STRIVE

Strengthening
Implementation of
Visayas
Education

FRAMEWORK FOR LRMDS

VERSION: FINAL V1.0.

DATE: AUGUST 2008

Amendment History

Date	Issue	Comment	Person
2 July 2008	V0.4	Initial DRAFT for comment	S Atkins
3 July 2008	V0.5	2nd Draft	S Atkins
10 July 2008	V0.6	3rd DRAFT addition of tables	S Atkins
11 July 2008	V0.7	DRAFT for presentation National Scoping Workshop	S.Atkins, C Lecaoraz, R Cruz
24 July 2008	V0.8	Draft including outputs from National Scoping and feedback from T& D – STRIVE C2	S Atkins
6 August 2008	V0.9	Consultation R6, 7, 8 and include STRIVE ICT infrastructure for IEMIS & LRMDS	S Atkins
11 August 2008	V0.10	Updated Appendix 4 – IT infrastructure	R. Cruz S Atkins
20 August 2008	V0.11	Final Draft for distribution to NLS-TWG Update includes Final ICT Workplan STRIVE Base level set up for ICT ready LRMDS	S.Atkins
25 August	V1.0	Final Draft for distribution to STRIVE, EDPITAF and NLS-TWG	SAtkins CLecaroz

Approvals

Name/Position	Signature	Date

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Glossary of Terms

ADM	Alternative Delivery Mode
AIP	Annual Implementation Plan
ALS	Alternative Learning System
BEAM,	Basic Education assistance for Mindanao
BESRA	Basic Education Sector Reform Agenda
BALS	Bureau Alternative Learning Systems
BEE	Bureau Elementary Education
BSE	Bureau Secondary Education
CLC	Community Learning Centre
DEPD	Division Education Development Plan
DepED	Philippines Department of Education
EDPITAF	Education Projects Implementation Task Force
HRD	Human Resources Development
ICT	Information Communication Technology
ICTU	Information Communication Technology Unit
IMCS	Instructional Materials Commission
IM_SS	Integrated Multi-Layered SBM System (IM_SS)
INSET	In-Service Education and Training
IP	Indigenous People
IPR	Intellectual Property Rights
LR	Learning Resource
LRM	Learning Resource Materials
LRMDS	Learning Resource Management and Development System
MOOE	Maintenance and Other Operating Expenses
NCBTS	National Competency Based Teacher Standards
NEAP	National Educators' Academy of the Philippines
PASMEP	Philippines-Australia Science and Mathematics Education Project
PPP	Public Private Partnerships
PROBE	Philippines- Australia Project in Basic Education
PRODED	Program for Decentralised Education
QA	Quality Assurance
REDP	Regional Education Development Plan
SBM	School-Based Management
SIP	School Implementation Plan
SEDIP	Secondary Education Development Improvement Project
SRC	School Report Card

STRIVE	Strengthening the Implementation of Basic Education in selected Provinces in the Visayas
TEEP	Third Elementary Education Project
TLE	Technology and Livelihood Education
TR	Teacher Resource
NGO	Non Government Organiszation
LGU or LGA	Local Government Unit or Local Government Authority

Framework for Learning Resource Management and Development System for Regions 6, 7, 8

1 Introduction

This Framework for Learning Resource Management and Development System (LRMDS) describes the standards, processes and guidelines of the systems developed to support implementation by DepED Central Office, Regions, Divisions and Schools initially within the Visayas regions VI, VII and VIII.

A major objective of the system is to provide a technical basis for assessing, acquiring, adapting, developing, producing and distributing quality learning and teaching resource materials for students and instructional support materials for teachers.

The Framework development is a continuing process informed by the collaborative work among the central and regional/division and school personnel on ways of improving access to quality instructional and learning materials. The evolving design, development and implementation of the LRMDS is a critical contributor to the successful implementation of the Basic Education Sector Reform Agenda (BESRA).

This Framework for Learning Resource Management and Development Systems describes the mechanisms to support coordinated and integrated access to quality resources by the DepED Regions, Divisions and Districts and Cluster/School levels. The need for such systems was identified through the research conducted during STRIVE Phase I during 2007 in Divisions 7 and 8 to identify the levels of access to quality learning teaching resources by Divisions and schools.

Research findings showed that the desired 1:1 textbook: student ratio did not exist in most schools surveyed, most teachers had no teacher manuals, teachers were having to use their own money to augment the instructional resources in the schools, schools which lose their textbook collection because of calamities do not get replacements and that few supplementary materials are available at the schools

Baseline studies for Stage II of STRIVE also identified highly variable distribution of resources across all levels and in most subject areas, (English, Mathematics, Science, ALS and TLE). The lack of resources was also highly variable across divisions sampled. Again, there was no instance within the study sites of a 1:1 ratio for textbooks. The research also identified the current procurement process for textbooks and supplementary materials as being problematic. That is, when the bidding process fails to identify qualifying bidders the process needs to be recommenced and during which time no resources are available except what the Division or schools may purchase independently using local funds or donations. (Baseline Research STRIVE II 2008)

1.1 Scope of Framework

The Framework for LRMDS describes for each system what is required at each level within the Education system to improve access to learning teaching and professional development resources in relation to each of the LRMD systems. That is, the key functions, processes, workflows for quality management and proposes organisational structures for sustainable implementation and management. Decisions as to how the functions are provided are the responsibility of the Region.

1.2 Vision for LRMDS

The provision of adaptive learning resource systems, fully functioning at the region and division levels, effectively developing and distributing adequate and varied learning resources to teachers and learners from both the formal Basic Education and Alternative Learning systems.

1.3 Objectives of LRMDS

The LRMDS is designed to achieve the following objectives:

1. Strengthened Learning Resource development and distribution systems at Regional and Divisional levels.
2. Improvement of instructional and learning materials system through support for the assessment, acquisition, adaptation, development, production and distribution of teaching/learning materials to schools.
3. Digitized available student learning materials (including from PASMEP, PROBE, PRODED, BEAM, TEEP, SEDIP, etc), particularly for reading in the early grades and TLE programs, English, Science and Mathematics in other grades, ADM and ALS.
4. Enhanced provisions of quality instructional and learning materials, particularly in reading in early grades and TLE, English, Science and Mathematics in other grades.
5. Modified and enhanced instructional and learning materials for implementing Alternative Delivery Modes and Learning Systems.
6. Improved development and utilisation of Quality Assurance (including Monitoring and Evaluation) systems for provision and utilisation of learning resources.
7. Development of ICT-enabled solutions in the three regions, integrated with national systems, to support the strengthening of the learning resource support systems.

1.4 Education principles

To achieve the objective of enhanced provisions of quality instructional and learning materials, particularly in reading in early grades and TLE, English, Science and Mathematics in other grades, the procurement, production and redevelopment of learning resources (LR), teaching resources (TR) and professional development materials (PDM) is informed by the following principles for 21st century quality education for all and in support of the *Millenium Development Goal 2: (MDG2)* http://www.un.org/millenniumgoals/ and Basic Education Sector Reform Agenda (BESRA).

Inclusivity

The principle of inclusivity requires that selection of resources for cataloguing, redevelopment and reproduction targets resources that are comprehensive and support basic education (elementary, secondary) and non-formal education (ALS) and alternative modes of delivery (ADM). A major priority is to provide for differentiated learning and access needs of all target users. In particular, catering for the needs of learners in multilevel or multigrade classrooms.

The LRMDS catalogue offers choice and flexibility as appropriate to meet the needs of individual aptitudes, abilities, learning styles, and interests. Student learning resources will be structured to scaffold student learning. Professional Development materials and those targeting non-formal education and alternative modes of delivery will apply best practice learning and instructional design based on evidence based research in distance education and adult learning.

Learner-centred

The learner-centred principle requires that student learning resources are activity-based rather than lecture-based. They are designed and or combined with teacher resources to be used by groups of students as in cooperative learning as well as providing for individual learning. The resources are designed to promote use of hands-on activities and an applied approach to learning within the classroom. Learning activities are designed to encourage learners to question, think, react, reflect, and decide in ways that develop critical-thinking and decision-making skills.

Access

The principle of access requires that all learning resources (LR), teaching resources (TR) and professional development materials (PDM) catalogued and or accessed via LRMDS are:

- demonstrating best pedagogical and andragogical practice
- relevant to the needs and expectations of users,
- founded on Filipino values
- accessible to the range of technology available to users,
- usable and functional across highly varied educational settings,
- supportive of alternative modes of delivery, and;
- supportive of students at risk.

Engagement in learning

The principle of engagement requires that redeveloped resources are not merely digitized textbooks but that the design of the learning activity is at the appropriate level (age and academic) for the users. The learning experiences need to be challenging enough but based on a good estimate of the previous understanding of the concepts so that all learners in the profile can extend their understanding.

Successful learning

The principle of successful learning requires that the learning objectives and required learning outcomes are made explicit. Good teaching and learning is underpinned by the learner making meaning of the learning opportunity: knowing what they know and what they don't know. This is achieved by the learning objectives and competencies being made explicit to the learner. Also, wherever possible, the activities include assessments to assist the learner and the teacher to evaluate level and depth of understanding, learning progress and learning needs.

2 SCOPE of LRMDS

The LRMDS system provides access to quality resources from the Regions, Divisions, Cluster/School level: including,

- information on quantity and quality and location of textbooks and supplementary materials, and cultural expertise,
- access to learning, teaching and professional development resources in digital format and locate resources in print format and hard copy,
- standards, specifications and guidelines for:
    - assessing & evaluating,
    - acquiring & harvesting,
    - modification, development and production,
    - storage and maintenance, and;
    - publication and delivery.

A system for quality assurance including continuous monitoring and evaluation will be implemented for each system and at each level to ensure increased access to and use of relevant and improved teaching and learning resources.

Access to LRMDS is limited to schools accredited by DepED, authorized DepED offices (CO, DO, RO) and attached agencies.

3 What is the nature of LRMDS resources?

The LRMDS is a web based catalogue and repository of learning, teaching and professional development resources. It functions as a clearinghouse. That is, the LRMDS provides information about the location of resources (hardcopy and softcopy) and allows users of the system to access directly digitized versions of resources that are published and stored within the LRMDS repository. It is also a quality assurance system providing support to DepED Regions, Divisions and Schools in the selection and acquisition of quality digital and non-digital resources in response to identified local educational needs.

3.1 Resource types

Learning Resources (LRs) are any digital or non-digital educational resource with a learning purpose. These resources are designed to be used directly by the student learners and or integrated into teacher developed lesson plans.

Teaching Resources (TRs) are any educational resource digital or non-digital that supports teachers in curriculum development, delivery and pedagogy or teacher trainers in the delivery of professional development programs.

Professional Development Materials (PDMs) are any digital or non-digital education training and development resource or program designed with a training and development purpose. Such programs may contain or reference LRs and TRs.

The LRs, TRs and PDMs:

i) may be accessed directly from the web based repository and, or

ii) availability is communicated by the system.

The LRMDS catalogue may also contain information relating to persons that may be accessed to support teaching and learning of local culture through oral traditions, story telling and with indigenous language expertise.

3.2 Resource formats

Resources accessed and located via the LRMDS may be provided in one or more of the following formats:

Non-digital*:* (print based) training and teaching manuals, workbooks, lesson plan guides (e.g. PROBE, SEDIP materials, BEAM printed Learning Guides), visual aids or reference books.

Digital*:* lesson plan guides (e.g BEAM online), worksheet activity, manipulative & interactive learning resource, training modules, CD's, videos, DVD and referenced, quality assured websites.

3.3 Pedagogical and Andragogical Approach to resource design

Selection and redevelopment of resources to be catalogued and made available via LRMDS is based on best practices in instructional design. In particular, the approach to selection of resources for redevelopment and design is underpinned by educational quality principles that ensure exploitation of the medium to maximise the opportunity for access and effective teaching and learning in varied educational settings. This approach and application of educational quality principles aims to ensure increased access, engagement and success in learning

3.3.1 Pedagogical Approach

Learners during the formal years of schooling are learning how to learn. Developing new skills and processes in relation to the domain of knowledge covered within the curriculum and involving increasingly more complex levels of cognition as students progress through schooling. A constructivist approach will be applied to selection and design for redevelopment of resources. Constructivist learning requires changes to learners' experiences. Constructivism asserts that we learn through a continual process of constructing, interpreting and modifying our own representations of reality based on our experiences with reality (Jonassen, 1994).

The learning activities need to help students understand concepts for themselves. This can be achieved by designing learning activities in which students solve new problems, research and integrate information, and create knowledge for themselves.

Constructivism is about challenging ideas. In conjunction with an inquiry- or problem-based approach, this type of pedagogy is invaluable in moving students to a more formal understanding of a particular concept, or way of knowing and doing. (Atkins & Jones, 2004)

3.3.2 Andragogical Approach

Design of training and professional development programs for adult learners should focus more on the process and less on the content being taught. Case studies, role playing, simulations, and self-evaluation are useful strategies to incorporate in adult training and development programs.

The principles to be applied to the design and development of Professional Development Materials ensures that the:

- learning objectives are explicit
- programs are self paced and support self directed learning
- activities provide opportunity for the learner to connect and build on prior experience
- programs are relevant to and support professional and vocational growth.

4 Acquisition and Procurement

Acquisition and procurement of resources may occur through the following processes:

Commissioned resources are comprised of LRs, TRs and PDMs that have been developed or procured to meet the specific requirements of DepED curriculum design, development and delivery. This material may be new content, specifically commissioned content, or existing content that has been modified to meet the needs of DepED. These materials may be derived from:

- material produced by DepED or foreign funded projects that needs to be digitised to make it available to teachers and students

- new material designed and developed in accordance with identified teaching and learning needs
- teacher developed resources.

Design and development:

Resources may be designed and developed in direct response to an identified teaching and learning need. School AIP, SIP and SRC will be the initial point of reference by divisions and regions to identify specific gaps in resource provision.

Where new content is to be designed and developed the Regional LRMD team has direct responsibility for development, production and quality assurance. The decision to produce the material in-house or to out-source development and production will be determined on the basis of cost effectiveness.

Appendix 3 contains an initial list of existing DepED and foreign funded project resources targeted for redevelopment.

Non-commissioned resources refers to teaching, training or learning content contributed or licensed via third-party agents, such as cultural institutions, government departments, not-for-profit organisations, or commercial publishers. This material may be:

- licensed and procured existing content that can be used in its current state (online objects/packages; CDs, DVD, video, print)
- licensed and procured existing content that needs to be modified (online objects/packages; CDs, DVD, video, print)
- licensed and procured material that needs to be digitised to make it available to teachers and students.

Public Private Partnerships (PPP)

There are many public and private agencies, organisations and institutions that produce or are able to support the production of high quality educational material.

DepED may establish public-private partnerships through collaboration with higher education institutions, cultural organisations, non-government organisations and commercial providers to cost effectively increase the range and access to quality educational materials.

