

## **System Decision Paper**

# **Corporate Lessons Learned (CLL) System**

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And

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# Table of Contents

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<b>I.</b>	<b>SDP TRANSMITTAL MEMORANDUM.....</b>	<b>3</b>
<b>II.</b>	<b>SYNOPSIS.....</b>	<b>4</b>
A.	FUNCTIONAL PROPONENT (FP) .....	4
B.	PROJECT NAME .....	4
C.	ACAT CATEGORY AND MILESTONE .....	4
D.	SYSTEM MANAGER (SM) .....	4
E.	BUSINESS PROCESS ANALYSIS .....	4
F.	MISSION NEED .....	6
G.	MISSION PERFORMANCE .....	7
<b>III.</b>	<b>PROJECT CONCEPT .....</b>	<b>8</b>
A.	PROJECT MANAGEMENT.....	8
B.	DEVELOPMENT STRATEGY .....	9
C.	ACQUISITION STRATEGY .....	9
D.	DESCRIBE THE TARGET USER SYSTEM .....	10
<b>IV.</b>	<b>RESOURCE MANAGEMENT .....</b>	<b>10</b>
A.	CLL MEMBERSHIP IN ITIPS.....	10
B.	IS LIFE CYCLE COST SUMMARY .....	10
C.	LIFE CYCLE VALUE OF BENEFITS:.....	12
D.	IS FUNDING SOURCE AND COST RECOVERY .....	13
<b>V.</b>	<b>TECHNICAL CONSIDERATIONS .....</b>	<b>14</b>
A.	JOINT TECHNICAL ARCHITECTURE .....	14
B.	DEMONSTRATED REQUIREMENTS.....	14
C.	INTEROPERABILITY, INTERFACES, AND INTEGRATION CONSIDERATIONS.....	14
D.	ELECTRONIC RECORD KEEPING PLAN .....	15
E.	CONFIGURATION MANAGEMENT PLAN .....	15
F.	DATA MANAGEMENT PLAN.....	15
G.	TESTING AND EVALUATION MASTER PLAN.....	15
H.	INTERNAL CONTROLS AND SECURITY. ....	16
I.	POST DEPLOYMENT SOFTWARE SUPPORT (PDSS) PLAN.....	17
J.	IS TECHNICAL DOCUMENTATION.....	17
<b>VI.</b>	<b>SIGNATURE AND APPROVALS.....</b>	<b>18</b>
A.	IS FUNCTIONAL PROPONENT (FP).....	18
B.	MILESTONE DECISION AUTHORITY (MDA) .....	18
<b>VII.</b>	<b>APPENDIX.....</b>	<b>19</b>
	CLL ECONOMIC ANALYSIS .....	19

# System Decision Paper

## Corporate Lessons Learned (CLL)

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### I. SDP Transmittal Memorandum

MEMORANDUM FOR: Chief of Engineers,  
ATTN: CECI-ZA / Mr. Wilbert Berrios,  
441 G. Street N.W. Washington D.C. 20314-1000

SUBJECT: Transmittal of System Decision Paper for Corporate Lessons Learned (CLL) system

1. The Engineer Research and Development Center's Construction Engineering Research Laboratory is please to submit the attached LCMIS documentation for the Corporate Lessons Learned (CLL) System. The attached System Decision Paper is for a combined Milestone 1 (Demonstration and Validation Phase) and Milestone 2 (Development Phase) of CLL. Attached, as Appendix A to this document, is the Economic Analysis for CLL.
2. When approved, the completion of the CLL development effort will provide the Corps of Engineers with a corporate level method to capture, review, approve, and reuse lessons learned across a variety of legacy information systems as well as have this capability to incorporated within future ISs. The financial importance of a corporate wide approach to lessons learned is clearly shown in the attached Economic Analysis. Lessons already generated with the first Design Quality application using a prototype CLL are estimated to save Seattle District \$2.8M over the next seven (7) years. By making these lessons available to the entire Corps with a completed CLL, anticipated saving on these lessons will grow to \$52.8M over the next seven (7) years.
3. The remaining two-year completion development timeline is presented within the SDP as well a breakout of the funding requirements (1<sup>st</sup> year \$200K, 2<sup>nd</sup> year \$200K). The Savings to Investment Ratio (SIR) for this effort is 141 and the Discounted Payback Period (DPP) is 2 years.
4. System maintenance expenditures after development are anticipated at \$200K per year. The resources necessary to integrate LL functionality within existing ISs should be drawn directly from their operating budgets as priority dictates. The cost to integrate a legacy IS with CLL is estimated at \$200K per IS.

