TRL where, assuming the TRL mirror is operational, they can be serviced. Setting up a remote mirror requires three main steps.

   a. Firstly it is necessary to synchronise the files and directories on the primary server to the remote mirror. This can be accomplished using a small program such as rsync (http://samba.anu.edu.au/rsync) that can be scheduled to check for changes in the files and directories on the primary server at a regular interval and then send the updated files to the copy on the remote mirror. Once this has been setup it does not require any user intervention to maintain the backup.

   b. Secondly if the website is utilising a database for dynamic content it will be necessary to replicate this database on the remote mirror using database replication. The process for this will depend on the database package used.

   c. Finally the Domain Name Server (DNS) that resolves the domain name into the servers actual IP address will need to be configured so that it has a failover state whereby if the primary server is unavailable it switches over to the mirror.

3.4   Additional items for good practice

Ideally a website statistics package would be a useful tool to monitor site traffic and usage patterns. Monitoring the number, geographic location and duration of visits to a website can often be a useful measure as to how effective the website has been at reaching its intended audience. There are simple to install and configure statistics packages such as the free AWStats (http://awstats.sourceforge.net) that can provide this functionality. If the CMS route is chosen then these often come with a stats package built in making the implementation trivial.

4.   Lao Context

The recommendations given in the following Section 5 have been reached based on the environment in Laos. In formulating these recommendations a number of issues were taken into consideration, these are described in full below.

4.1   Function

The key requirements of the SEACAP 3 project are to draft LVRR Standards and Specifications and assist the MCTPC in their dissemination and mainstreaming. A Lao based locally run Rural Road website with a significant information exchange capacity for use at province and district levels should play a major role in achieving this. The principal function of the proposed website should be to impart locally relevant information to a local audience. Links to larger regional or international websites would provide additional benefit, but are not its prime aim.

4.2   Ownership

Since the project aims to review and revise country specifications it is imperative that the government of Laos, specifically the MCTPC, undertake full ownership of the project outputs. The project team has been working closely with MCTPC and they (MCTPC) are keen to take on the role of hosting the website. Hosting the website elsewhere could undermine this vitally important relationship.

4.3   Capacity

At present the MCTPC lacks the necessary capacity to host a proposed rural roads Laos website, although this is likely to change once they have revamped their web server and the ministries website itself. LTEC do not have their own web server, but they do have IT technicians available to carry out website maintenance and updates. Currently their website which is hosted by BluePlanet functions well. Both LTEC and MCTPC's websites are static and both would benefit from some support and capacity building.

4.4   Finance

Financial resources are in short supply, so keeping costs to a minimum is important. However, there is a need to look beyond the scope of the project to ensure that the whole life cost of providing the website is minimised, if this entails a slightly higher up front costs then this will be desirable in the long-term. Funding for regular website maintenance may need to be sought depending on the final hosting arrangement.

4.5   Timetable

The SEACAP3 project finishes in February 2008. The website will need to be operational much earlier than this so that it can house the project's outputs and any operational issues are addressed prior to the end of the project. It is suggested that the website be operational no later than the end of September 2007.

5.   Recommendations

5.1   Hosting

Initially it is recommended that LTEC with support from SEACAP 3 arrange for the website to be hosted with BluePlanet under a new second level domain. Annex B gives more details of BluePlanet's charges as of August 2007. This hosting arrangement will enable rapid development of the site and easy updating for the remainder of the SEACAP 3 project. LTEC should be custodians of the site until the MCTPC are in a position to host the site on their own server, at which point the site will transfer to the MCTPC server and future management of the site agreed between LTEC, MCTPC and the SSC. Due to the high costs charged by BluePlanet, large documents could be hosted away from the main site on free resources such as the transport-links website this will significantly reduce the required space and the annual charges.

Implementing a remote mirror of the site (possibly on one of TRL's servers although this will need to be cleared with TRL's IT and Software Bureau) should be considered.

5.2   Website Design

A CMS solution should be deployed as this meets many of the website criteria, being that it is easily updatable, configurable, maintainable, zero cost and contains many desirable features and customizations such as a statistics package and forum code. Designing a dynamic site from scratch would be a considerable technical challenge and one that is likely to produce little benefit compared to a CMS solution. If a CMS solution is deemed to be too challenging technically by the project team then a series of linked static pages could be used although this will make future updating more difficult.