At the most simple level existing publicly available quality repositories and educational portals of educational content can be evaluated by the LRMDS Administration Team (Region) and referenced and catalogued for including in the online LRMDS catalogue.

More sustained partnerships may be established by direct collaboration with higher education institutions responsible for teacher education, cultural organisations and NGOs with education objectives. Similarly, publishers and providers of information communication technologies may be approached to support provision of learning resources, equipment or training.

5 Standards and Specifications for LRMDS

For sustainability to be achieved, establishment, implementation and operation of the LRMDS must be underpinned by the consistent application of monitored standards and specifications.

A standards based system will ensure ongoing interoperability, accessibility, scalability and extensibility.

Within LRMDS each standard and specification designates key performance criteria in relation to the quality characteristics. Each consists of quantitative and qualitative elements. Thus a concept of 'reasonableness' on balance is used in the application of the criteria and applied throughout the quality assurance processes at the various levels of the system.

The requirements for each commissioned or non-commissioned LR, TR or PDM will be based on the version of specifications at the time the resource is procured. To a degree, the requirements are an interpretation and application of standards and measures within a specific context at a particular point in time. Periodic reviews and maintenance schedules for the systems and contents are required to support sustained implementation.

Published specifications, procedures, guidelines, indicators, templates and tools are provided to support implementation of the LRMDS. These instruments are used by various personnel involved in quality assurance at different levels within a region, division or by the cluster/school.

An overview of the scope of each of the specifications is provided in Table 1. The actual specifications are published separately and monitored, evaluated and revised by Central Office Teaching and Learning Resource Management and Coordinating Unit. As such these specifications are informed by DepED Central Office policy, standards and guidelines.

The LRMDS specifications cover:

1. A. Educational requirements
2. B. Technical specifications for content development
3. C. Rights management
4. D. Accessibility
5. E. Metadata (discovery, management and maintenance).

5.1 Why do we need specifications?

Standards and specifications along with documented guidelines are provided to ensure, that all resources available are of a high quality and educational value. Importantly, they are deemed fit for purpose, easy to access and use. Large scale, distributed systems with multiple users require consistency and coherence in organisation, management and maintenance if such systems are to be sustained.

5.1.1 What specifications are required for LR, TR and PDM production, modification and procurement?

The specifications for LR, TR and PDM production, modification and procurement define the educational and technical attributes required for access and use.

The following specifications are developed and available from the LRMDS system. The LRMDS Regional Manager is responsible for keeping the standards and specifications up to date and for communicating changes to all LRMDS users.

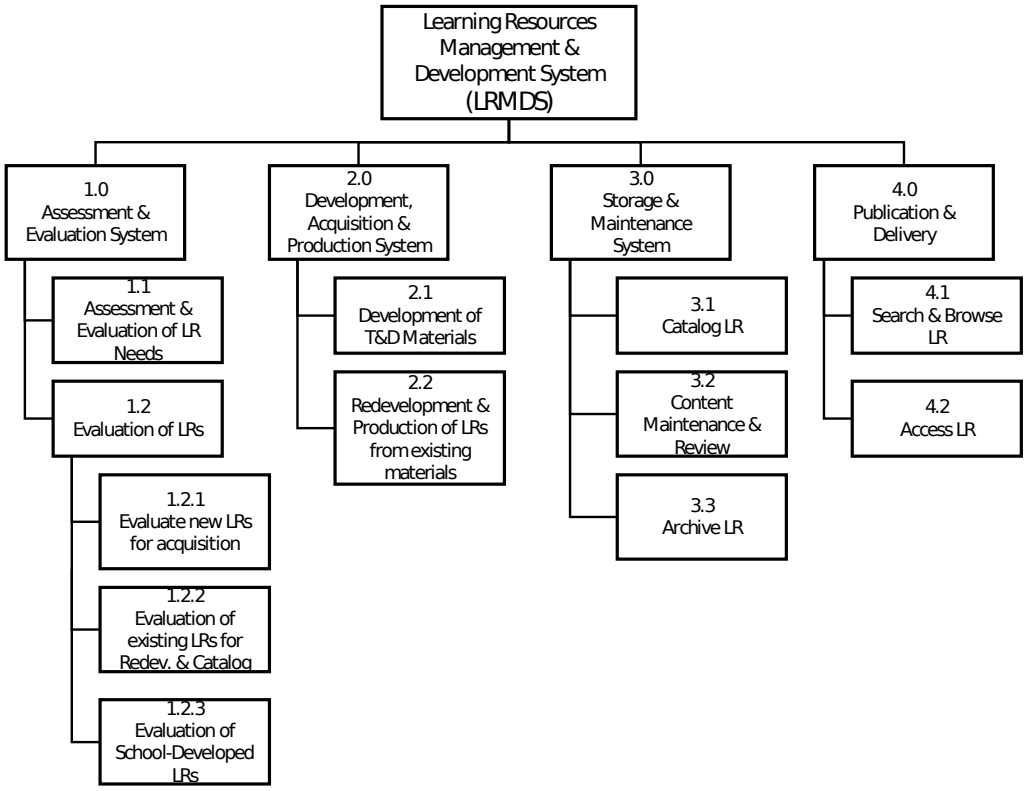
Table 1: Specifications

Area of concern	Principles	Supporting Policy or Guidelines for LRMDS specifications development

Educational: curriculum, subject matter, skills and processes, age and stage of schooling, cultural inclusivity and language of instruction	Educational requirements and indicators: • learning and teaching • content, • accessibility, • usability	DepED IMCS Evaluation process and indicators for Print Supplementary Materials DepED IMCS Evaluation process and indicators for Supplementary Reading Materials DepED IMCS Rubric for evaluating multimedia instructional materials DepED IMCS Evaluation of computer Assisted Instructional Materials DepED Mother Tongue(MT)-Based Multi-lingual Education (MLE) Implementation
Accessibility: geospatial, physical and intellectual ability	Legal requirements/policy: • Special needs: physical, intellectual differences • Flexible operation and presentation: different rendering and presentation of information and data. • Device needs: utilise a wide range of devices or special assistive devices. • Appropriate learning design: users with varying capabilities and individual learning differences	SPED Bureau guidelines
Technical: format, file size, authoring software, user plug-ins, players, software interoperability	• Accessibility: inclusive of teaching and learning capacities, contexts and environments • Usability: usable by a range of teachers and students • Interoperability: used and shared on and between a wide range of platforms, software and hardware • Flexibility: mixing and reusing learning resources from a range of sources • Durability: withstand technology changes • Scalability: technology selected is able to benefit from growth and reuse.	Dep ED IMCS Technical Evaluation report form for Multi-media Instructional materials DepED IMCS Evaluation of Minimum Technical Requirements DepED Draft ICT Strategic Plan
Intellectual Property & rights management: IPR author, contributors, copyright, access and distribution, use	• Equitable: negotiation is balanced between rights owner and user • Authoritive: agreed format and presentation of rights information • Informative: communication of rights and conditions of use • Legal compliance: IP requirements	• Republic Act No. 8293 Act Prescribing the Intellectual property code and establishing the intellectual property office, providing for its powers and functions and for other purposes.
Storage & distribution: version control for management and	• version control: versions assigned and communicated • Metadata: each resource is catalogued	• Refer to DepED- STRIVE ICT workplan • Refer to Technical Specifications for content.

maintenance, access Metadata	• Discovery: varied access to discover, via unique log on, search and browse • Publish: varied formats- digital, print	
Publication & use: file types, formats for reproduction and usage permissions	• Communicated information contains: • Educational purpose • Version • Format • Copyright and rights information and conditions of use	• Refer to DepED- STRIVE ICT workplan • Refer to Technical Specifications for content.

6 The Learning Resources Management and Development System



The Learning Resources Management and Development System comprises four integrated sub-systems designed to support increased distribution and access to learning, teaching and professional development resources at the Region, Division and School/Cluster levels of DepED. The LRMDS serves as one component of the Integrated Multi-layered School Based Management System (IMSS). The IMSS functions to serve and respond to the needs of schools at the division and regional level.

The Integrated Multi-Layered SBM System (IM_SS) (Appendix 1) is a three-dimensional matrix that defines the critical education processes by way of identifying:

- Functions & responsibilities,
- Appropriate organizational structure,

- Processes and mechanisms, and;
- Process tools,

within the various levels (school, division, region & central offices) and strands or management areas of the education system. The IMSS illustrates the relationship of these system elements in terms of:

1. Vertical alignment of critical processes and responsibilities at the various DepED levels (school, division, region & central office)
2. Integration of the responsibilities, structures, processes across each area of education management

The LRMDS is managed and maintained by the Region in accordance with requirements of DepED Central office for distribution and access to resources. It is responsive to identified school learning and teaching resource needs and supports divisions via the regions to fulfil these needs.

The LRMDS is manifested as an online networked information and communication system connected at each level to physical facilities including, libraries, media production and development centres coordinated by Administration & Management and QA teams.

6.1 System for Assessment and Evaluation

The Assessment and Evaluation system for identification of materials to be procured, redeveloped or reproduced is designed to support schools, divisions and regions:

- in identifying learning, teaching and professional development resource needs
- reviewing and recommending resources for acquisition and procurement
- identifying existing resources for reproduction
- evaluating teacher developed materials for local use and shared distribution via LRMDS

6.2 System for Development, Acquisition and Production

The Development, Acquisition and Production system is designed to support local development and or production of learning, teaching and professional development materials by the regions and divisions via the LRMDS. The system is designed to:

- support local design and redevelopment of existing learning and teaching resources by the region in response to identified needs of schools
- develop on behalf of Regional NEAP training and development resources and or PDMs for distribution via LRMDS
- support modification and translation of resources into mother tongue.

6.3 System for Storage and Maintenance

The Storage and Maintenance system is designed to ensure ongoing and sustainable access to quality learning, teaching and professional development resources via the LRMDS. The system comprises:

- the online catalogue of all quality assured resources that are stored in the LRMDS repository, available from online sites and locates hard copies of resources stored at regions, divisions and or schools/cluster levels

- content maintenance and review schedules and processes to ensure ongoing technical and educational fit for purpose
- archiving services

6.4 System for Publication and Delivery

The Publication and Delivery system is designed to provide the web based user interface to access the LRMDS. It is designed to support user:

- Search, Browse, View and download resources and information contained within the repository
- Authentication for access and use of third party material licensed to DepED

The specific workflows associated with each subsystem are described in Section 7.

6.5 Functions, processes and structure to support effective implementation of LRMDS at each level.

6.5.1 Central Office

The specific functions and processes required of Central office to support effective implementation of LRMDS to improve access to learning, teaching and professional development resources by schools is described in Table 2.

Table 2: LRMDS Central Office requirements

Function	*Processes*	*Process Tools*	*Structure*
1. Sets policies, guidelines, standards and specifications on: 1.1 Procurement, selection and prioritization, adoption, production, distribution and utilization 1.2 Development of digital and print materials 1.3 Resource requirements for the curriculum 1.4 Evaluation	Publishes standards specifications procurement of digital and non-digital resources. Develops, publishes and reviews curriculum standards and competencies	Assessment and evaluation guidelines and criteria Procurement guidelines and processes Intellectual property rights and copyright Minimum technical requirements Published curriculum	Teaching and Learning Resource Management and Coordinating Unit headed by Assistant Secretary ICT Specialists Technical evaluators Curriculum specialists Subject area specialist ICT technicians Database management (EMIS) Special consultants LRM policy coordinator

Function	*Processes*	*Process Tools*	*Structure*
of teaching and learning resources 1.5 Promoting local initiatives involving development, production and utilization of local materials: e.g use of mother tongue, IP education, alternative delivery modes, ALS, ICT integration.			
2. Provides current list of approved LRs/ TR/PDMs for procurement (IMCS)	Trains evaluators in using instruments for evaluation of resources (Region and Division)	IMCS evaluation guidelines and criteria for evaluation of IMs Evaluator training programs	IMCS NEAP
3. Networks with various stakeholders for resource mobilization	Identifies potential agencies and organisations	Protocols for establishment of public-private partnerships	
4. Monitors & Evaluates compliance to policies and impact of learning materials	Access and Usage Quality of resources Gap analysis	Survey instruments Reporting templates	

6.5.2 Region

The specific functions and processes required of the Regional office LRMDS facility to support effective implementation of LRMDS to improve access to learning, teaching and professional development resources by schools is described in Table 3.

Table 3: LRMDS Regional Office requirements

Function	*Processes*	*Process Tools*	*Structure*
1. Manages implementation of policy, standards, specs from CO for LRMDS Clearinghouse	Publishes specifications, guidelines and criteria for access by Region, Division & school Trains supplementary materials coordinators Publishes specifications,	Learning Resource Plan Assessment and evaluation criteria and guidelines published.	LRMDS Administration & Publication Group: Librarian, subject matter experts, IT support- web manager; IPR Coordinator

Function	*Processes*	*Process Tools*	*Structure*
	guidelines and criteria Identify and equip all personnel involved with LRMDS Implementation process Reg. Plan REDP LR plan for procurement, development and production based on identified needs		
2. Monitoring and evaluation; Monitors the LRMDS operation and evaluates its effectiveness	Monitors and reviews policy for identification of policy gaps Monitors standards and specifications for resource catalogue, development and production Monitors that the LRMDS is providing materials to meet local needs Undertake specific evaluation task to determine the usefulness of LRMDS and resources Monitors that the operation of the LRMDS are based on set standards and procedures Model for M&E for the region Consolidation of DEDP for possible incorporation in the REDP	QA conformance and compliance checklists and guidelines for all specifications User survey published Reporting on access and downloads	LRMDS Administration & Publication Group QA Team: Technical analysts, online editor, subject matter experts, T & D.
3. Assessment & Evaluation System for identification of materials to be procured or produced within the region	Guidelines for Assessment and Evaluation of resources published and available in LRMDS Identification & communication of supplementary materials that can be purchased by schools using public funds Selection of materials needed locally Assess against national criteria Acceptance/rejection for local use	Assessment and evaluation criteria checklists: School Division Region Criteria, guidelines and rubrics to evaluate digital and non-digital resources Checklist of materials Survey forms Questionnaire	LRMDS Manager and Administration Team

Function	*Processes*	*Process Tools*	*Structure*
4. Development & Production (new and & re-development) **create, redevelop modify resources**	Specifications and standards published Modification and indigenization guidelines Development guidelines QA reviews: design, development, conformance Develop locally needed materials that are not in the national list nor available locally Redevelop/modify existing materials to meet local need Produce locally made materials Reproduce existing materials	Standards and specification indicators and guidelines Request/ Job orders for (outsourced) production Design Brief and Specification template; Functional specification template; Procedure for conformance testing	LRMDS Development Team Production & development unit – full facility: desktop publisher; multimedia programmer; graphic artist, project manager. LRMDS QA Team Editors, subject matter specialists
5. Production of PDMs and T and D materials	Coordinate with Reg NEAP to review and assess design requirements Develop alpha/beta version of PDMs and forward to QA for final review Develop alpha/beta version of LR and forward to QA for final review Test LR and prepare QA Test Report	T & D request for T&D Materials Development (PDMs) Design Brief Template and Design Specs for the T&D Material and includes all content (including suggested or specific graphic arts or media Development and production QA Editorial, technical, educational, IP checklists and guidelines QA Review procedures	LRMDS Administration & Publication Group Project Manager LRMDS Development Team LRMDS QA Team
6. Storage & Maintenance	Review specifications annually (part of M&E) QA for all LRMDS updates (part of M&E) Manages and maintains LRMDS	QA Guidelines and checklist: Publication Archiving Redevelopment Digital Library	LRMDS QA Team
7. Publication & Delivery	Map LR,TR,PDM to curriculum Apply metadata Catalogue	Metadata specification Publish checklist	LRMDS Manager and Administration Team

Function	*Processes*	*Process Tools*	*Structure*
8. Financial management	Budget allocation for LRMDS operation and maintenance	Networking and linkages with prospective funding agencies MOOE allocation	Regional Director LRMDs Manager
9. Manage access and use across Regions, Divisions	T & D for LRMDS developed and conducted at region: Education Supervisors I, PS District Supervisors, and Division Subject Area Specialists	Training program for access and use of LRMDS Training program for resource reproduction, re-contextualisation at region level	LRMDS Manager and Administration Team

6.5.3 Division

The specific functions and processes required of the Division LRMDS facility to support effective implementation of LRMDS to improve access to learning, teaching and professional development resources by schools is described in Table 4.