E. William East  
CLL System Manager  
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Laboratory

# System Decision Paper Corporate Lessons Learned (CLL)

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## II. Synopsis

### A. Functional Proponent (FP)

HQ USACE / CECI

### B. Project Name

Corporate Lessons Learned (CLL)

### C. ACAT Category and Milestone

ACAT IV-B Combined Milestone 1 Demonstration and Validation Phase and Milestone 2 Development Phase.

### D. System Manager (SM)

Mr. E. William East, CEERD-CF-N

### E. Business Process Analysis

A comprehensive review and analysis of the design quality business process was conducted during the period FY95-98. Information gained from these activities was used to identify methods for improving design quality and was utilized to develop the Corporate Lessons Learned (CLL) concept.

The initial concept of capturing LL during a business process was identified in 1995 with the development of the Reviewer's Assistant System<sup>1</sup>. This specific application dealt with how to capture LL during a design review process.

How to create and abstract LL during the design process was further developed in 1996 in a paper presented to an American Society of Civil Engineering conference<sup>2</sup>. Also during this period the Construction Industry Institute published a research report titled Modeling the Lessons Learn Process<sup>3</sup>. This document identified the benefits of LL, reviewed current practices, and identified existing systems (including COE efforts). Many CLL identified concepts were supported by this document.

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<sup>1</sup> The Reviewer's Assistant System: System Design Analysis and Description E. William East et al, USACERL Technical Report FF-95/09 April 1995.

<sup>2</sup> Creating and Abstracting Lessons-Learned from BCO Reviews, Bill East et al, ASCE 1<sup>st</sup> Congress on Computing in Civil Engineering, Reston VA 01 Jan 1996.

<sup>3</sup> Research Team 123, dated Draft August 2, 1996

## System Decision Paper Corporate Lessons Learned (CLL)

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Also during this early review of the design quality business process, a prototype system was developed to demonstrate how during a project's life cycle knowledge and experience could be captured, processed, and disseminated within an organization by the use of the world-wide-web. This effort clearly demonstrated how the world-wide-web could be used to support the design intent of the prototype CLL<sup>4</sup>.

The requirements for an initial version of CLL were identified in 1997 and a prototype version of CLL was also developed. The requirements were published in 1998 as a technical report<sup>5</sup>.

The initial CLL design requirements and prototype were reviewed internally and externally. The CERL CLL developer participated in the Department of Energy's Lessons Learned Society<sup>6</sup> to further identify what approaches have, and have not been, successful at other government agencies. As part of a R&D project, two workshops were held in 1996/98 with Corps HQ, Division, District, and Resident Office personnel to further validate and refine the necessary requirement and approach of the lessons learned system. These findings were used to update the prototype CLL<sup>7</sup>.

The above analysis and development efforts produced a CLL concept that was successfully reviewed at multiple levels. A Corps' employee from the Vicksburg District, on long-term training at Georgia Tech, verified that the prototype CLL was the most effective approach to lessons learned<sup>8</sup>. An inter-directorate task force created by the Corps' Board of Directors to review lesson learned approaches confirmed this opinion in 1997 and identified the CLL as the "best of breed" when compared with 47 other systems and approaches to lessons learned.

As a result of the Board of Directors review, in May 1998 the Chief of Engineers authorized a two-district test (Baltimore and Huntington) of CLL with a design quality application. Because of the success of the test at Baltimore and Huntington, the Office of Secretary of Defense identified the CLL system as a quality management "Best Practice" for Quality Management in December 1998.

An economic analysis of benefits of CLL to the Design Quality Business Process identified significant savings from the first application to be integrated with CLL.

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<sup>4</sup> The Use of Organizational Knowledge Within Public Works Engineering Construction and Maintenance Agencies , USACERL Technical Report 98/64, 01 Apr 98, Bill East et al.

