Kenya Request for Proposal (RFP)
Laboratory External Quality Assessment (EQA) Database development Application for Kenya
Issued 10 July, 2014
Responses due by 31 July, 2014

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Background
The Association of Public Health Laboratories (APHL) through a cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC), Division of Global HIV and AIDS Program (DGHA) is supporting the President’s Emergency Plan for AIDS Relief (PEPFAR).

This request for proposals (RFP) is one component under the overarching PEPFAR goal to strengthen health system capacity and services in Kenya. A complete description of PEPFAR can be found at http://www.pepfar.gov/about/

This RFP solicits offers from qualified information technology software providers and developers to create an electronic system for managing the activities and data related to the External Quality Assurance (EQA) programs administered by the Kenyan Ministry of Health (MOH) National Public Health Laboratory Services (NPHLS). This RFP is only in reference to the software necessary to support these activities.

Laboratory EQA programs evaluate performance of laboratories for specific tests using proficiency testing (PT) schemes, specimen rechecking and retesting, and site visits. Multiple times per year proficiency testing items (under a proficiency testing scheme) are sent to participating laboratories who submit results for review to the PT providers. NPHLS acts as a PT provider for some items, e.g., HIV Rapid Diagnostic Tests. NPHLS receives all PT laboratory results and reports for public laboratories from PT providers. Ensuring the correct analysis of patient samples is a critical component of the health care system and PT is one component of quality assurance that can identify problems for follow up and corrective action to ensure accurate test results.

Several of the Laboratory proficiency testing schemes (PT Programs) are administered by not-for-profit organizations. NPHLS is responsible for managing these PT Programs and integrating the results into a national EQA Program. NPHLS requires an electronic system to manage the workflow and results, perform statistical analyses and analyze the data associated with each PT Program. The goal of this software development project will be to provide a system to manage all aspects of these PT programs.
The system created will be a modern web based system with all of the data in a centralized system. In addition to supporting the PT Program workflows the system will have reporting templates to help analyze the PT activities within the country based on the data generated by using the system.

This is envisioned to be a custom software development effort but if existing software is proposed as the solution the existing functionality and customization required to meet each of the requirements identified must be provided. The implementation plan shall include transfer of the software code to the MOH or a designated partner with training for future modifications by their programming staff, contract staff or partner. After the initial development, successful implementation and transfer of the software code, MOH does not anticipate licensing or maintenance costs with the developer. The developer will be eligible to respond to proposals for training, maintenance and further customization should such support be required. The initial phase of the development will address management of PT, and additional EQA functions may be developed to enhance the base application.

Development and Implementation Schedule
The implementation will be done in a phased approach. The first phase includes development of the core infrastructure and implementation of the first four PT schemes (HIV Rapid Test, HIV CD4 - General Panel, HIV CD4 - Biochemistry, HIV CD4 – Hematology). Award of a contract and development is planned to start by early September 2014 and proposed to finish user acceptance testing of the first programs (at least one and up to four) in December 2014. The specific project implementation schedule and milestones will be determined when the software developer is selected. Immediately following the user application acceptance, users will be trained and the system will go live for the program administrators and end users. After the user acceptance testing for Phase I is complete the detailed design requirements gathering will start for the next set of PT programs. There may also be some additional functionality that is specified in more detail and estimates requested. The goal is to have all of the PT programs and functionality implemented and in use by 30 June 2015.

RFP Response Submission Details
RESPONSE DUE DATE IS 31 JULY 2014

The RFP responses should include enough information for the reviewers to determine whether the Software Developer will be able to competently develop and support the software requirements listed. The responses should include detailed descriptions of how the Software Developer will meet each of the points defined in the sections General System Requirements and Additional Considerations and Requirements. It is not required that the Software Developer has previously developed an application for support management of PT programs. However, it is advantageous and preferable if the developer has experience with laboratory or health related software. If the Software Developer does not have direct experience with PT or EQA systems they must still demonstrate their understanding of the detailed requirements by developing a project plan that shows a level of effort for implementing the core architecture as well as the expected level of effort and plan for implementing each of the detailed requirements.

Please use the Cost Worksheet in Annex E to identify the costs associated with the project. All costs should be specified in US Dollars.