Table 4: LRMDS Division Office requirements

Function	*Processes*	*Process Tools*	*Structure*
1. Provides access to LRMDS 1.1 Implements use of LRMDS	Online access to LRMDS Catalogue of resources maintained. Library		Library/LRMDs manager/coordinator
2. Integrates and or modifies content for local context/needs	Division/School generated resources subjected to Region A&E for inclusion in the LRMDS/Library LR, TR/PDMs developed and reproduced for local use. Create and maintain pool of writers/experts (training) Assess local needs for localization Training of writers translators etc.	facility to support copy, re-contextualization, indigenization & localization Indigenization and localization guidelines for reproduction of materials Training programs for Division ICT team	QA Production Team
3. Monitors and evaluates	Reports to Region access, use, redevelopment (as above) and requests for LRMD updates Model for M&E for LRMDS Review of SIP/AIP re:LR plan	Usage survey instrument LR Plan and AIP/SIP Schools and classroom visitation Focus Group Discussion Survey tools	QA Team and LRMDs Manager

Function	*Processes*	*Process Tools*	*Structure*
	Consolidation of LR Plans in the DEDP		
4. Provides information and training on LRMDS function and services	Training of school heads and subject supervisors/teachers Capacitate school heads to conduct in-school training for teachers Training for district supervisor	Training program for access and use of LRMDS	LRMDS Administration & Lib hub
5. Advocacy	Information dissemination Coordination with stakeholders	Advocacy and information dissemination program/campaign materials	Division Superintendents

6.5.4 Cluster/School

The specific functions and processes required of the Cluster/School to support effective implementation and use of LRMDS to improve access to learning, teaching and professional development resources by schools is described in Table 5.

Table 5: LRMDS Cluster/School requirements

Function	*Processes*	*Process Tools*	*Structure*
1. Provide universal access to LRMDS 1.1 Schools to provide access to all Learning resources via the LRMDS 1.2 Schools should provide access to teachers and students to LRs through the LRMDS	Identify LR Needs Cluster schools according to distance Review existing LR in school and LRMDS and identify gaps & priorities Secure LRs from Region, Division, and other sources (GOs/NGOs) for school utilization LRC as Community Learning Center for ALS, as repository of LRs for Elementary and Secondary Levels	LR Plan integrated with SIP/ AIP/SRC Search, Browse, download, bookmark	LR Committee: Principal, teachers, parents, ALS, CLC representatives
2. Use content and integrate for teaching and learning	Download and copy digital or print resources	Lesson plan template Modules for ALS EASE Modules (Sec.) Learning Package	Subject supervisor, Teacher, CLC,

Function	*Processes*	*Process Tools*	*Structure*
		(Elem.) Supplementary LRs	
3. Teacher-developed materials: (Relevant & Indigenization and Localization) Digital subject to A&E at Region Non-digital A&E may be at the Division	Develop materials to support teaching and learning Review teacher develop material	LR A & E school checklist for submission Submission template for Division/Region QA Rubrics/Criteria/Standards and specifications: for local production of materials in Mother Tongue Materials Evaluation Guidelines	LR Committee: Principal, teachers, parents, ALS, CLC representatives

7 LRMDS Workflow Process overview

The LRMDS consists of four integrated sub-systems. Each system is designed to support increased access to LR/TR/PDM materials by School/Clusters, Divisions and Regions.

7.1 Assessment and Evaluation System

7.1.1 Assessment and evaluation of LR, TR and PDM needs

The assessment and evaluation of LR, TR and PDM need is a responsibility of all levels. **Schools**/ **Clusters** develop as part of the SIP and AIP a Learning Resource Plan using the LR Plan Template. This plan identifies areas of school level need for LR/TRs in relation to:

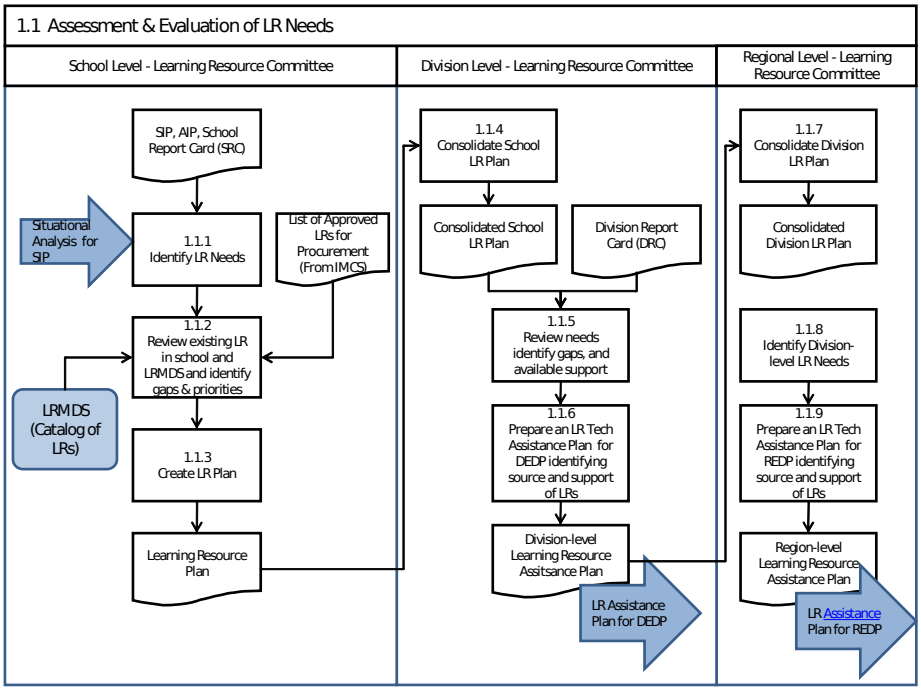
- Underachievement – test results
- Competencies – teacher capacity in subject area and pedagogy
- Resource gaps across subject and year levels
- Indigenization requirements
- Alternative modes of delivery
- Support facilities for use of resources at the school level.

The LR Committee established at the school/cluster level conducts, completes and submits the LR Plan to the Division in conjunction with the AIP, SIP and SRC process.

The **Division** consolidates the School/cluster LR Plans and develops an LR Assistance Plan for DEDP. This identifies areas of need and proposes sources of support and acquisition of resources as per Supplementary lists of approved materials, recommendations for reproduction of LRs at the Division and or requests for modification of existing resources and procurement or for development and production of new resources by the Region LRMDS.

The **Region** Learning Resource Committee reviews and consolidates the LR Assistance Plans for DEPD and develops a REDP to support procurement and production of LR/TRs for inclusion in the LRMDS. See Diagram 1.1.

Diagram 1.1 Assessment and evaluation of LR, TR & PDM needs at each level



7.1.2 Evaluation of new learning resources for acquisition/procurement

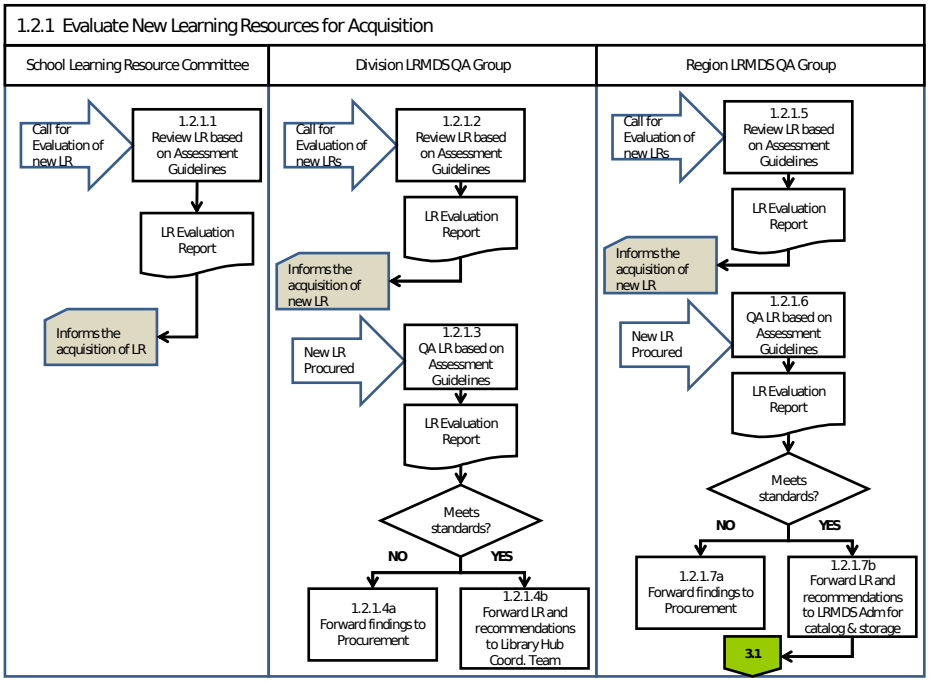
Evaluation of new learning resources for acquisition/procurement (Diagram 1.2.1) is conducted at the School/cluster level by the School Learning Resource Committee and at the Division and Regional levels by the QA Team at these levels.

Schools may use the assessment and evaluation criteria to select and acquire Learning Resources using local funds. They may also access the list of IMCS approved supplementary materials and procure these from local funds. Schools/clusters may also assess and evaluate LR/TRs and provide an evaluation report to the Division to request acquisition and inclusion in LRMDS.

The Division will review submitted LR Evaluations for acquisition of new resources and will determine whether to acquire for distribution via the divisional Library hub. Cataloguing of the acquired resources within LRMDS is the responsibility of Regional LRMDS. Divisions will forward recommendations and notification of acquisition of new LRs/TRs where these are to be discoverable within the LRMDS.

The Region reviews the Division LR Evaluation recommendations for acquisition and will a) catalogue the resources being acquired at the Division level and or b) procure the LRs/TRs for inclusion in the LRMDS and cataloguing.

Diagram 1.2.1

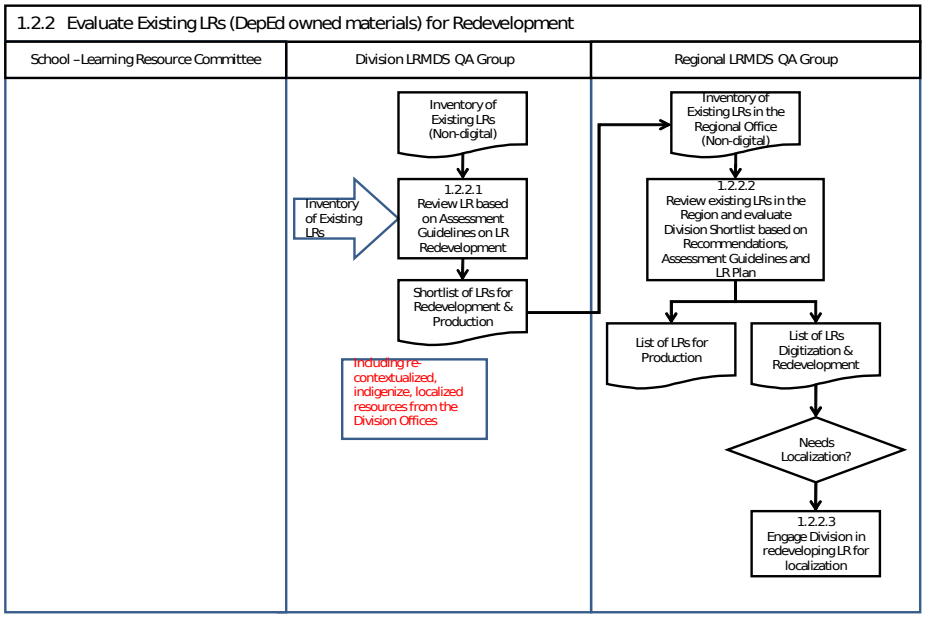


7.1.3 Evaluation of existing resources for reproduction

The LRMDS contains an inventory and catalogue of all existing LRs/TRs/PDMs. The LRMDS catalogue locates and provides information on the location and access to these resources. Through the process of identification of needs, (Diagram 1.1) the Regional LRMDS QA Team will evaluate Division shortlists and determine which resources will be reproduced (as is) and which resources will be redeveloped, modified and digitised.

The final list of LRs/TRs/PDMs identified for reproduction is submitted to the Division for production and distribution to library hubs, clusters/schools. Diagram 1.2.2.

Diagram 1.2.2



7.1.4 Evaluation of teacher developed materials

At the School/cluster level teachers develop LRs/TRs for classroom and local training use. Teacher-developed materials may be digital or non-digital. These materials may be included in the LRMDS catalogue and or redeveloped for inclusion in the LRMDS.

All digital LR/TR/PDMs (Diagrams 1.2.3a and 1.2.3b) must undergo assessment and evaluation via the School, Division to Region. See Diagram 1.2.3b. Digital resources identified and accepted by the Regional LRMDS QA team for inclusion in the LRMDS will be catalogued, and reproduced and or redeveloped by the Region.

Non-digital teacher developed materials undergo assessment and evaluation by the Division LRMDS QA Team.