<sup>5</sup> Design Review and Related Lessons Learned Systems , USACERL Technical Report, 01 Jan 1997, Bill East

<sup>6</sup> U.S. Department of Energy Society for Effective Lessons Earned Sharing, April 1-2 1997

<sup>7</sup> Design Review and Related Lessons-Learned Systems in the U.S. Army Corps of Engineers, USACERL Conference Proceedings 97/71, April 1997, Bill East

<sup>8</sup> The Use of Organizational Knowledge Within Public Works Construction and Maintenance Agencies, *ibid*

## **System Decision Paper**

### **Corporate Lessons Learned (CLL)**

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Re-use of lessons learned generated by the Design Review and Checking System (DrChecks) at the Seattle District offer a savings potential of \$2.8M to Seattle District during the next 7 years. The ability of Corps wide re-use of these lessons provided by CLL, offers a corporate savings potential of \$52.8M for these same lessons. The complete economic analysis is included in the Appendix.

#### **F. Mission Need**

The Corps, as service organization, continually strives to produce projects “better, cheaper, and faster” than the competition. To do this, the Corps must rapidly adopt new technologies that support competitive advantages. An example of this willingness to innovate is that since the successful initial test of CLL in 1998, approximately one-third (1/3) of the Corps’ districts have adopted and are paying for annual subscriptions to the prototype CLL. The adopting districts see this methodology has a way to both improve the direct execution of projects and also the business processes that enable project execution. CLL users view an effective lessons learned reuse processes as a means to avoid repetitive mistakes and also as a method to share good business practices.

The ultimate benefit of CLL is that it provides the capability for the Corps’ business processes to respond directly to customer specific and location specific criteria. Not only can Corps’ customers provide input to the CLL system but they will also have the ability to track how and when each item they submit gets translated into changes to Corps’ standard operating procedures or technical requirements.

Currently, some offices have stand-alone lessons learned databases associated with specific topics or specific technical subjects. Some of these knowledge repositories have the desirable feature of being integrated within the business process that uses this information like the Resident Engineer System (RMS). Other repositories are simply stand-alone databases, such as the Hazardous, Toxic and Radioactive Waste Center of Expertise Lesson Learned, which require users to visit an independent site to acquire information.

These systems are primarily operated and maintained by local champions who are often also the subject matter experts as well. The success or failure of these systems is driven by these individuals’ energy and commitment and to ensure system success. These champions must often dedicate full time to the capture, evaluation, and entering of lessons to “their” systems. Since these stand-alone systems are not fully integrated into the entire business process that produces the lesson information, the information has to be re-entered into these knowledge repositories. To reuse of this information, an interested party must first go to the site and then create a specific retrieval query against this knowledge repository. Since these “extra steps” are required, employees rarely exercise the opportunity to utilize the corporate knowledge that has been gathered. In addition, these local

## **System Decision Paper**

### **Corporate Lessons Learned (CLL)**

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systems are extremely difficult and costly to maintain and administer. If the local champions of these systems depart, often the viability of the system as well as the information it contains is lost to the Corps.

Thus unless there is an easy-to-use method to both capture and apply lessons learned as people go about their daily business practices, the paper or electronic lessons will not be re-used. These problems are more difficult if multiple offices have related lessons learned databases on different topics. Even if the employee wanted to use the data, it is unlikely that they would know either about the existences of these repositories or be able to find the locations of all the relevant data sources. These issues have been all been directly address by design of CLL.

#### **G. Mission Performance**

In a large and distributed organization, such as the Corps of Engineers, similar projects are often completed by various teams composed of individuals with different historical experience levels. As a result, lessons learned by one team are often not readily or easily available to other teams and therefore must be re-learned at other sites. Without effective communication methods, recurring problems are inevitable given the breadth of customers, locations, and facility types that are included within the Corps program. By building an effective lessons learned sharing and reuse mechanism into users' daily business process, such problems will virtually disappear because the correct solution to the current problem can be easily identified, retrieved, and applied.

Allowing customers to participate in the identification of customer and location specific criteria will strengthen the bond between the Corps and its customers. The CLL, therefore, has the effect adding an increased capability for the Corps to be sure to meet custom specific requirements that does not existing in other facility delivery processes.

