



System Implementation Proposal

Contents

Contents	1
OpenELIS Implementation	2
BACKGROUND	2
SCOPE OF WORK	2
NOT IN SCOPE	4
FOUNDATION RESPONSIBILITIES	4
LABORATORY RESPONSIBILITIES	4
ASSUMPTIONS	4
RISKS	4
TIMELINE AND COST	5
REIMBURSABLE EXPENSES	5
ANNUAL MAINTENANCE	5
System Requirements	6

OpenELIS Implementation

BACKGROUND

The OpenELIS Foundation (www.openelis.org) is a global community of professionals in laboratory science, public health, health informatics, and software development whose mission is to develop open source community based solutions and thereby support the informatics needs and best practices of environmental, clinical, and public health laboratories. The Core Values of the OpenELIS Foundation are to use Open Source and Collaboration as the driving force in developing community based software that provides innovative solutions to laboratory information systems for clinical and public health laboratories. OpenELIS activities are supported through the OpenELIS Foundation.

OpenELIS is a freely available, state-of-the-art open source Enterprise Laboratory Information System. It is successfully implemented in public health laboratories in the U.S. and in high-throughput clinical laboratories internationally.

The design of OpenELIS is based on the "[*Requirements for Public Health Laboratory Information Systems*](#)" which was published from a collaborative project completed by 25 state public health laboratories, the Association of Public Health Laboratories (APHL), and the Public Health Informatics Institute (PHII), with funding provided by the Robert Wood Johnson Foundation.

OpenELIS comprises two products; a laboratory component and a client web portal. The laboratory component supports the activities of laboratory staff and closely matches many of the testing and reporting processes. The web portal is designed to allow clients and customers access to their results, ability to sign-up for notifications, or to monitor the status of their samples.

The high-level functionality available through OpenELIS includes:

- Sample entry and tracking
- Comprehensive test definition including result validation, prep and reflex rules, QC definition
- Electronic worksheet with QCs and batch result entry
- Inventory with lot and expiration information for items, orders, kits, shipping
- Ability to create flexible auxiliary data
- Vocabulary translation and mapping for electronic data exchange
- Management, QC plot, Turnaround, and selectable ad-hoc reports including Web Reports
- User management with flexible permissions to modules and workgroups
- 3-tier architecture for highest security
- Support of multiple languages

SCOPE OF WORK

The OpenELIS Foundation provides support services for implementations of OpenELIS in Public Health Laboratories (PHLs). These services can range from the initial system installation and setup through training, ongoing support, and customization.

The OpenELIS Foundation proposes a phased approach to an OpenELIS implementation. The first phase will involve implementation of the Environmental Laboratory Section of OpenELIS. Additional phases will (not included in this proposal) involve expanding to Newborn Screening and the Clinical laboratory sections. OpenELIS provides many standard functionalities and laboratory processes that can be easily adopted without requiring system modification. It is our experience that due to standardization across the Environmental section of most PHLs, there will be little to no changes required to the Environmental module. The Foundation will provide a detailed presentation of the current version to the stakeholders and determine any additional requirements.

This proposal includes installation, customization of reports and project management of the tasks listed below.

- 1. Installing OpenELIS test and production environments (IT [100%])**
 - 1.1. Install Operating System
 - 1.2. Install FAX & Print services
 - 1.3. Install JBoss
 - 1.4. Install PostgreSQL Database
 - 1.5. Upload Applications
 - 1.6. Integration with existing security framework
 - 1.7. Load base tables for security and OpenELIS
 - 1.8. Integration of OpenELIS-Portal to client's web framework
- 2. Working with the laboratory and the LIMS administrator to populate the base tables such as tests and methods, quality assurance events, clients, projects, etc. (LIMS Admin [100%], IT [20%], Lab)**
 - 2.1. Basic training of LIMS administrator
 - 2.2. Setting up standards between laboratory sections for naming and other conventions
 - 2.3. Populating base tables
 - 2.4. Review Report Requirements
- 3. Assisting in the configuration of security and user permissions for laboratory staff and external clients (LIMS Admin [100%], IT [10%], Lab)**
 - 3.1. Training of LIMS administrator
 - 3.2. Working with IT group to add external user accounts
- 4. Training the key laboratory experts/train the trainer (LIMS Admin [100%], Lab)**
 - 4.1. Prepare training documentation
 - 4.2. Prepare permission and section documentation
 - 4.3. Train the trainer
- 5. Report Configuration and Development (LIMS Admin [100%], Lab)**
 - 5.1. Modifications to Final report
 - 5.2. Development of Custom Report (optional)
- 6. Helping laboratory experts to create section specific SOPs for their processes (LIMS Admin [100%], Lab)**
 - 6.1. Developing training scenarios
 - 6.2. Running through scenarios
 - 6.3. SOP Development
- 7. Working with the laboratory to perform acceptance testing and system validation (LIMS Admin [100%], IT [10%], Lab)**
 - 7.1. Develop checklist with responsibilities
 - 7.2. Ensure testing is complete
 - 7.3. Publish and go live

NOT IN SCOPE

The following tasks are specifically excluded from this proposal. If required, estimates for these can be created.