Diagram 1.2.3a

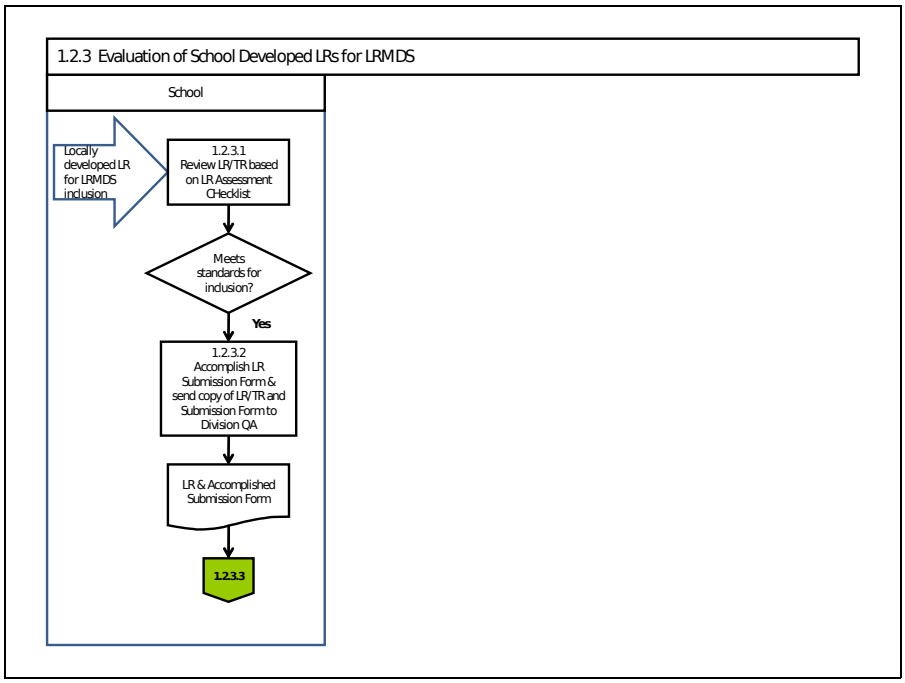
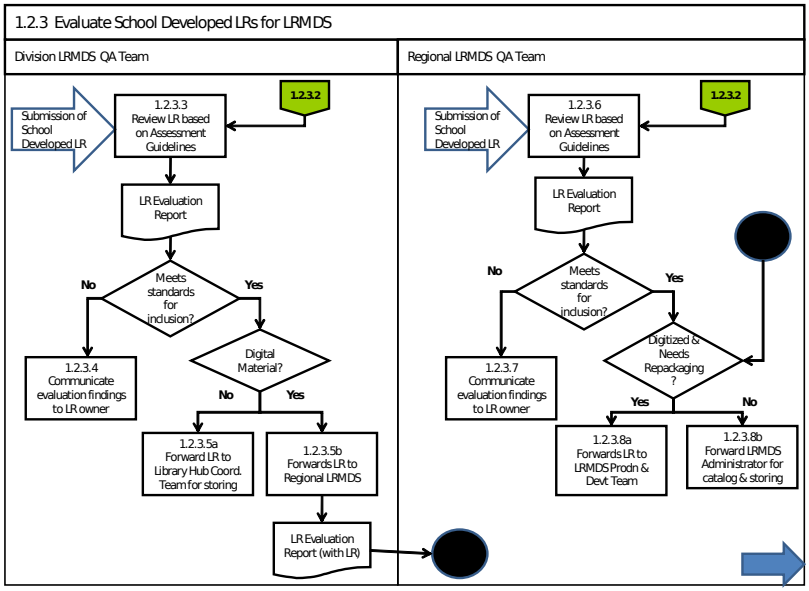


Diagram 1.2.3b



7.2 Development, acquisition and production

In the first instance the materials designated for acquisition, development and production for access and distribution via the LRMDS will comprise Training and Development materials (TRs/PDMs) and existing LRs owned by DepED. Development and production of new LRs/TRs will be in response to School/Division needs analysis.

7.2.1 Training and Development Materials

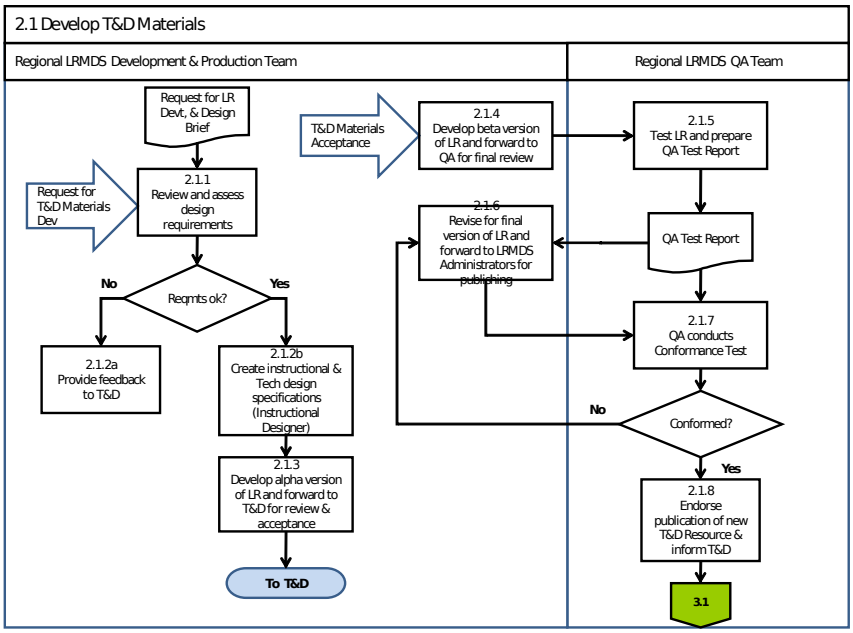
Training and Development Materials comprise all materials including templates used for training needs assessment, training modules, and professional development materials for access and reference.

The LRMDS Development and Production Team at the Region is responsible for production of new and reproduction of existing materials for access via LRMDS by the Regions, Divisions and Schools. Refer to the DRAFT Training and Development Framework 2008.

Under NEAP at the Region training materials are designed. The Training and Development Team provides a request to LRMDS for materials development. Acceptance of the request requires the submission of a completed Design Brief and Specifications template. This contains all content including suggested or specific graphics, art and media.

The LRMDS Development and Production team prepares an instructional and technical design specification and develops alpha version of the resource. The alpha version is reviewed by Training and Development and LRMDS QA. The QA review outcomes are incorporated into the production of the beta version. The beta version is reviewed by T and D and LRMDS QA team. Following acceptance of the beta version and documented modifications a final Conformance version is created for final QA and publication. See Diagram 2.1.

Diagram 2.1



Any resource that has been digitally produced (new or modified existing resource) and is to be distributed and accessed directly from the LRMDS system is required to be package in accordance with LRMDS Storage, Distribution and Cataloguing specifications and standards.

When a resource is ready to be published it is uploaded and packaged for storage in the LRMDS repository. See Diagram 3.1.

7.2.2 Reproduction and Development of Existing LR/TRs/PDMs (DepED)

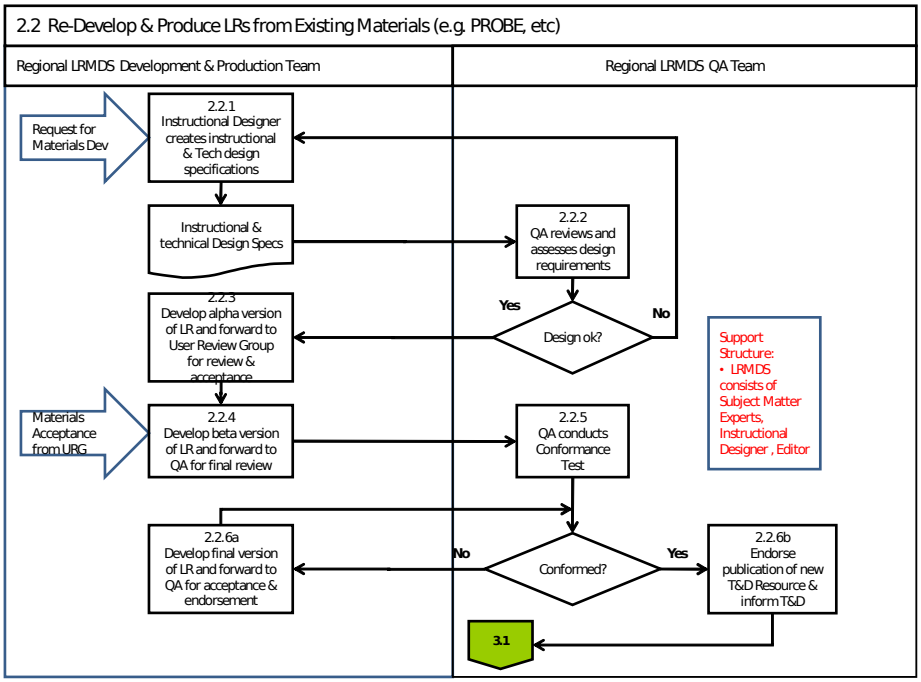
Existing resources identified via School/Division/Region needs analysis (LR plan, DEPD, REDP) and targeted for supporting increased access via LRMDS will be reproduced by the Regional LRMDS Development and Production Team.

The LRMDS Instructional Designer develops an Instructional and Technical Design and Specifications for the redevelopment of the resource. The LRMDS QA Team reviews the proposed design and development specification. If approved an alpha version of the material is produced and reviewed by a designated User Review Group.

Review feedback is incorporated into the beta version of the LR/TR and forwarded to QA for final review and conformance testing.

Once approved for publishing the LR/TR/PDM is stored and packaged, catalogued and published in LRMDS. See Diagram 2.2 and 3.1.

Diagram 2.2



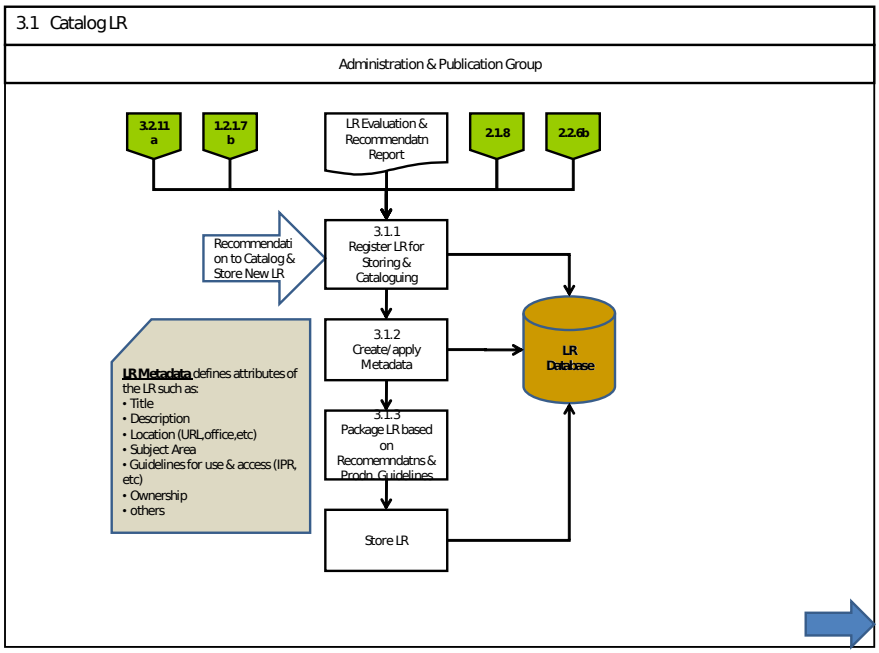
7.2.3 Storage and maintenance system

All content (LR/TR/PDMs) digital and non-digital that are to be located via the LRMDS are catalogued. (Diagram 3.1) The Regional Administration and Publication Group have responsibility for cataloguing all resources using agreed metadata specifications.

LR/TR/PDMs evaluation and recommendations for cataloguing within LRMDS may be derived from School and or Division assessment and evaluations relating to existing DepED materials, newly developed resources, and modified resources. In all instances, the addition to the LRMDS catalogue is the responsibility of Regional Administration and Publication Group.

The Administration and Publication Group reviews the recommendations for the LR/TR/PDM to be catalogued. Cataloguing requires metadata to be applied to the resource prior to publication.

Diagram 3.1



7.2.3.1 Content review and maintenance

The conduct of content review and maintenance (Diagram 3.2a) is a continuous process managed by the Regional LRMDS QA and M&E Team. Content reviews are triggered by:

8. Reported content faults,
9. Changes to system standards and specifications, and;
10. Usage reviews.

1. Reported content faults

Reported content faults may be derived from any users of the LRMDS system. A content fault/issue report template is completed and sent to the Region LRMDS Manager. Content faults or issues may relate to educational integrity, technical functioning, and intellectual property/copyright infringement. All issues are investigated and the severity of the issue determines whether the resource is withdrawn prior to fixing or is listed as requiring action during the schedule of periodic review and maintenance. Withdrawn resources are communicated to LRMDS Administration and Publication and are archived. (Diagram 3.3)

2. Changes in System standards and specifications

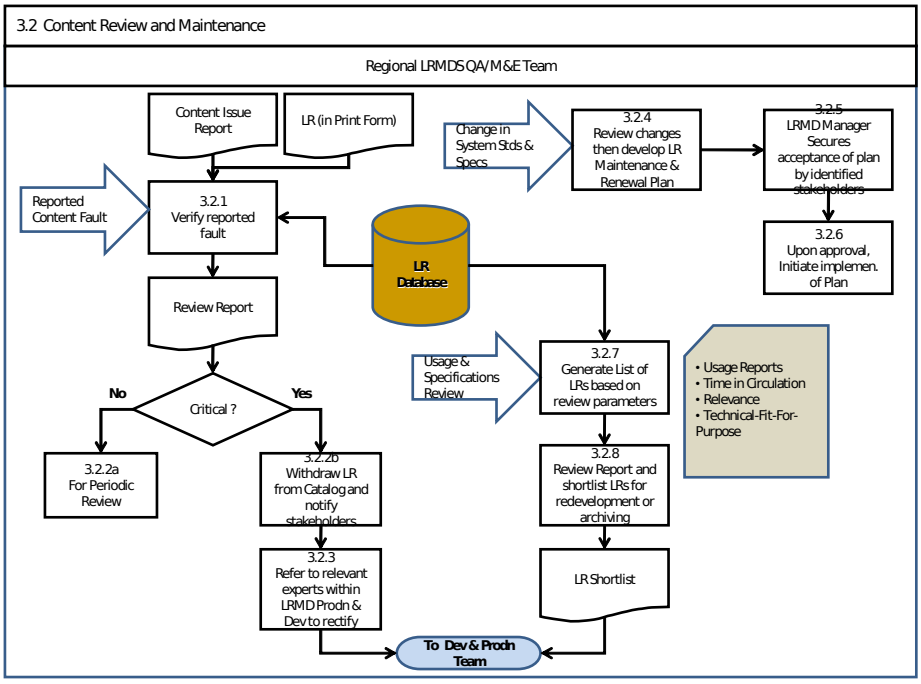
Changes in System standards and specifications will usually result from decisions at Central office to modify or update curriculum frameworks, educational standards or technology advances (software and hardware). These are system wide changes and therefore require the identification of the quantity of resources requiring modification to conform. A maintenance and renewal plan is developed by the Regional LRMDS QA Team and provided to the Regional LRMD Manager for approval and communication to stakeholders.