The initial application focus of CLL was the USACE Design Quality Business Area. The demonstrated success with this business area points to potential success offered by applying CLL to any business process. CLL can also collect needed information vertically and horizontally across staff efforts that support line activities.

Five new concepts are introduced with CLL:

1. Capture LL while doing work. The design concept of CLL is that a "submit" button is added to legacy programs that will allow capture of potential lessons will doing standard tasks.
2. Distributed Gate keeping. CLL routes suggested LL to local evaluators for approval (2 in Figure 1).
3. LL Registry. This is the sharing mechanism that allows employees to quickly find lessons learned stored in different forms and locations, referred to as repositories that relate to their current problem area. The registry can be

# System Decision Paper

## Corporate Lessons Learned (CLL)

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viewed as the worldwide address book that identifies the locations of all repositories on all LL topics (3 in Figure 1).

4. Submission Locally and Nationally. This registry concept supports the local entry of lessons (1 in Figure 1), local approval of lessons (2), and retrieval of lessons by the Registry (3) for any user. Note that LL topics that are of a national level are retained at a national site (4) which are sometimes called a Center of Standardization (COS).

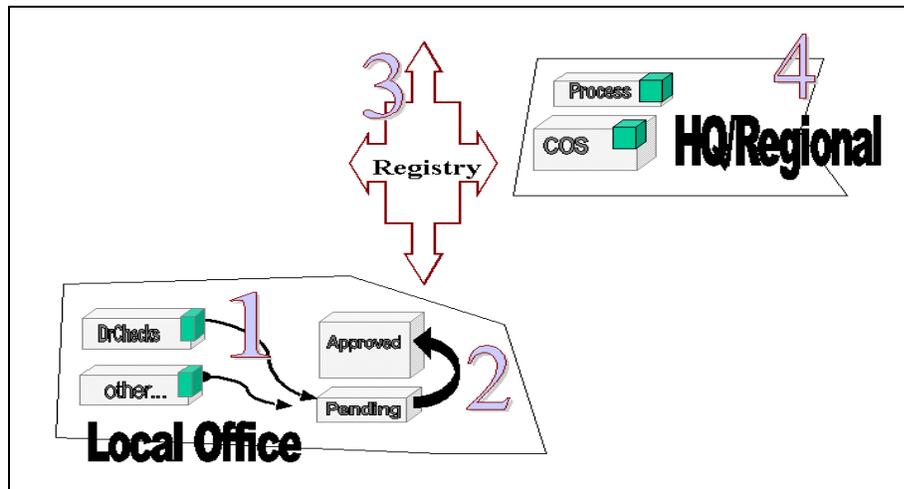


Figure 1. CLL Architecture.

5. Automatic Tracking and Follow Through. CLL extensively utilizes e-mail to inform LL submitters and evaluators on the status of submittal and approval activities. Process management reports are also available. Assignments and status reporting are automatic and require no external effort.

The CLL registry will be designed to adapt to changes in content and scope of local and national lessons learned repositories. Existing and new business processes or national lessons learned centers would be evaluated by the CECI to determine the benefit of inclusion in the CLL registry. If approved, the location and method for accessing these repositories will automatically be transmitted to the CLL Registry. Repositories may be updated or added over time and registry updates may be brought on-line automatically primarily by CLL software. An XML data exchange standard will be developed to allow the Registry to communicate with different repositories. This effort shall be started and completed during the second year of the development effort.

### III. Project Concept

#### A. Project Management

An Integrated Product Team (IPT) has been assembled from ERDC (CEERD-CF-N) and HQ USACE (CECI) to provide project oversight. This effort shall provide

## **System Decision Paper**

### **Corporate Lessons Learned (CLL)**

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the backbone for the capture of CLL from other Information Systems (ISs). Proponents for these other ISs must take an active role in funding and oversight of the integration of CLL into “their” IS. Development of CLL and project management of the effort is being accomplished by CEERD-CF-N. Staffing of CLL approval and issues related to the linking to other ISs are the responsibility of proponents of the ISs with the advice and assistance of CECI.