Software Developer information required to be included with response.
1. Full legal name and if Software Developer has a "doing business name" the d/b/a as well.
2. Authorized representative of the Software Developer for the contract.
3. Telephone, fax and e-mail address of the single point of contact for communication between APHL and the Software Provider. Contact information for other persons whom the Software Developer may request informational copies sent in addition to the single point of contact.

4. Business mailing address.

5. Name and contact information of at least three previous customers of the Software Developer for whom they have performed similar work.

Responses must be sent to APHL by e-mail attachment in MSWord and PDF format (electronic signatures accepted) to LISproposal@aphl.org; or by fax to 240-485-2700 attention of Esther Gathinji, Specialist, Global Health Program, APHL; or by courier/delivery service that has a tracking system or by U.S. Postal Service (USPS) Priority or Express Mail to Esther Gathinji, APHL, 8515 Georgia Avenue, Suite 700, Silver Spring, MD, USA 20910. E-mail and fax responses must be received at the APHL office by 5 pm EST / 9 pm UTC on 31 July 2014. Courier and USPS responses must be postmarked or entered into a tracking system by 5 pm EST / 9 pm UTC on 31 July 2014. APHL prefers responses sent by e-mail attachment. Submitters should request a delivery receipt for an e-mail submission. In every case, submitters will receive a confirmation of receipt of their proposal from APHL. APHL may terminate or modify the RFP process at any time during the response period.

Responses that are not received by the stated deadline shall be determined to be non-responsive and at APHL's discretion may not be considered in the review of respondents.

There are three parts of the review for the award of this contract by APHL.

In the first part, APHL reviews all responses received by the response deadline and selects the top 2-4 candidates to be investigated in more detail. The selection process for the top candidates will be based on the following general criteria.

- Capabilities of the Software Developer
- Proposed system architecture and design
- Proposed platform and software tools
- Proposed project plan with level of effort and estimated schedule of deliverables
- Completeness of response
- Cost

Part 2 of the selection process will be a meeting with the selected respondents in Nairobi, Kenya to present their proposal and to demonstrate existing software systems they have developed. Part 2 will also include reference checks which may include meeting with previous clients.

As the final portion of the selection process APHL shall select the preferred Software Developer in consultation with CDC and Kenya MOH personnel, and request a final offer prior to issuing a contract. The final offer will permit inclusion of changes that may arise in deliverables or conditions of the implementation during the negotiation that are approved by APHL.

**Designated contact person for this RFP**
Lucy Maryogo-Robinson
Director, Global Health
Association of Public Health Laboratories
30 June 2014

**Note:** Questions regarding general functional specifications or technical aspects of the application described in this RFP must be directed in writing, preferably via email to: esther.gathinji@aphl.org with a copy to lucy.maryogo@aphl.org.

Communication regarding the content of this RFP to any other employee of APHL, the Kenya Ministry of Health and CDC employees involved in the project or any staff at laboratories is prohibited except as authorized by the designated Contact, during the period from date of release of the RFP until the notice of intent to contract is released. Unauthorized contact concerning this RFP may disqualify the respondent from participating in the RFP process (may not be considered in the review of respondents).

**EQA Terminology**

EQA and laboratories have a specialized language and often terms are used interchangeably or have slightly different uses between countries or programs. For the purposes of this software development project we will be using the following terminology. These terms will become more apparent as they are used when describing the functional requirements.

“Proficiency testing” is the evaluation of participant laboratory performance against pre-established criteria by means of interlaboratory comparisons.

“Proficiency test item” is a sample, reference material, piece of equipment, measurement standard, data set or other information used for proficiency testing.

“Proficiency testing round” is a single complete sequence of distribution of proficiency test items, report of the participant results, and the evaluation and reporting of results to the participants.

“Participant” is a laboratory, organization or individual that receives proficiency test items and submits results for review by the proficiency testing provider.

“Customer” is an organization or individual for which a proficiency testing scheme is provided through a contractual arrangement. For the purpose of this contract, NPHLS is the customer.

“Proficiency testing provider” is an organization that takes responsibility for all tasks in the development and operation of a proficiency testing scheme.

“Program Administrators” are the staff at the central offices of the NPHLS or staff of the contract PT Providers who prepare materials, ship materials, accept results and perform analysis on the data returned.