3. Usage reports

Usage reports are a combination of system checks for monitoring access and download and LRMDS M& E commissioned annual review reports from Schools/clusters and Divisions. Usage reports cover time in circulation, relevance, technical fit for purpose, and may include some recommendations for localisation and or indigenisation.

Any resource requiring redevelopment is reported to Regional LRMDS Development and Production Team. Resources identified for archiving are communicated to the Administration and Publication group.

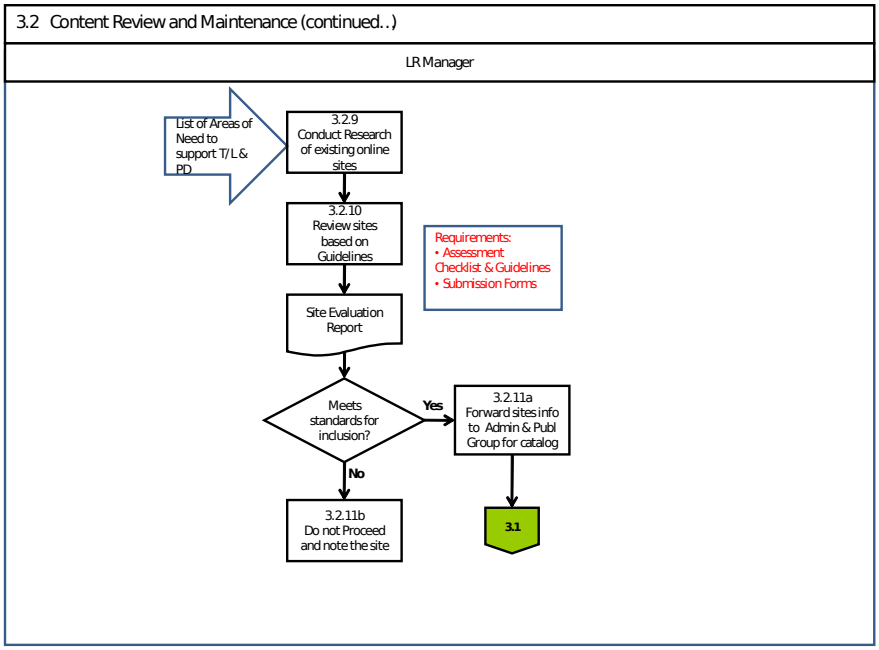
Diagram 3.2a



7.2.3.2 Content reviews and maintenance of online links to external repositories

The LR Manager is responsible for monitoring the catalogue of resources and to continue to research and review other open access sites for integration in to the LRMDS system and catalogue. (Diagram 3.2b) A site review evaluates the site content and links for educational quality, copyright and conditions of use, safety and security in relation to authenticity and integrity of providers. A site evaluation report is provided and if the site is suitable for cataloguing the Administration and Publication Group adds the reference URL to the catalogue with associated metadata. Sites deemed unsuitable are recorded. Reference URLs catalogued in the LRMDS are subjected to the same review and maintenance processes as described above.

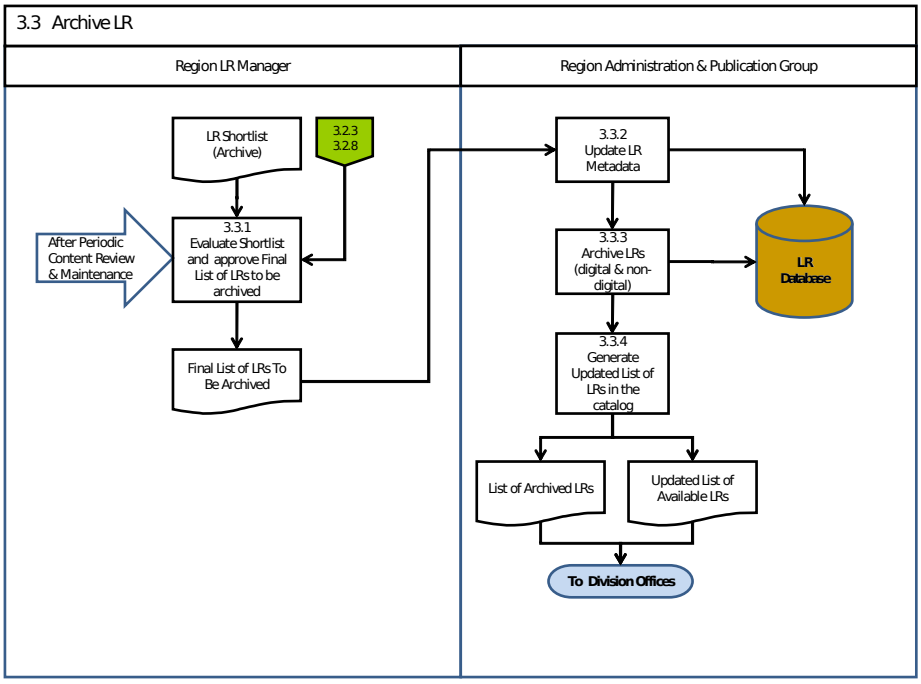
Diagram 3.2b



7.2.3.3 Archive Resources

After the periodic review is completed any resources that are targeted to be withdrawn from the system are archived. (Diagram 3.3) In some instances a resource will be withdrawn permanently and archived. For example the review process has resulted in identification of a major content error. In other instances the current version of the resource is withdrawn and archived. A new version will be developed and published. When any resource is archived the Catalogue is updated and lists of archived resources are communicated to Divisions and Schools.

Diagram 3.3



7.3 Publication and Delivery

7.3.1 Access LR

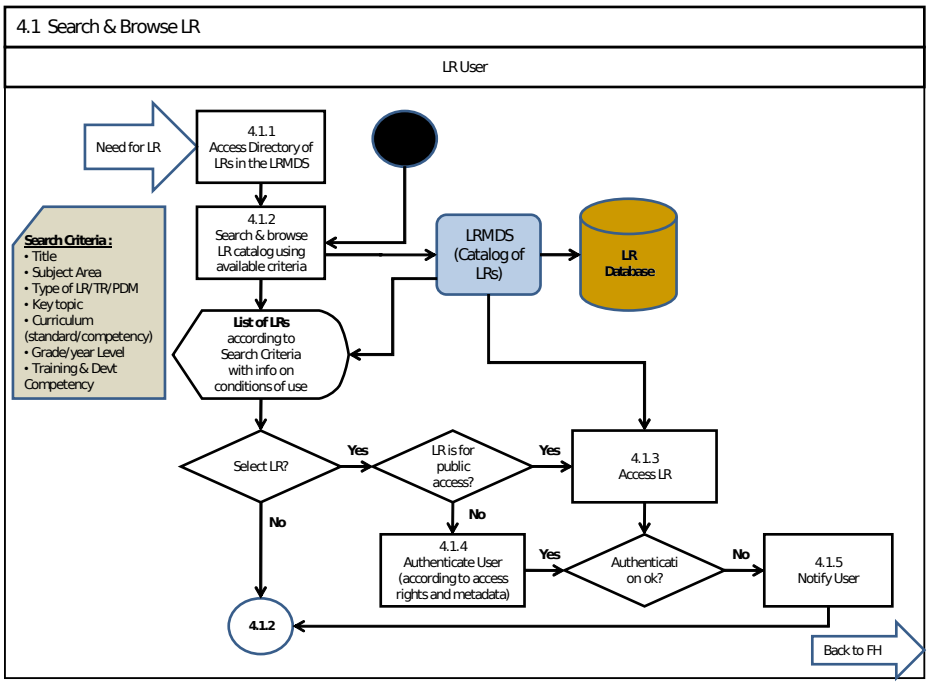
All catalogued and published resources can be located and or accessed via searching the online Catalogue. The metadata that describes each resource is searched by the user. The search and browse facility of the online catalogue may be queried (searched) via:

- Title
- Subject Area
- Type of resource - LR/TR/PDM
- Key topic
- Curriculum standard/competency
- Grade/year Level
- Training & Development competency (NCBTS)

The system for searching and browsing is publicly available. (Diagram 4.1) Open resources comprise DepED owned materials and referenced public online materials. However, all users are required to be authenticated to access the resources that contain third party copyright content before viewing or download. Regular subscribers to the LRMDS will be registered and authenticated.

All resources will contain copyright information and conditions of use. This information is communicated to the user via the list of search results and at the point that the resource is accessed for viewing or download.

Diagram 4.1



8 Proposed base level Facilities and Equipment (Central Office, Region, Division, Cluster/School, Library hub, Community Learning Centre)

Table 6 Facilities and equipment.

Central Office	Facilities,	Equipment,	Infrastructure
Learning & Teaching Resources Management and Coordination Unit	Conference and viewing room Learning resources Management Center : video-conferencing facility	3 Computers Laptops (optional) 2 Data projector 1 TV 3 Desk work stations 1 Electronic whiteboard CD/DVD recorder & player 1 mass production Printer, copier, scanner 1 Fax machine	wireless broadband connectivity Landline and cellular phone connection PA system LAN/WAN Software Email accounts **Refer to Appendix 4 Infrastructure for EMIS & LRMDS**
Technical Team for EMIS and LRMDS	**Refer to Appendix 4 Infrastructure for EMIS & LRMDS**	**Refer to Appendix 4 Infrastructure for EMIS & LRMDS**	**Refer to Appendix 4 Infrastructure for EMIS & LRMDS**
Region LRMDS	**Facilities,**	**Equipment,**	**Infrastructure**
LRMDS **Administration & Publication** Combine/locate with library (see library below)	LRMDS office Shelving Workstations x 3 Rest rooms Kitchen facilities 1 meeting area	3 Computer 2 Data projector tables and chairs, 1 electronic whiteboard, 1 DVD/CD recorder and player, 1 Color/B/W printer/ copier./scanner 1 Phone 3 Filing cabinets Shelving Fax	phone connection PA system **Refer to Appendix 4 Infrastructure for EMIS & LRMDS**
Media Centre **Development & Production** **Quality Assurance**	Room with capacity for 6 workstations and desktop computers Electrical installations Iron grills for protection Air condition units	Computer x3 1 mass production Printer, copier, scanner 1 Risograph machine 1 Opaque Projector 1 Digital SLR camera with lenses & battery packs and bags Video Camera	**Refer to Appendix 4 Infrastructure for EMIS & LRMDS**

		Laminating machine Paper cutter 1 CD/DVD Burner 2 White board **Software: (1 site license)** Adobe Video and audio editing Adobe Authorware Ms Office Professional Virus protection software Operating system; Windows 2007, XP, Players/Plugins	
Library **Storage & Maintenance** Combine/locate with Administration/publication (see above)	Library area Air conditioned, curtains/blinds Security grills Reading and study area *Optional:Training area 1 room with 11 sets of computers; PA system,	*Furniture* Main Desk (administration) Shelving Bookcases 2 Filing cabinets 1 Data projector 1 Screen 3 computers networked & internet access 1 TV with video player Whiteboard (electronic) optional **Software: (1 - site license)** Adobe Acrobat Ms Office Professional Virus protection software Operating system; Windows 2007, XP, Players/Plugins	Wireless network Phone **Refer to Appendix 4 Infrastructure for EMIS & LRMDS**
Division	**Facilities**	**Equipment**	**Infrastructure**
Library/**Library Hub** Storage & Maintenance community access centre (may be combined with lib hub)	Library Dedicated public access space Air conditioned, curtains/blinds Security grills Reading and study area	1 Main Desk Shelving Bookcases 3 Filing cabinets 1 Photocopier & Printer/scanner	Computer terminals for general access to LRMD

	training room with PA system, Rest rooms Kitchen facilities *Optional: Training area 1 room with 11 sets of computers; conference room PA system,	1 computers networked & internet access CD/DVD Player 1 Data projector 1 Screen tables and chairs, 1 electronic whiteboard, 1 Phone 1 Opaque Projector Sound system Video switchers TV and video player/recorder **Optional** Portable Laptops **Software: (1 - site license)** Adobe Acrobat Ms Office Professional Virus protection software Operating system; Windows 2007, XP, Players/Plugins	
Media Centre Re-development and Production Quality Assurance	Room with capacity for 5 workstations and desktop computers Electrical installations Iron grills for protection Air condition units 2 meeting areas	Computers (3) 1 High speed printer/ copiers/ Scanner (mass production) 1 Risograph machine 1 Laminating machine 1 Paper cutter 1 CD/DVD Burner/Player 1 White board **Software: (1 - site license)** Adobe Authorware Ms Office Professional Virus protection software Operating system; Windows 2007, XP, Players/Plugins	**Refer to Appendix 4 for IT infrastructure for LRMDS**
School/Cluster	**Facilities**	**Equipment**	**Infrastructure**
CLC/Library/ Lead school	Security grills	1 Main Desk	Wireless network

	Reading and study area Meeting room Training room Air conditioned, curtains/blinds	Shelving Bookcases 2 Filing cabinets 1 Photocopier &printer/Scanner 1 Computers internet/networked 1 CD/DVD Burner Projection Screen 1 Overhead Projector with transparency maker 1 CD/DVD Players 1 television set and Video player Standby generator **Software: (1 - site license)** Adobe Acrobat Ms Office Professional Virus protection software Operating system; Windows 2007, XP, Players/Plugins	**Refer to Appendix 4 for IT infrastructure for LRMDS**

**Optional: RELSS-LRMDS provision of training facilities integrated with Reg. NEAP.*

9 Proposed base level Organizational Structures

The LRMDS is located, managed and administered by the Region. The content repository and catalogue is maintained at this level. The LRMDS Administration and Publication Group manage and maintain the system. Development, production and publication of resources including cataloguing of non-digital resources that are referenced in the system is managed at this level.