5.3   Maintenance

The IT department at LTEC should be charged with maintaining the site until such a time as the MCTPC are ready to take over the management and maintenance role. As a result, it may be necessary for the LTEC team to continue maintaining the website beyond the close of the SEACAP 3 project. This would necessitate a small additional maintenance contract with LTEC based on one person's time for three days per month. There should be no additional hosting charges, as these will have been paid for upfront.

6.   Additional Considerations

6.1   SEACAP Regional Website

The SEACAP programme covers four countries and has already resulted in the publication of many resources online. There is an argument that the programme as a whole should have a centralised website where all the information across the region can be made available in one place. This concept holds merit, but it would be unwise to replace national websites where they are functioning successfully as these are important in engendering ownership amongst local stakeholders. A new regional website could be established that ties together the information from the country based sites or alternatively existing online knowledge brokers such as gTKP or transport-links could be used to perform this function. Contact with either or both of these websites should be made to move this forward.

6.2   Document Formats, Interoperability and Data Persistence

Currently there is an active debate in the world of information management surrounding the issue of electronic document formats, interoperability between different platforms and the longevity of so called 'closed' or proprietary document standards such as those used by Microsoft Office. Many governments are now considering alternative 'open' document

standards for their documentation to ensure that the data will be accessible for the foreseeable future and by users of diverse operating systems and applications. Adobe's Portable Document Format or pdf is one such 'open' standard and is ideally suited for use on the Laos SEACAP website.

Nevertheless it is recognized that most users in Laos will be using Microsoft Windows® and the Microsoft Office suite of applications so documents should be made available in this proprietary format alongside the pdf versions where appropriate.

7.   Conclusion

The recommendations given in this report need to be taken into consideration as soon as possible so that development of an appropriate Lao PDR SEACAP or Rural Road website can begin in earnest. If these recommendations are taken forward in full, further work will be required to successfully transfer the website to the MCTPC web server when it is operational. This almost certainly will fall outside of the existing project's timeframe. Should LTEC and MCTPC require technical assistance during the transfer, this can be provided by TRL.

Annex A. Other Dissemination Mechanisms

The website should be viewed as one component of a wider dissemination strategy. Websites are very good at providing up to date information to a dispersed group of users as is the case here, however relying on a website as a sole dissemination mechanism runs the risk of marginalising or completely ignoring a proportion of the intended audience. By its very nature access to a website requires a computer and an internet connection and in some provinces access may be non-existent, slow or intermittent making the download of reports and documentation difficult or in some cases impossible. Even in cases where computers are readily available and connection quality is good end users may still wish to read a printed version and availability of printers and their consumables may provide an additional barrier in these cases. Therefore it is recommended that the outputs from the project are provided in hardcopy and made available on request. Additionally a CDROM digest of all the project outputs could be produced on a print-on-demand basis that ensures that remote users with computers have a physical archive of all the documentation to use for reference. Finally an email group could be established to allow practitioners to discuss any queries, suggestions and experiences they may have.

A-1   Email

The use of email as a dissemination and communication tool is widespread. Many companies and institutions email regular bulletins and announcements to a list of email contacts, keeping them up-to-date with recent developments. This practice is not to be confused with 'spam' or unsolicited emails which are a constant annoyance to email users.

The advantage of disseminating via email compared to a website is that it has a greater chance of reaching the target audience, since most people check their email regularly even if they do not visit websites. Additionally people who do not have their own computer or internet connection will go to Internet cafes in order to check their email. All of the 17 provincial offices in Laos have a computer and access to the internet, so establishing email contact with a group of core users should be achievable. Unfortunately a large number of district offices do not have internet access available to them.

The emails themselves can be set out in an attractive way including small graphics to make them visually appealing. Documents can be attached to the emails, but often it is better to simply email a link to the document on the website as this has the benefit of not using up too much of the users mailbox capacity.

A more powerful use of email would be to establish an electronic mailing discussion list. Setting up the list can be achieved for free using the Yahoo Groups or Google Groups services. A discussion mailing list enables subscribers to post emails to all the other members of the list. This way open discussions can be held in order to resolve queries, air suggestions or share experiences. All of the posts are also captured in a digest that can be viewed on the internet, providing a useful resource of information when the time comes to update the specifications and standards documentation in the future.