**Acronyms and Abbreviations**

MOH – Ministry of Health  
NPHLS – National Public Health Laboratory Services  
LDU- Laboratory and Diagnostics Unit  
APHL – Association of Public Health Laboratories
General System Requirements

1. The core of the software system will be a modern web-based system with configuration and administration capabilities, user security and maintenance capabilities, secure web based data entry screens, a secure database storing the data, and reporting capabilities necessary for the analysis of the data on broad levels and very detailed levels.

2. The official language in use in the Kenya laboratories is English. Therefore application screens, documentation and training materials must be presented in English.

3. While the data entry for the system will primarily be web based, it is realized that not all participants will have access to the web which will require some data to be collected on paper and manually entered at a central location. Similarly, some data will be entered via data file imports and through electronic scanning of written forms and converted to electronic format via Optical Character Recognition (OCR) software.

4. All program areas listed in this document will not be released for use at the same time. A phased approach will be taken.

5. The web based portion of the application should not require a specific web browser. The web based portion of the application should be able to run on most modern browsers (e.g. Firefox, Google Chrome, Microsoft Internet Explorer, Safari). It cannot be expected that the participants will have the most recent versions of the browsers but it is expected they will be able to have reasonably recent versions of one of the browsers listed.

6. The system should be designed in consideration to not having recurring licensing costs.

7. The preferred database software to be used for storage is Microsoft SQL Server due to the wide use of the software within Kenya and people familiar with these databases. The Microsoft SQL Server installation will be provided.

8. The server architecture is preferred to be run under Microsoft OS. The physical server and operating system will be provided.

9. A specific web server or software has not been identified but the software developer is urged to utilize commonly used and stable software.
10. While we understand the need to keep up with the latest development technologies the RFP responses will need to include the intended architectures so the reviewers can determine if they deem the proposed software platform and architecture stable. Extremely leading edge technologies are generally less desirable than established technologies unless there is a strong case for their use. The development platform will also be judged on the availability of people within Kenya who have training to maintain and develop within the architecture.

11. The data must reside on servers housed within the NPHLS offices in Nairobi. Access to the servers either physically or remotely will be controlled by MOH staff.

Additional Considerations and Project Requirements

The software developer is to consider the following issues when developing the cost estimate and project plan, and also in the response to the RFP. Many of these considerations are not direct development efforts but should be considered when developing the cost estimate. Some of these items are not part of the phase one development but we identify them so the developer can take these into account in their initial design. The developer must provide hourly or daily rate costs for future work that falls outside of the phase one efforts and which are not included in their overall price quote for phase one.

**Project Management:** The project is large enough to require a good project management plan, preferably maintained in MS Project, and continued monitoring and updating of the plan. Weekly or bi-weekly meetings are also planned to get status updates and as a chance to review questions and risk factors.

**Architectural/Database Design Review and Approval Meetings.** In the early design stages of development the software developer will be required to present their architecture and database designs to experts provided by the Ministry of Health. This requirement has been added because the programs will be developed in a phased approach. The reviewers will have knowledge of the future programs and ask questions as to how future requirements will work within the proposed design. This is an attempt to alleviate the need for major design changes later in the project. This review is not expected to be extensive; however, some oversight has been deemed necessary.

**User Interface Design Review.** Take into consideration the need for design and project administration meetings between the Software Developer and representatives from APHL, CDC, and NPHLS. These requirements do not set forth the detailed guidelines for the user interface so there will need to be design review when the proposed design is completed by the software developer.

**Detailed Requirements Gathering Meetings:** This document does not contain every detail for implementing each program. Therefore there will need to be meetings between the Software Developer and the specific program managers. Existing formulas, forms, and other detailed information will be supplied by the program managers.

**Superuser Training/Support.** Two individuals must be trained on the technical aspects of the software in regards to all operational and maintenance aspects so that typical or simple technical problems can be managed on-site without having to call the software developer’s customer support group. These
users should also be trained to perform all of the configuration options of the developed software with the assistance of the system documentation.