9.1 Central Office

Table 8 Organizational Structure for LRMDS

Structure	Function	Roles & Responsibilities	Human Resources
Teaching & Learning Resource Management and Coordinating Unit	Sets policies guidelines, standards and specifications for: Procurement Development Evaluation Promotion Resource mobilization Provision of current list of approved/ recommended LRs/TRs/PDMs	Publication of policies guidelines, standards and specifications Provides models for innovation in learning resource design and development Research best practice learning and teaching re-	ICT Specialist Technical evaluators Curriculum specialists Subject area experts LRM policy coordinator/manager Support staff

Structure	Function	Roles & Responsibilities	Human Resources
	Networks with stakeholders for resource mobilization Monitors and evaluates compliance to policies and impact of learning materials	sources	
LRMDS & EMIS Information Technology Unit	Management and Administration	Technical management and administration of the EMIS and LRMDS Maintain the primary repository of stored available digital resources, including video and other multimedia formats Helpdesk	Database Manager Business analyst Systems analyst Web Developer

9.2 Region

Table 8 Organizational Structure for LRMDS

Structure	Function	Roles & Responsibilities	Human Resources
LRMDS Administration & Publication Group:	Manages implementation of policy, standards, specs from CO for LRMDS Clearinghouse	Publishes specifications, guidelines and criteria for access by Region, Division & school Develop guidelines for A and E & publish Manages Educational Specification Map LR,TR,PDM to curriculum Apply metadata Catalogue Guidelines: Publication Archiving Redevelopment Identification & communication of supplementary materials that can be purchased by schools using public funds Trains supplementary materials coordinators Monitors and reviews policy for identification of policy gaps	LRMDS Manager Librarian IT support Web manager; IP Coordinator Metadata Analyst Subject matter experts: (Science, Mathematics, English, TLE) Elem, Sec, ALS 3 Support staff
LRMDS Manager and Administration Team	Manage access and use across Regions,	T & D for LRMDS Teams developed and conducted	Roles as above

Structure	Function	Roles & Responsibilities	Human Resources
	Divisions	at region/division: Education Supervisors I, PS District Supervisors, and Division Subject Area Specialists Training program for resource reproduction, re-contextualisation at region level Training program for access and use of LRMDS	
QA Team:	Monitoring and evaluation	Monitors standards and specifications for resource catalogue, development and production. QA Editorial, technical, educational, IP checklists and guidelines QA Review procedures: design, development, conformance Test LR and prepare QA Test Report Procedure for conformance testing Monitors access and usage Review specifications annually QA for all LRMDS updates Manages and maintains LRMDS	QA Manager Technical analysts online editors Copyright Clearance & permissions officer
LRMDS Development Production Team full facility:	Dev & Production (new and & re-dev) create, redevelop modify resources	Specifications and standards published: Technical, IP, Accessibility, Metadata Modification and indigenization guidelines Development guidelines Design Brief and Specification template; Functional specification template; Develop alpha/beta version of LR and forward to QA for final review	Production Manager Desktop publisher/ HTML encoder Instructional designer Multimedia programmer Graphic artist, Production assistant/Editor

Structure	Function	Roles & Responsibilities	Human Resources
		Develop final version	
Region Managers	Financial management	Budget allocation for LRMDS operation and maintenance Networking and linkages with prospective funding agencies MOOE allocation	Regional Director LRMDs Manager

9.3 Division

The LRMDS Administration & Lib hub Group at the Division level is responsible for supporting access to the system and reproduction of materials at the division for schools and training purposes. The Division QA and Production Team support re-contextualization of resources for localization and indigenization. Where major redevelopment work is required the Division submits a request and Design brief and specification to the Region LRMDS Manager.

The Division plays a crucial role in monitoring and evaluating the needs, access and use of LRMDS by schools, clusters and Community Learning Centres.

Table 9 Organizational Structure for LRMDS

Structure	Function	Roles & Responsibilities	Human Resources
LRMDS Administration & Lib hub	Provides access to LRMDS Implements use of LRMDS Provides information and training on LRMDS function and services Training of school heads and subject supervisors Training program for access and use of LRMDS	Coordinates Online access to LRMDS Catalogue of resources maintained. Library maintained	Library/LRMDs manager/coordinator Technical support
QA Production Team	Integrates content for local context/needs Modifies content for local context/need Monitors and evaluates access and use of LRMDS by schools, cluster, CLCs	Manage & catalogue Division/School generated resources LR, TR/PDMs developed and reproduced for local use. Create and maintain pool of writers/experts (training) Indigenization and localization guidelines for reproduction of materials Reports to Region access, use, redevelopment (as above) and requests for LRMD updates	QA Coordinator Production Manager Desktop publisher; Instructional designer Web Designer Production assistant Editors/Writers

9.4 School/Cluster and Community Learning Centers

All school personnel may access and use the system. Schools and teachers are the primary users of the system and play a major role in identification of resources and areas of resource need. Schools and teachers also produce resources and these resources may be made available to share via the LRMDS.

Table 10 Organizational Structure for LRMDS

Structure	Function	Roles & Responsibilities	Human Resources
LR committee	Coordinate across subjects and levels access and use of LRMDS to support Teaching and Learning needs within the School/ Cluster/CLC	Access LRMDS Identify LR Needs - LR Plan integrated with SIP/AIP/SRC Review existing LR in school and LRMDS and identify gaps & priorities Review and evaluate teacher developed material	Principal/Assist Principal LR coordinator ICT Coordinator Subject Supervisors
Cluster/ Lead school and Community Learning Centres	School Developed Learning Materials (Relevant & Indigenization and Localization) Review materials in all levels Reproduce materials for teaching and learning needs	Rubrics/Criteria/Standards and specifications Identification of Learning resources for reproduction of Mother Tongue Modules for ALS EASE Modules (Sec.) Learning Package (Elem.) Supplementary LRs Materials Evaluation	LR coordinator ICT Coordinator Subject Supervisors

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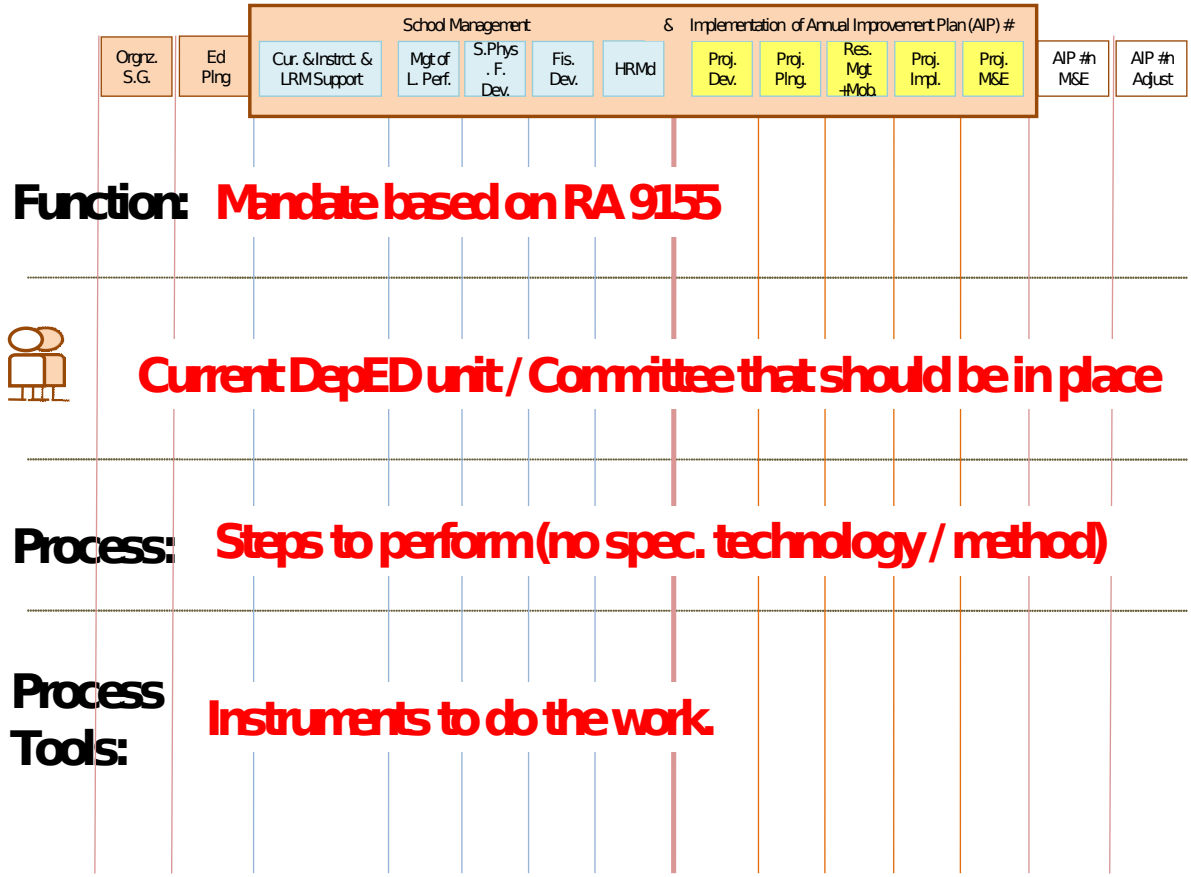
Appendices

10.1 Appendix 1 Integrated Multi-layered SBM Systems



10.2 Appendix 2 - Use Cases

Scenario and use case:

Example *Scenario 1:*

A non-central secondary school in Nth Samar was recently flooded during a typhoon. Many of the class sets of teaching and learning resources were damaged.

In what way will the service and functions of the RELSS/LRMDS assist in alleviating/solving the problem for the teachers at this school?

Example *Use case 1:*

Mr Joy is a secondary Mathematics teacher. His school does not have any computers at this time. He has travelled to the Lead school for Mathematics within his local cluster to search for resources for Year 9 Mathematics.

He is looking for student activities and lesson plans for Algebra.

He logs on to the LRMDS and searches for Year 9 Mathematics – algebra

The following list of resources is the result of his Search.

- Learning guide (BEAM) – solving algebraic equations: Learning resource 75:38 – Algebraic Expressions Competencies: mathematics/7/3
- Interactive resources – Exploring algebra, 3 containers complex proportional relationships
- Text Book reference: Year 9 Mathematics: located at Lead school
- 6 Worksheets for student activities – algebraic expressions and solving proportional problems.

Mr Joy prints out the Learning guide and all the worksheets. He makes enough copies of the worksheets for his classes. The printing costs are allocated via the school MOOE. On this occasion the local community has provided extra funding to the Lead school for resource reproduction.

He notes that he can borrow the text book from this school as there is a class set. He only wants a copy for his own reference.

He also copies the interactive resources to his own USB so that he can have a look at them on the computer at the Lead school. He thinks that this will give him some ideas for planning some lessons for his class on proportional relationships.

Mr Joy is looking forward to when computers are available at his school but in the meantime being able to easily search and find a range of learning materials related to his teaching program is very useful. This means he doesn't just have to rely on one textbook.

Note:

It is important that the narrative of the use case identifies: Functions, Services, Facilities, Equipment, Human resources, Structure/organisation So that requirements (specifications) can be identified from the use cases. ***See highlighted text***

Use Case Scenario 2

Ms Portia is a teacher at the Lead School in Region VII. Her school has a general purpose computer lab as well as portable computers. The school has wireless broadband so she and her students are able to access a range of learning materials online.

Ms Portia is planning her English classes and wants to develop a program around writing for different purposes.

Use Case 2

From her office at the school she logs on to the LRM system to search for learning materials.

She enters the Search terms into the system: English language, literature, text types Year 7/8.

Her Search response yields the following list of learning resources.

- **Interactive resources**

Web Designer Browse jumbled web pages, which are all connected with dragons. Match material to the type of website it belongs to: cultural, natural science or Chinese restaurant. Identify features of the texts. For example, identify opinion adjectives such as 'tasty' that describe restaurant food in a positive way. Match up the title, main body text, graphics and animation. Choose words and images suited to the topic or content. This learning object is one in a series of four objects.

Rainforest Track down a black panther reported to be prowling around a town. Interview witnesses and gather information from sources such as a website, advertisement and newspaper article. Notice that some of the statements may be wrong and the opinions may be biased. Choose the evidence most likely to be accurate. Rate reliability by using the SAFE test (Source, Attitude, Facts and Emotions). Identify when, where and how to find the panther. This learning object is one in a series of three objects.

- **Text book**

Text book for Secondary English – Chapter 4 Creating texts for different audiences.

Class sets available from regional library hub.

- **Learning resource guide:**

877: 935 - Information in non-textual format

Competencies: english/7/1

2 Instructions, Questions, Explanations and Responses

- Listening
    - Listen to and carry out instructions given.
    - Listen to explanations of specific processes noting sequence and cause-effect relationships.
    - Adjust listening strategies (marginal, selective, attentive, critical) in relation to the main purposes of listening, one's familiarity with the topic and level of difficulty of a text describing a process and narrating short accounts.
    - Distinguish what to do and what not to do in emergency situations (fire, typhoon, earthquake, etc.)
    - Listen to clues to enable one to tune in to the topic.
- Speaking

- Give clear commands, requests and directions to get things done.
- Formulate responses to questions noting the types of questions raised (yes-no, wh-questions, alternative, modal, embedded).
- Respond to offers made (accept, turn down or negotiate changes in offers made).
- Give instructions, prohibitions, warnings.
- Ask and answer different types of questions when conducting an interview.

- Reading
  - Interpret instructions, directions, notices, rules and regulations correctly.
  - Read closely to find answers to specific questions, note sequence of events, etc.

- Literature
  - Show appreciation of literature specifically Philippine literature as a means of highlighting human rights in varied genres
  - Distinguish between the Language of Science and the Language of Literature

- **Online links**

English Listening Language Lab Online - Learn English Naturally

ELLLO is a collection of over 800 audio activities that ESL, EFL, and **English** students and teachers can access freely via the net.
www.elllo.org/

Ms Portia spends some time reviewing the list and then decides to download the Learning guide to her local drive and to also download the interactive resources.

She wants to spend some time reviewing these and linking the interactives into the learning guide activities.

She will then copy her completed learning module to the Local server for her class to access the resources.

She has also set up an activity for the students to access one of the English language listening labs online. Ms Portia books the computer lab for this session so that all students can access individually the listening task.

For the other classes she will set up computer stations in the classroom for small groups of students to use to explore the interactives.

She also photocopies some of the worksheets for the students to complete and to submit for assessment.

10.3 Appendix 3 List of existing DepED and foreign funded project resources.

Foreign Funded

Project	Subject	Level	Existing format
BEAM Learning Guides	Mathematics		Printed pdf Online
	Science		Printed pdf Online
	English		Printed pdf Online
	Indigenous People		Printed pdf Online
PROBE	Science		Printed
	Mathematics		Printed
	English		Printed
SEDIP	All subject areas		
	SSA EASE-		
CONSTEL	English		Audio- video print
	Mathematics		Audio- video print
	Science		Audio- video print
PRODED			

DepED

Project	Subject	Level	Existing format
BALS modules			Print and digital
BEE			Print and digital
BSE			Print and digital
NEAP			Print and digital

10.4 Appendix 4 Excerpt Information & Communications Technology (ICT) Workplan Draft Version 0.5 August 13 2008.

EXECUTIVE SUMMARY

"Knowledge is a fundamental driver of increased productivity and global competition. It is seminal to invention, innovation and wealth creation. *Information and Communication Technology (ICT) provides a foundation for building up and applying knowledge. Countries that use innovative information technology applications possess advantages for sustained economic growth and social development*."