A-2   CD ROM

Most computers are now fitted with CD-ROM or DVD-ROM drives, so even if they are not connected to the Internet a CD-ROM can be used to disseminate information electronically. The big advantage of using CD-ROMs is their large storage capacity. Each disk can hold upwards of 640MB of information, making them ideal for the dissemination of large files or groups of large files which would otherwise take a long time to download from the Internet or be prohibitively expensive to produce, store and post in hardcopy format. A CD-ROM can

also contain multimedia content such as training videos and presentations, making them a powerful and cheap dissemination tool.

A-3   Hardcopy

Professionally produced paper copies of documents still have a significant role to play in the overall dissemination strategy. A bound report can be easily stored for future reference or presented during meetings and discussions as credible evidence to backup a well reasoned argument. Loose leaf pages printed from the internet or photocopied from a report don't convey the right message when trying to convince decision makers to change their policies. The obvious disadvantage of hardcopy production and distribution is cost. It can be prohibitively expensive to produce documents on-demand, or even to produce batches and store them. Documents have to be placed in to envelopes, addressed and posted. This can require significant labour inputs.

Financing of hardcopy dissemination can be achieved by charging for the documents. Developing a business model for this is difficult since demand is largely unknown until the service has been established. In the case of the SEACAP 3 project one of the outputs will be a new set of standards for low volume rural roads in Laos, so there will certainly be a number of documents that are made available in hardcopy.

A-4   Creating a Coordinated Dissemination Strategy

For a successful dissemination strategy it is important to understand the role of each of the dissemination mechanisms and apply them in the most appropriate manner. Additionally it is important to ensure that the overall strategy is co-ordinated, so that the different dissemination pathways interlink and work together. For example, when sending out hardcopies, consider including the URL of the Lao SEACAP website on the cover (possibly on a self adhesive label), provide links on CD-ROMs that link to pages on the website or open up email forms, and possibly enable a mechanism on the website for the online ordering of hard copies. By linking the different mechanisms together into a coherent package the target audience are free to choose the delivery mechanism that is best suited to their needs.

In addition it is advisable to undertake some form of advertising to raise awareness of the services on offer. This could take the form of a simple leaflet or an advert in a widely read trade journal or newspaper.

Annex B. Hosting costs

Working on the assumption that LTEC will be responsible for the website initially it is logical to use the same hosting company (BluePlanet) that hosts their website for the SEACAP Laos website.   A full breakdown of their services can be found on their website (http://www.blueplanet.laopdr.com/productsframeset.htm). It is worth noting that the costs are comparatively high compared to UK and USA based hosting companies and whilst there are cheaper alternatives available none appear to have the level of professionalism and track record that BluePlanet have. The LTEC website has been successfully hosted by them for two years and feedback from LTEC staff on the service provided has been positive.

The BluePlanet cost for registering a top level domain is very high there is an initial setup fee of $100USD and an annual fee of $40USD. They do offer a cheaper Sub Domain service and this makes far more financial sense as it carries a setup fee of $10USD and an annual fee of $25. The resulting website address using the Sub Domain service will be something in the format of www.*seacap*.laopdr.com where the '*seacap*' portion of this address can be chosen by the project team or SEACAP Coordinating Committee.

Web hosting costs are also high with an annual charge of $12USD per MB per year. Since the site will be hosting a number of documents and reports it is estimated that something of the order of 20MB of website space will be required. This could be significantly reduced by hosting documents offsite at www.transport-links.org and linking to them from the SEACAP website.

A summary of the costs for is shown in Table B-1. Note that the costs incurred in the first year will be the annual cost and setup cost combined.

Item	Setup Cost (USD)	Annual Cost (USD)
Domain Name Registration and Leasing	$10	$25
Web Hosting (CMS including all project documents) **OR…**	N/A	$360 **(est. on 30MB of space)**
Web Hosting (CMS with project documents hosted off site) **OR…**		$120 **(est. on 10MB of space)**
Web Hosting (Static with project documents hosted off site)		$60 **(est. on 5MB of space)**

Table B- 1. Blue Planet Domain Name Registration and Web Hosting Costs