#### **B. Development Strategy**

The evolutionary strategy was selected as the development methodology. This choice was made as it allowed the development of initial CLL components with the first software build prior to completion of the entire design. This limited focused approach allowed an initial prototype CLL build to support two COE Design Quality Business Practices: DrChecks and the Whole Barracks Renewal Program. DrChecks successfully demonstrated the concept of CLL 1 and 2 in Figure 1 (local collection, evaluation, and re-use of lessons). The Whole Barracks Renewal Program successfully demonstrated CLL 4 in Figure 1 (national collection, review, and re-use of lessons). The demonstrated CLL success with these two systems caused this approach to be recognized as the best conceptual method to follow in developing a corporate lessons learned system.

#### **C. Acquisition Strategy**

CLL will be developed by primarily by in-house COE resources with some contractor support during a two-year effort. The Engineering Research and Development Center’s (ERDC) Construction Engineering Research Laboratory (CERL) will accomplish project management and development.

During the first development year, CERL will extend the first fully operational prototype CLL application (Design and Review Checking System (DrChecks)) into a corporate system during the first year of the development effort. A Registry will be developed to allow sharing of information between ISs.

The focus of the second development year will be the development of the Data Exchange Format . This effort will allow the free and meaningful exchange of information between any legacy ISs.

Each proponent of an IS will be require to fund and manage a separated development effort to add a CLL component. Work required for this activity will include: (1) development of a local lesson collection capability (see 1 in Figure 1), (2) development of a local repository (see 2 in Figure 1), and (3) update of registry to accommodate the new IS (see 3 in Figure 1). Items 1, 2 and 3 must be funded from the application’s IS budget. The framework of the CLL Registry to easily support new additions shall be programmed for and funded from the CLL development and operational budget during the second year.

## **System Decision Paper Corporate Lessons Learned (CLL)**

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### **D. Describe the target user system**

Initial focus of CLL targets has been those IS directly involved with Design and Construction Quality. Currently DrChecks is the only application. A logical next candidate could be the Resident Management System (RMS). An information paper on applying CLL to RMS is under development. The final decision is the responsibility of IS managers who, acting with CECI will identify, plan, and program resources for the next application to be added to CLL. Other horizontally and vertically related ISs should also be evaluated to determine the benefits of being added to CLL.

## **IV. Resource Management**

### **A. CLL Membership in ITIPS.**

CLL was added to ITIPS on 12 May 1998 and last updated on 15 Jul 1998

### **B. IS Life Cycle Cost Summary**

#### **1. Cost Summary:**

Detailed development cost and time frames are presented on Table 1.

**System Decision Paper  
Corporate Lessons Learned (CLL)**

**Table 1 LCIMS CLL Development Schedule and Cost**

<b>ACTIVITY</b>	<b>COST</b>	<b>TOTAL</b>	<b>STATUS</b>	<b>SOURCE</b>
<b>FY00</b>				
Design Review LL (a)	-		completed	(R&D)
LCMIS Documentation (b)	\$50K		completed	(CEMP)
CLL Economic Analysis (c)	\$55K		complete 01	(CEMP)
Map to Command Data Dictionary(d)	\$45K		complete 01	(CEMP)
		\$150K		
<b>1<sup>st</sup> year (CLL Phase 1)</b>				
CLL Registry revision (e)	\$100K			(LCMIS)
Push Back Technology (f)	<u>\$100K</u>			(LCMIS)
	\$200K	\$350K		
<b>2<sup>nd</sup> year (CLL Phase 2)</b>				
Data Exchange Format/Process (g)	\$100K			(LCMIS)
CLL Process Management Report (h)	\$100K			(LCMIS)
	\$200K	\$550K		
<b>IS Budget Funding Responsibility to Integrate with CLL</b>				
<b>3<sup>rd</sup> + year (Cost per IS added to CLL)</b>				
Add CLL Module (per IS)	\$150K			IS Budget (i)
Update Repository (per IS)	<u>\$ 50K</u>			IS Budget (i)
	\$200K			per IS

Notes:

- (a) The CLL module is currently included in the Design Review and Checking System (DrChecks). There are currently 12 Districts using DrChecks. Pacific Ocean Division has standardized on the use of CLL for capture of Division LL. A national repository for lessons learned related to the Whole Barracks Renewal Program has also been funded by CEMP-EE.
- (b) Prepared MNS and SDP
- (c) Prepared LCC Economic Analysis with results from DrChecks
- (d) Map COE Command Data Dictionary entities and identify relationships to the existing CLL data structures

## System Decision Paper Corporate Lessons Learned (CLL)

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- (e) This work involves the design, implementation and testing of a distributed, robust CLL Registry that can direct users to CLL registries for business processes selected by IS proponents with the assistance of CECI.
- (f) The focus of this effort shall be to identify and develop efficient and user appropriate methods to locate and return potentially re-usable lessons to both the IS business process “doer” and the IS user that has a QA/QC “checker” role for the doer.
- (g) The data exchange format will be an XML-based technique to support the free exchange of information from distributed knowledge repositories,
- (h) The effective management of the CLL effort shall require comprehensive reports that track performance, use, and benefits. Considerable efforts shall be required to identify, scope, and program these reports. Examples of these types of reports have been developed for DrChecks and could be extended to other ISs.
- (i) New IS’ participation in CLL may either be funded as line items in that IS’ budget. CLL Module 1 component will provide the ‘yes/no’ lessons learned submission button to the appropriate location within an existing IS and local review and approval capability. The repository update will support the addition of additional indexing and routing features need to support the additional IS.

### 1. Recurring Costs for CLL

Specific cost for recurring cost are identified on Table 2. The recurring costs for the first three years of operation are shown above. As additional business processes or lessons learned repositories come on-line the cost is expected to rise slightly. This rise will be primarily in increasing user group communication tasks from one-half man-year to one man-year. The total recurring costs is not expected to exceed \$250K

**Table 2 Recurring Cost for CLL**

ACTIVITY (FOR ALL USERS)	ESTIMATED COST
One man-year for telephone hotline support	\$100K
One-half man-year for program enhancements	\$ 50K
One-half man-year for user group communication	\$ 50K
Total	\$200K

### Life Cycle Value of Benefits:

Based upon the evaluation of only one prototype application use of CLL with DrChecks, it is estimated that completion of CLL Registry, which will allow all Corps Districts to utilize the existing lessons, cost avoidance to the Corps is estimated to be \$52.8 million within the first 7 years of operation. This represents a multiplier effect of over 18. The expected Savings to Investment Ratio (SIR) of

## System Decision Paper Corporate Lessons Learned (CLL)

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this system is conservatively estimated to be greater than 140. As more and more existing ISs begin to use CLL, the SIR will grow dramatically as only the marginal cost for addition will only be for: the addition of a submit and find button to the IS, structuring a review and approval capability, and a registry update. Similarly, the Discounted Payback Period (DPP) for CLL is only 2 years. The complete Economic Analysis is provided in Appendix A.

### C. IS Funding Source and Cost Recovery

#### 1. One-Time Cost

- (a) FY00 focused on development of LCMIS documentation and project management. Creation of a System Decision Paper and Economic Analysis were initiated. In addition, the data mapping necessary for further system development was also initiated. A prototype CLL was funded for by earlier R&D monies.
- (b) First Year: CLL Phase 1 the major effort it to develop the programs necessary to expand CLL to collect and link lessons from various applications. The CLL Registry (3 in Figure 1) will direct users to CLL repositories for business processes outside the current Design Quality Business Process. Secondary efforts during the first year will also include the revision of existing CLL applications to accommodate the Command Data Dictionary data mapping. An additional minor effort for the first year effort will include the development of a user selected targeted CLL push technology. The goal of this effort is to automatically spawn queries to the CLL to see if lessons exist that relate to the user's current actions and to notify the user of their existence. In addition, this effort will allow the user to "tailor" the type of notification they receive. Hence since this push technology will be tailored to exactly the user need, improved re-use of stored lessons is to be expected over that of the traditional method of having to separately initiate a query.
- (c) Second Year: The primary focus of year two is the Data Exchange Format. This XML-based technique will support the automated communication among distributed CLL repositories. A secondary effort for the second year will be the development of the appropriate CLL process management reports that identify lesson development periods, lesson re-use, and estimated benefits obtained.
- (d) Third and later years: The CLL cost will be limited to system maintenance (Table 2) The cost associated with incorporation of other ISs into CLL (Table 1) shall be borne by the IS's operational budget. Specific tasks will involve the adding the 'yes/no' lessons learned submission button to the appropriate location within the existing IS and adding the approval and