**Code Transfer and Programmer Training.** The MOH will gradually take over the responsibility for the development and maintenance of the application as well for implementing new programs. This will be done gradually as the system becomes stable and multiple PT programs have been implemented successfully. In order for this to occur in an efficient way the MOH employed software developer will work with the software developer at some level during the development phase and especially close when the details of each PT program are implemented. The software developer is asked to include the cost of training this developer in their overall phase one costs. The person or persons identified will have database and programming experience in a web environment. Also include the cost of producing documentation related to this effort about the database, code, and the steps to implement new PT programs. This documentation is a requirement of the project.

**Software Maintenance.** The software developer will be required to fix software defects which are identified within six (6) months of user acceptance testing at their own cost. After this six (6) month period, any new defects identified will be documented by the MOH and an estimate of cost to repair provided by the software developer.

**User Training.** The super users will need to have sufficient training and training materials supplied in order to train the individual users. This may be a train-the-trainers scenario. The software developer will be required to provide the first set of general end-user training materials and documentation.

**Post-Installation Training.** The software developer should identify the costs for training requests after the initial training is complete. This could include training newly hired super users or refresher training on the system maintenance and configuration. Identify costs and available options on the cost estimate worksheet in Annex E.

**Post-Installation Customization.** It is possible there will need to be some additional customizations of the software in the future which the MOH desires the software developer to perform. The cost structure associated with this additional customization should be listed in the RFP response; see the cost estimate worksheet in Annex E.

**System Acceptance.** APHL, in consultation with MOH and CDC, will accept the software in a phased project development structure. Before development starts a project plan, delivery schedule, acceptance plan and payment plan will be negotiated with the software developer.

**General Functional Requirements**

The PT programs all have the same general concepts but differ slightly in some respects; e.g. data elements collected, workflows, and analysis of results. This section will describe the general process and then each program and proficiency test will be detailed in the Program Specific Requirements.

Where possible we have included samples of existing forms. Many of the current forms are from proprietary EQA management programs and are not able to be included in this document. However, we
have included some of the data elements that need to be collected. Before each development phase starts there will be an additional requirements gathering phase where the selected Software Developer will meet with the EQA program manager and discuss the exact details of the data elements that need to be collected, algorithms to determine the PT outcome, report formats and other details relating to the specific PT being implemented.

**Overview of EQA and PT Program Structures**

The following is a list of the NPHLS Sections and the proficiency test items they will prepare.

- **HIV Serology Section**
  - HIV Rapid Test
  - ELISA

- **HIV CD4 Section**
  - CD4
  - HIV Chemistry (limited subset of full biochemistry panel)
  - HIV Hematology (limited subset of full hematology panel)
  - Pima CD4

- **HIV Molecular Biology Section**
  - Viral Load
  - EID PCR

- **Microbiology Laboratory**
  - Gram Stain
  - Culture Identification
  - Microbial Susceptibility Test
  - Microbiology Serology

- **Tuberculosis Laboratory**
  - AFB Smear
  - GeneXpert
  - Drug Sensitivity

- **Malaria**
  - Slide cross-checking
  - Malaria Microscopy
  - Malaria Rapid Tests

- **Biochemistry**
  - Urea
  - Alkaline Phosphatase
  - Albumin
  - Bilirubin-Total
  - Bilirubin-Direct
  - Calcium
  - Chloride
- Chol-Total
- Chol-LDC
- Chol-HDL
- Creatine
- Glucose
- Gamma GT
- Potassium
- Protein total
- Sodium
- Uric acid
- TSH
- T3

- Hematology
  - HB
  - WBC
  - RBC
  - Hematocrit
  - Platelets

**Example Workflow**

- **PT Item Preparation**: Preparation of batches of materials to be used in PT rounds
- **Define a Round of Testing**: Define information about the specific round of testing to be administered.
- **Expected Results**: Enter expected results for each specimen to be tested by participants
- **Validate Expected Results**: Second entry of expected results for validation purposes
- **Prepare Shipments**: Shipment preparation and logging of which specimens are sent to which location
- **Receive Samples**: Receipt of samples by participant
- **Sample Analysis**: Analysis performed by participant
- **Results Entry**: Results of analysis entered in data system
- **Determination of results**: Proficiency test results and scoring, and the outcome of the PT round sent to participants
- **Reporting**: Reporting and monitoring of all activities

Not all steps will require values entered for each Proficiency Test item. The requirements will vary between the PT programs. For example, some programs may not perform a validation step. Some programs may not have an “expected results” entry workflow step if their results are based on formulas executed during the Determination of Outcome step.