- Procurement setup and maintenance of hardware, networking, printers and workstations
- Installation and maintenance of database not supplied with OpenELIS
- System backup and recovery processes
- Define and set up reference tables, data dictionaries, vocabulary
- Procurement and maintenance of integration engine for data exchange

FOUNDATION RESPONSIBILITIES

- Provide System Administrator to install OpenELIS test and production environments
- Provide Developer to modify/develop custom reports and/or any other modifications necessary to the OpenELIS application
- Provide SME to implement best practices in use of OpenELIS
- Provide regular project status and issues management
- Ensure progress of project according to agreed timeline
- Ensure Foundation resources are allocated as needed

LABORATORY RESPONSIBILITIES

- Solid understanding and approval of project scope and plan
- Provide required information and manage laboratory resources to ensure progress follows agreed timeline
- Assign the role of LIMS Manager to maintain LIMS configuration and user permissions
- Acceptance testing, deficiency logging and Sign-off
- Maintenance and Administration of servers and networks and IT hardware
- Any other items out of Scope for this implementation

ASSUMPTIONS

This list of assumptions was used to create the scope, estimated cost and plan for this proposal. If any of these assumptions do not hold true, the level of effort, plan and the cost of the proposal may be affected.

- Upon initiation of this project, the laboratory will have procured all necessary IT hardware and software components – besides those installed as components of OpenELIS – and arrange access to building and systems for OpenELIS Implementation team.
- The OpenELIS Foundation will supply staff to complete the documented Scope and Deliverables within the reasonable effort and timeline agreed to by the Laboratory and the OpenELIS foundation
- The Laboratory will provide staff and expertise required to keep the project on-track within the reasonable timeline agreed to by the Laboratory and the OpenELIS Foundation

RISKS

- The project timeframe and cost is dependent on availability of laboratory staff and allocation of time to the project

TIMELINE AND COST

Timeline, Effort, and Costs Estimates for the Project

Phase	Tasks	Timeline	Level of Effort
Site Configuration	OpenELIS Infrastructure	Wk. 01-02	5 days
Training & Setup	Training & Standards LIMS Admin & IT Train the Trainer & Documents	Wk. 02-13 Wk., 09-13 Wk., 09-13	50 days 7 days 10 days
Development	Modify existing Final Report Custom Reports Development	Wk. 14-15 (TBD ¹)	3 Days TBD
Laboratory Training	Training Scenarios & SOP's	Wk. 14-17	15 days
Implementation	Acceptance Testing, System Validation, & Implementation into Production environment	Wk. 18-30	10 days
Totals			97 Days
Annual Maintenance	General Support of OpenELIS Application and its configurations	52 weeks (Post implementation)	Up to 64 hours / Month

Travel and living costs are estimated at 2-3 trips of one week. Travel and living will be billed at cost. Extra trips will be an additional cost.

Any change in the identified scope will require a scope change and a re-estimation of project cost and timeline.

The Foundation will receive prior approval, in writing, if the identified effort is to exceed the budgeted amount for any phase.

REIMBURSABLE EXPENSES

Progress Billing will be used for project effort, maintenance agreements, and expenses considered as reimbursable (such as equipment staging, printing and communications expenses, and cost for work or software from third parties).

ANNUAL MAINTENANCE

Support will be primarily provided for maintenance of OpenELIS test and production system including application updates, database maintenance, and bug fixes. Available hours of support may be used for report creation or changes, programming, and other enhancements and will include adding customizations into the code repository. Customizations requiring implementation effort beyond allocated support will be billed per hour.

¹ Custom report development effort is dependent on completing specific reporting requirement

System Requirements

OpenELIS Hardware and Software Requirements

System	Item	Configuration	Notes
Production Application Server	Hardware or Virtual Equivalent	4-6 Processors 8GB memory 50 GB for OS and Software Single NIC Fax Modem (or email-based solution if required)	Based on ~ 30-40 users
	Software	Ubuntu Linux LTS JBoss v7.1 Hylafax (for hardware fax modems if required)	
	Networked Storage	750GB-1TB per year Storage for Scanned images (optional) File Share for Database backup File Share for Desktop access to application server (for saving reports)	
Production Database Server	Hardware or Virtual Equivalent	4-6 Processors 8GB memory 300-500 GB Storage for Database	Based on ~300-400,000 samples / year, for 5 years
	Software	Ubuntu Linux LTS PostgreSQL 8.3.3	
Test Application Server	Hardware or Virtual Equivalent	2 Processors 4GB memory 50 GB Storage for Application	
	Software	Ubuntu Linux LTS	
Test Database Server	Hardware or Virtual Equivalent	2 Processors 4GB memory 100 GB Storage for Database	Access to minimal Networked Storage for testing if required
	Software	Ubuntu Linux LTS PostgreSQL 8.3.3	

System	Item	Configuration	Notes
Desktop	Software	Windows 7.x Firefox 24 or higher Microsoft Excel 2007 or higher PDF Viewer Halifax desktop (for those managing Fax)	
External Clients		Firefox, Chrome or IE8 (or higher) PDF viewer	
Other	Hardware and/or Software	Printers, Barcode Printers, Barcode Scanners, System and Database Backup -- TBD	For web reporting a proxy will need to be configured to communicate with JBoss from the Web Server A Managed Certificate will be required for HTTPS web reporting