## **System Decision Paper Corporate Lessons Learned (CLL)**

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local repository. The CLL Repository updates will support the addition of additional indexing and routing features need to support each additional IS. To both guarantee a short programming period and successful new IS integration, a comprehensive analysis of benefits followed by a marketing program of CLL benefits will be required by the CLL proponent/program manager to the appropriated IS proponents.

### **2. Recurring Cost**

Recurring cost falls within three separate categories: telephone hotline support, program enhancements, and user group communication. Eventually, when the number of applications using CLL grows the entire cost of this effort could be borne by their O&M programs. Initially, centralized support maybe necessary for initial funding of the first two requirements (\$100K for hotline support, and \$50K program enhancements). It is anticipated that each application using CLL shall be able to fund the user group communications at \$50K per year.

## **V. Technical Considerations**

### **A. Joint Technical Architecture**

CLL is being created on a web client-server platform. The HTML forms presented to the user are created with HTML and Java Scripts and are dynamically driven by COTS data base product (Cold Fusion). No Java applets or ActiveX controls will be used in CLL. These restrictions as to active content are consistent with web accessibility standards. SQL Server will be utilized as the robust data platform. This choice was made to allow external military and governmental agencies to use this product without violating Corps licensing agreements.

### **B. Demonstrated Requirements**

The CLL concept (functionality and applicability) has been successfully demonstrated with the DrChecks application. At present 12 Districts are using DrChecks and CLL for their design review business process. Benefits of reuse of knowledge captured by the CLL module in DrChecks have been documented at Seattle District by an economic analysis (See Appendix).

### **C. Interoperability, Interfaces, and Integration Considerations**

The entire design intent of CLL is to ensure interoperability, interfaces, and integration. Interoperability is met by using the legacy IS to capture the LL. All that is required is to add a CLL yes/no button within the existing program. Significant legacy reprogramming will not be required to add this feature hence limited or no interoperability issues are expected. Since CLL will utilize local lesson review and content approval, interface and integration issues are not

## System Decision Paper Corporate Lessons Learned (CLL)

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expected. The Registry concept will support interoperability between data repositories by providing cross-references between data sources. The XML Data Exchange Format will eliminate the interface and integration issues between differing repositories, which may store information using different data descriptors.

### D. Electronic Record Keeping Plan

Hourly, daily, and weekly backups of all CLL data to shall be made to local disk. Weekly backups of data and web pages shall be stored to removable media and stored. Media will be rotated every four weeks.

### E. Configuration Management Plan

An evolutionary development strategy is being followed. The objectives of the build strategies will be identified and periodically reviewed and updated following joint reviews and an evaluation of user submitted system change proposal (SCP). A numeric scheme shall be followed to record major and minor changes to the operational system. A technical support application on DrChecks will be used to capture all technical support calls and SCPs.

### F. Data Management Plan

Active CLL issues shall be maintained within the system until they have been identified for removal (sunsetting). Three methods of removal shall be available: (a) user identification of a topic no longer applicable, (2) subject matter expert review and decision to remove, and (3) regulation/requirement change that no longer makes the lesson appropriate.

The LL Registry and Repository, which supports the sharing of CLL across different business practices, shall utilize the Command Data Dictionary (CDD) as a mean of insuring the CLL captured and retrieved across various ISs do, in fact, relate to the same data elements. Categories of information within the CDD that relate to each existing CLL database shall be identified. The managers of this data shall be identified for reference by the CLL. Regulations or other documents that identify the allowed values for index-type data structures will be identified and documented. Currently allowable values for all index-type data structures will be identified and documented based on these standard sources

### G. Testing and Evaluation Master Plan

Prototype testing of this CLL project was accomplished with the deployment of DrChecks at Seattle, Huntington, and Baltimore Districts in FY98. The software that was installed at these sites to test it was the Design Review and Checking System. Both of the functionality and benefits of the prototype CLL were clearly identified. While the prototype testing only evaluated the local creation, local approval, and local re-use of lessons, it was clear that CLL could effect a significant improvement in the design quality business process. An extremely conservative economic analysis supported these observations. Since the intent of

## **System Decision Paper Corporate Lessons Learned (CLL)**

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CLL is to deploy it to a variety of business processes and only a small marginal additional cost per additional application will be required, a significant increase in the benefits of CLL is to be expected.