- *World Bank Strategy Report, April 2002*

STRIVE 2 was designed to develop and strengthen education management and learning support systems for School-Based Management (SBM), Human Resource Development - In-Service Education and Training (HRD-INSET) and Learning Resources Management and Development System (LRMDS) by improving access to quality basic education in selected provinces in the Visayas. These systems shall be established with quality, access and sustainability cutting across all systems. These systems shall be supported by ICT-enabled solutions that aim to, (1) strengthen information management at the regions and divisions to enable information-driven decision-making, planning, policy formulation, monitoring and evaluation and program management, and (2) provide a venue for connecting people to people and people to knowledge and information they need to effectively act and create new information, using available and internally developed ICT tools.

The Information & Communications Technology (ICT) Workplan shall serve as the blueprint for the design, development and implementation of an ICT Solution that will enhance and strengthen critical support systems at Regions VI, VII and VIII, in part through the practical application of these innovations in four (4) selected Divisions - Negros Occidental, Bohol, Tagbilaran and Northern Samar. The ICT Solution will be developed, implemented and refined in the STRIVE covered regions and divisions prior to a large scale roll-out to be undertaken by DepEd. The workplan was derived through a series of consultations and collaborative work with key stakeholders at the STRIVE region and divisions offices, the Office of Planning Service and the ICT Committee at the Central Office. In deriving the Solution System, an assessment of the current ICT resources and capabilities in the STRIVE provinces was conducted (see Annex A – ICT Situationer).

The **Solution System** is presented in this document in terms of the three (3) key components of information systems, which are Process, Technology and People. The Process component describes the functional design of the information systems and learning support system. It also provides the relevant strategies to develop these systems. The Technology component defines the technologies (hardware, software and communications) that will support the Process components, while the People component focuses on the organizational and institutional support strategies to be established to ensure that the Solution System is successfully developed and implemented within the effective term of STRIVE. Cutting across these 3 components are the policies that come with implementing and mainstreaming these systems. Policies and standards will be formulated and institutionalized alongside the roll-out of systems in STRIVE regions and divisions.

Process

The Process component of this Plan defines an Information Systems Architecture that builds on the existing systems and ICT structure, linking processes and data towards an Integrated Education Management Information System Framework. This framework has two major building blocks: (1) the web-based application systems supporting the critical processes of education management at all levels (school, division, region and national levels) and maintaining transactional databases, and (2) the system managing the learning resources including the vast unstructured knowledge holdings of DepEd.

This Section on Process provides a more comprehensive development and implementation plan of the key undertakings summarized as follows:

a) Re-engineer the Basic Education Information System (BEIS) so that it becomes part of a web-based Integrated Education Management Information System of DepEd that will effectively support planning, policy formulation, monitoring and evaluation and quality assurance at all levels of the education management system.

b) Develop a Training & Development Information System that is linked with the Human Resource Information System to support the development needs of teachers, school heads and education managers.

c) Establish a Learning Resource Portal (eLearningResources) that consists of an Online Catalog of LRs, central repository of LRs, management and development of LRs at the STRIVE regions and divisions.

d) Develop a Project Management Support System that consists of a Document Management System, Project Coordination Tool and Project M&E Database System.

The strategies for developing and implementing the Solution System are governed by the following principles:

- Use of web technologies and implementing the Application Service Provider (ASP) model for the application systems to eliminate problems and reduce cost in deployment and maintenance, and ensure sustainability of application systems;

- Use of Open Source Technologies for the development of the information systems to release users from the burden of software licenses and to respond to non-functional requirements that include portability and interoperability ;

- Involvement of system users in a joint application systems design and development to promote early adoption and ownership of the system, increasing the likelihood of sustaining the systems even beyond the project.

Technology

The overall plan for the Technology Infrastructure of the Solution System is directed to (1) strengthen Network and Server Infrastructure in the DepEd Data Center to handle the IEMIS, T&D IS linkage to HRIS and the LRMDS, the latter requiring capability for document imaging, multi-media resources, audio and video streaming, and (2) beef up the capability of the regions, divisions and schools to access the centrally deployed systems through the internet. This shall be done in phases throughout the implementation of the ICT Workplan to cater to the ICT resource requirements of different application systems as these are implemented.

Other technology strategies address the following:

- Platform for technology and implementation of application systems;
- Centralized implementation approach, promoting web-based applications;

- Authoring tools for the development of LRs.

People

The section on People Strategies proposes capability building programs that are directed towards promoting ownership and sustainability of the systems to be developed even at the early stages of the systems development. The ICT Coordinators are the focal persons for the ICT component of STRIVE in the regions and divisions. At the Central Office level, implementation arrangements with the UIS Task Force were drawn particularly in the development and implementation of the Integrated EMIS. Moreover, coordination mechanisms with the ICT Committee, apart from their involvement in the UIS Task Force, are evident particularly in the definition and implementation of ICT Policies and Standards and in the implementation of the ICT infrastructure in the Central Office.

Development & Deployment Strategies

This Section defines the approach and methodology for developing and implementing the system. A Gantt Chart of the activities and the timelines for undertaking and delivering the required outputs is shown in Annex E. In summary, the schedule for the design, development and implementation of each system is shown in the table below.

Systems & Major Development Phases	Target Schedule
Integrated EMIS	**June 2008 – March 2010**
Design and Development	*June 2008 – April 2009*
Pilot Implementation	*May 2009 – March 2010*
Training & Development IS	**July 2008 – May 2009**
Design & Development	July 2008 – Feb 2009
Pilot Implementation (TNA, PPDS, TDS)	Jan 2009 – May 2009
Learning Resources Management System	**June 2008 – Mar 2010**
Design & Development	June 2008 – March 2010
Soft Launch of eLearningResources	March 2010
Project Management Support System	**Oct. 2008 – Nov. 2008**
Design & Development	*Oct 2008 – Nov 2008*
Pilot Implementation (TNA, PPDS, TDS)	*November 2008*

Investment Requirement

The Investment Requirement Section presents the estimated costs for the establishment of the technical infrastructure to support the Solution System. This technical infrastructure consists of the hardware and communications facilities, including the software for developing learning resources. The cost of developing the systems and the infrastructure for the Project Management Support System shall be covered by STRIVE, while the infrastructure component of the IEMIS, T&D IS and LRMDS shall be provided by DepEd. While this plan presents the minimum ICT requirements, the precise contributions of STRIVE and DepEd in terms of ICT and network infrastructure are to be determined separately, since, as indicated in the Assessment Report, the regions currently differ in their capacity to implement the information systems and will therefore require different levels of input in this regard.

Indicative investment requirements are summarized in the table below. Details of these costs are shown in Section 5 – Procurement Plan.

Systems By Site	Indicative Investment Requirement
Central Office (Data Center)	**6,965,000.00**
Integrated EMIS	*1,365,000.00*
LRMDS	*5,600,000.00*
Regional Office	**2,080,000.00**
Integrated EMIS	*670,000.00*
LRMDS	*1,200,000.00*
Training & Development IS	*210,000.00*
Division Office	**2,080,000.00**
Integrated EMIS	*670,000.00*
LRMDS	*1,200,000.00*
Training & Development IS	*210,000.00*
Cluster Schools	**332,000.00**
STRIVE Project Management Support System	**960,000.00**

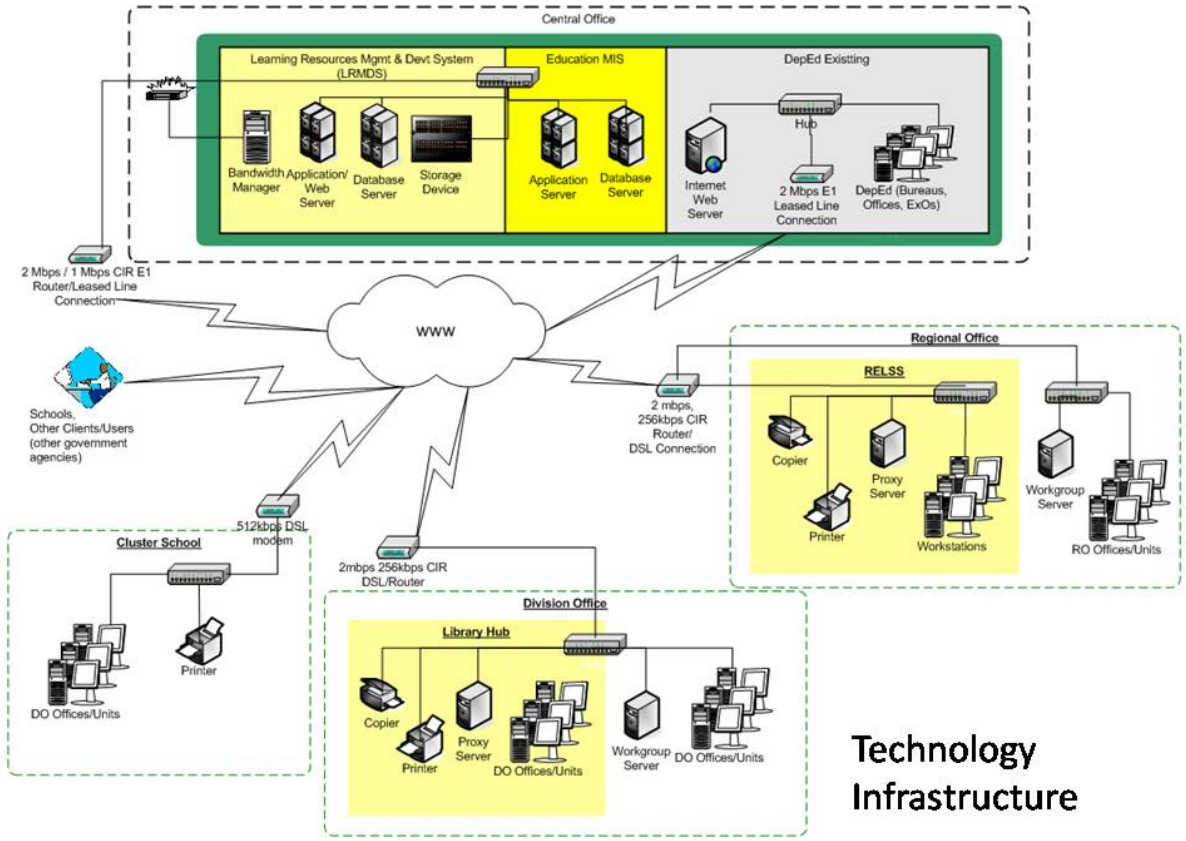


Figure 1: Proposed Technology Infrastructure

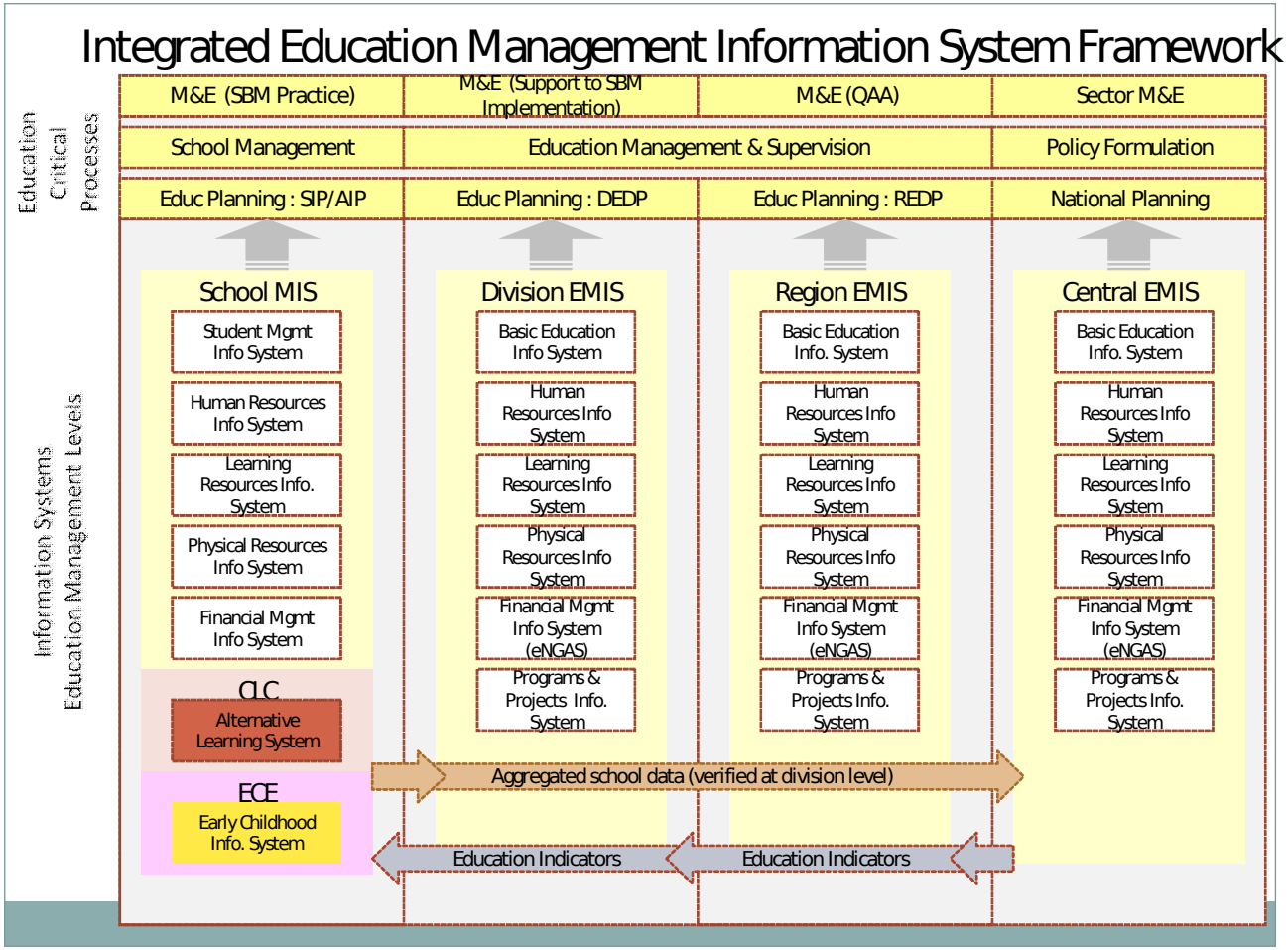


Figure 2: Overall Architecture of the Integrated EMIS and its Support for the Critical Education Processes