CLL will be implemented in two separate phases. During the first year (Phase 1), the implementation of the Registry with the existing DrChecks applications will be accomplished. Prior to testing of the Registry, Districts POCs will be notified about the effects of the registry linking of existing local data bases, the ability to recover lessons from other districts, and the features of the user selectable push technologies. After notification, districts will use the first application of CLL (DrChecks) and the CLL Repository to capture, evaluate and search lessons learned. At the conclusion of a four-month test period, districts will prepare a report describing their use of the system. CERL will prepare a summary of the test, including all system design and administrative documents, and forward the complete package to HQUSACE. The submission of this final package of materials in Draft Report format will complete the testing and evaluation portion of Phase 1.

Phase 2 shall involve the addition of the data exchange format to the registry that will allow retrieval of lessons from a different IS. While proponents for ISs in conjunction with CECI will identify the appropriate IS, one possible candidate closely associated with the Design Quality Business Process is the COE Resident Management System (RMS). The addition of the RMS IS will allow the capture of lessons related to the actual construction and delivery of facilities to the end user. Clearly lessons captured here will be very beneficial upstream during the design delivery process.

It is anticipated that a one to two quarter test period will be required to adequately test the functionality of the data exchange format in adequately linking the lessons between the differing business processes of design and candidate selected. At the conclusion of the test period, CERL would prepare a summary of the test, including all design and administrative documents, and forward the complete package to HQUSACE. The submission of this final package of materials in Draft Report format would complete the testing and evaluation portion of Phase 2.

### **H. Internal Controls and Security.**

Department of State is conducting a formal security accreditation testing of current version of CLL with a design quality application. This accreditation process includes simulated attacks on the site. All security experience gained from this process shall be applied to the CLL Phase 1 and 2 development efforts.

## System Decision Paper Corporate Lessons Learned (CLL)

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### 1. External network access restrictions.

Before accessing CLL, all users must get access to the CLL web site through an Internet service provider. All providers, including Corps' networks, require that users have valid login names and passwords.

### 2. User Identification.

All users must register to use the CLL. This registration places security ID in the cadre of each browser. This security ID is used by the CLL to identify individual users by the computer on which the registration occurred. Providing access to an individual's computer is the responsibility of the person who "owns" each personal computer registered with CLL.

### 3. Access Rights.

Individual CLL system administrators assign access to view/add/update/delete data. The administrators will restrict access to those who should have such access as part of their task in each CLL business practice.

### 4. Data Creation/Update Tracking.

Add and update query activity is recorded without the users' knowledge for all such transactions.

## I. Post Deployment Software Support (PDSS) Plan

Each existing IS utilizing CLL shall pay and manage the development of a one-time cost not to exceed \$200K for CLL 1, 2, and 3 (yes/no button, local review, and Registry update) that will support a LL search function. If the IS is significantly upgraded, a CLL interface update may also be required and should be included in the IS upgrade budget.

A single IS funded annual user support fee not expected to exceed \$50K/yr will provide support for LL exchange and assistance in searching remote data repositories.

## J. IS Technical Documentation

All CLL development coding utilizes self-documenting capabilities. This is self-documenting coding is augmented by on-line help manuals and materials that provide a complete on-line approach to system documentation.

The evolutionary design has been published in technical reports that cover the past MIL Std 498 requirements.

**System Decision Paper**  
**Corporate Lessons Learned (CLL)**

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**VI. Signature and Approvals**

A. IS Functional Proponent (FP)

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Mr. Wilbert Berrios  
CIO

B. Milestone Decision Authority (MDA)

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Mr. Wilbert Berrios  
CIO

**System Decision Paper**  
**Corporate Lessons Learned (CLL)**

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**VII. Appendix**

CLL Economic Analysis