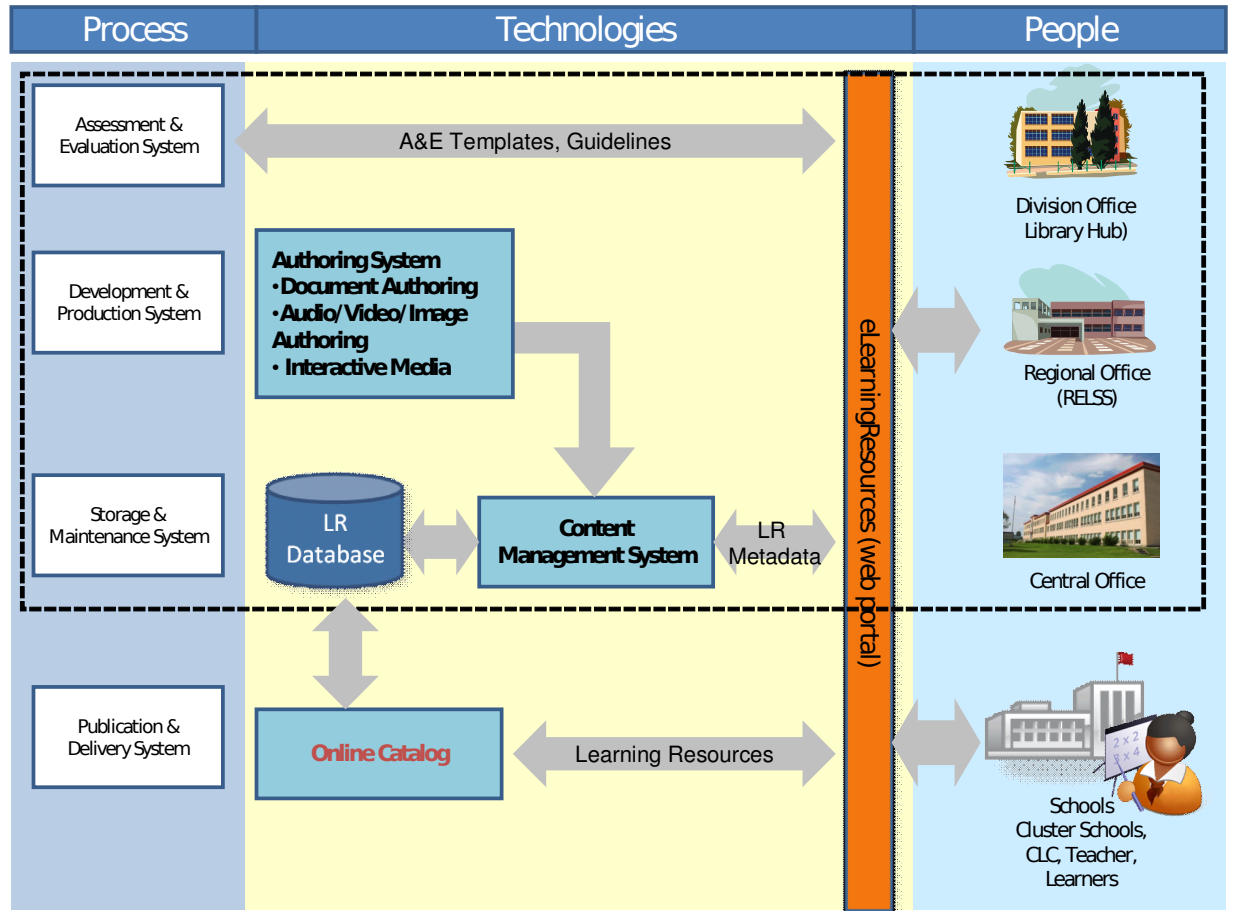


Figure 3 LRMDS Framework

System	Purpose	Standards & Specs	Proposed Software
Authoring System	Content development	• Web 2.0 • Supports XML • Complies with standards of Learning Management System • Flash, PDF, AdobeAIR	• Adobe Creative Suites (DreamWeaver, Flash)
Audio/Video Editing	Multi-media Content development	Video Format(Eg. DivX, Xvid, FLV, Mp4, mpeg, avi, ntsc, QuickTime, RealMedia, WMV) Audio Format (eg. WMA, Wav, MP3, EIF)	•Adobe (Adobe Premier, Adobe After Effects, Encore, SoundBooth)
Document Authoring	Document publishing Digital rendering of printed documents	• interoperability (independent of hardware, software & operating system)	• Adobe Acrobat • XHTML • MS Office
Content Management System	Metadata creation Maintenance (create, update, archive) LRs	• Interoperability • Accessibility • RSS Support • Search Engine Optimization (SEO)	For Development: • ASP .Net, Flash, AJAX, FCKEditor • MySQL or MSSQL 2000/2005
eLearningPortal	Portal or gateway to LRMDS services and content Search Engine LR Catalog or Directory		

Figure 4 LRMDS Development and production system software requirements Region, Division, Central Office

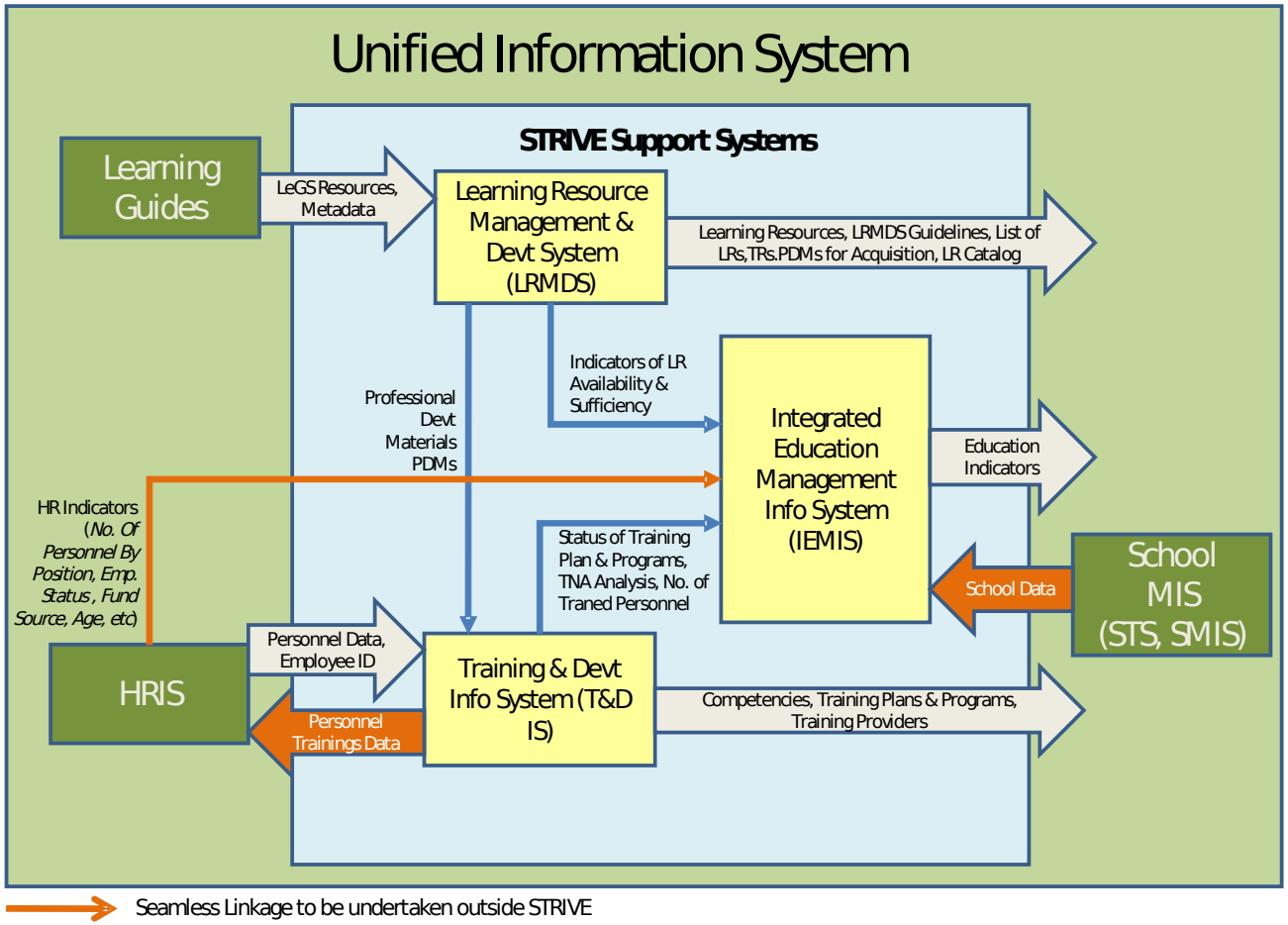


Figure 5 Solution system

Procurement Plan

This Section provides the minimum infrastructure costs required to implement the Solution System for LRMDS. Refer to pages 33-39 of DepED – STRIVE ICT Workplan V0.5

Indicative HW/SW & Communications Requirement: LRMDS

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
A. Learning Resources Management & Devt (LRMDS)								
Central Office								
19.	1	Application Server	Rack/2U; Quad-Core Intel Xeon Processor X5460 up to 3.16GHz and up to 1333MHz front-side bus; No. Of Processors (std/max): 1/2; Level 2 Cache, 2x2 or 2x6MB (dual-core) or 2x6MB (quad-core); Memory (std/max): 4GB/48GB fully buffered DIMM 667MHz via 12 DIMM slots, Expansion Slots: 4 PCI-Express or 2 PCI-X and 2 PCI-Express; Disk Bays Total: Six 3.5" or eight 2.5" (Small Form Factor (SFF)); Max Internal Storage: 1.8TeraByte (TB) hot-swap Serial Attached SCSI (SAS) or 6.0TB hot-swap Serial Advanced Technology Attachment (SATA) Network interface:Integrated	300,000.00	300,000.00			
20.	1	Database Server		300,000.00	300,000.00			

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
			dual Gigabit Ethernet (GbE) Power supply (std/max): 835W 1/2 AC standard, DC power supply optional; Hot-swap components: Power supply, fans and hard disk drives (HDDs); RAID support: Integrated RAID-0, -1, -10, optional RAID-5, -6; Limited warranty: Three year customer replaceable unit (CRU) and on-site					
21.	1	SAN Storage Device	Server attached storage device with at least 1 Terabyte capacity; 1 CPU at 8Gigabytes	2,500,000.00	2,500,000.00			
22.	1	Router	10/100BaseT Modular Router; Cisco 1700 IOS IP; 1 x 2-port Serial WAN Interface Card; 1 x V.35 Cable, DTE, Male, 10 Feet	400,000.00	400,000.00			
23.	1	Firewall Appliance	Anti Virus Firewall with content filtering and anti spam; IP/MAC address building; Policy Based Routing; Multiple WAN link support; Diff Serv setting; Policy based traffic shaping, Guaranteed maximum priority bandwidth; HA Active-active mode load balances non AV, Traffic; HA	400,000.00	400,000.00			

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
			Link Security, Link Fail Over; NAT, PAT, Transparent (Bridge), Routing Mode (RIP v1, v2); H.323 NAT Traversal, Policy Based NAT; User Group Based Authentication; Dynamic Intrusion Detection and Prevention Intrusion for over 1300 attacks; Automatic real time updated; Customizable detection signature Lists					
24.	1	Bandwidth Manager		450,000.00	450,000.00			
25.	3	Uninterruptible Power Supply (UPS)	At least 15 minutes backup time; 3X3 KVA	100,000.00	300,000.00			
26	1	Rack System	The same system as specified for EMIS will be utilized	-	-			
27.	1	Desktop	As above	80,000.00	80,000.00			
28.	1	Switch	Cisco Switch=Form Factor External - 1 U; 24 Port x Ethernet 10Base-T, Ethernet 100Base-TX; Ethernet, Fast Ethernet;2x10/100/1000Base-T(uplink); 2 x GBIC; SNMP/RMON/HTTP;Half-duplex,full-duplex; Flow control/full duplex capability, layer 2 switching, auto-sensing per device, dynamic IP	100,000.00	100,000.00			

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
			address assignment, auto-negotiation, auto-uplink, IGMP snooping, manageable, stackable;IEEE 802.1Q, IEEE 802.1p; UPS 500 Watts; Cablings					
29.	1 set	LAN cables, Access Point, WIFI LAN Cards, Installation		50,000.00	50,000.00			
30.	12 months	E1 Leased Line Connection	At least 2 mbps, 1 mbps CIR Internet connection bandwidth	60,000	720,000.00			
Regional Office								
31.	1	Proxy Server	As specified for the Workgroup Server	150,000.00	150,000.00			
32.	1	Printer (networked)		50,000.00	50,000.00			
33.	3	Desktops/Laptops	As above; for LR development	100,000.00	300,000.00			
34.	3	Desktops	As above specifications; For Access to LRs at the RELCs	80,000.00	240,000.00			
35.	1	UPS	As above	50,000.00	50,000.00			
36.	12 mos.	DSL Connection	At least 2 mbps, 512kbps CIR Internet connection bandwidth	8,000	96,000.00			
37.	1set	Network setup, switch, cable, WIFI LAN Cards	Network peripherals bundled with installation	100,000.00	100,000.00			
38.	1 site licens	Authoring Software	Supports Web 2.0 (XML, RSS, Flash Files, etc)	236,000.00	236,000.00			

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
	e		Complies with the standards of Learning Management System; ideally 10 users					
Division Office								
39.	1	Proxy Server	As above	150,000.00	150,000.00			
40.	1	Printer (networked)		50,000.00	50,000.00			
41.	3	Desktops/Laptops	As above; for LR development	100,000.00	300,000.00			
42.	3	Desktops	As above specifications; For Access to LRs at the RELCs	80,000.00	240,000.00			
43.	1	UPS	At least 15 minutes backup time; 1x3 KVA	50,000.00	50,000.00			
44.	12 mos.	DSL Connection	At least 2 mbps, 512kbps CIR Internet connection bandwidth	8,000	96,000.00			
45.	1set	Network setup, switch, cable, WIFI LAN Cards	Network accessories bundled with installation	100,000.00	100,000.00			
46.	1 site license	Authoring Software	Supports Web 2.0 (XML, RSS, Flash Files, etc) Complies with the standards of Learning Management System 3 site licenses (ideally 10 users) for STRIVE regions	236,000.00	236,000.00			
Cluster Schools or CLC								
47.	12 mos.	DSL Connection	At least 512 kbps	2,000.000	24,000.00			

No.	Qty	Component	Specifications	Unit Cost	Total Cost	Source Of Funds		Proc. Sched (Qtr-Month)
						STRIVE	Others	
48.	3	Desktops	As above	80,000.00	240,000.00			
49.	1	Printer		50,000.00	50,000.00			
50.	3	UPS	At least 15 minutes backup time;	6,000.00	18,000.00			