The exact details for each program and for each step are not listed in this document. Enough requirements are supplied to enable the software developer to give an estimate of the level of effort based on the type of work necessary.
Sample Preparation
The information collected about each type of material produced will vary for each PT item. Material is often prepared and referenced as “Batches” and information is collected for each Batch of material.

Some programs will be sourcing their materials from outside the NPHLS. These programs will still need to record the source of their materials in the sample preparation step and other information regarding the shipment.

Some of this information may not be specific to all programs. This is only used to give the software developer a general idea of what data will be collected.

- Batch Name or Number – Each program will need to decide how they want to name and increment their batches
- Date Prepared
- Prepared By
- Expiry Date of this batch
- Material Type – What is the material? (Whole Blood, plasma, slide, etc)
- Material Origination Source – Where the material originated
- Blood Pack Number
- Date of collection

Define a Round of Testing
This step may be combined with the expected results screen. This would be where information about the round is created. It could be as simple as a Panel Name, Round Name, Description and Date.

It might also include a definition of how many samples, numbering of samples, or origin batch of the sample.

The format of the samples IDs will vary between PTs but will generally be one or two short text indicators preceding a numeric value (e.g. PT-11-D1, PT-11-D2). For the first implementation phases there is not currently a requirement for randomizing which samples go to participants; but this will be a requirement for a future phase.

The user should be able to define the start and end dates of the testing window. Results entry will be disallowed after the end date of the testing period.

Expected Results
Enter expected results for each specimen to be tested by participants. The number of samples to be tested as part of a PT will be defined for each PT. It is not expected to change from round to round but may change at some point in time.

The expected result of the analysis for each sample will vary from analysis to analysis. Each PT will have their own formula and the details will be collected when the program is implemented. There are more examples of these in the program detail sections later in this document. However, there are some basic methods.

1. Setting a qualitative value. E.g. Positive/Negative, Reactive/Non-Reactive
2. Between a fixed range determined by the program administrator
3. Determined by a calculation based on responses returned from the participants. The participant is judged on how far they stray from the standard deviation; e.g. A SD 2 or greater would constitute a failure.

**Validate Expected Results**
Second entry of expected results for validation. This is not always done and will be PT specific.

**Prepare Shipments**
Shipment preparation and logging of which specimens are sent to which location.

- Round
- Date Prepared
- Prepared by
- Date Shipped
- Shipping method
- Picked up by – On many paper log forms there is a place for the name or initials of the courier
- Participant to whom the samples were shipped
- Number of panels shipped

If sample randomization is necessary this is where it would be done (future requirement).

The program administrators should be able to issue an email or SMS message to the participants stating which panels and how many have been shipped. The message would also include other information about the beginning and end of the testing period. This should be able to be done in individual or batch mode.

**Receive Samples**
The participants may be required to log information when samples are received. This is often done on a paper log form and then entered during the results entry process.

- Received Date and Time
- Quantity received
- Who received the material
- Condition of the material when received
- How it was stored after being received
- Temperature of sample transport

**Sample Analysis**
Analysis performed by participant. This section does not typically require electronic data entry. The samples are often accompanied by paper worksheets for the participants to use during analysis and they will often write them on those sheets. If they are not able to do electronic data entry they enter the results on the paper forms and return those. This step and the results entry are often combined into a single data entry step; please refer to the Results Entry for more information and data elements to be collected.
Results Entry

Results of the analysis are entered into the data system. The form will be different for each PT. Please refer to the Program Specific Requirements for more detail on the values required to be entered. In general however, it can be expected that there will be one or more values entered for each sample. The values may be text, drop-down list of values, or numeric values. The number of data elements stored in order to record the results for each testing item for each sample varies depending on the program and the testing item.

The goal is to have as many results entered electronically as possible. However, not all participants will have web access. This is especially true for the HIV Rapid Test panel because of the large number of participants. Currently, they are using a program named Teleforms to scan the paper forms and OCR the data and enter it into a database. There is more information about this in the program details section and it will be a requirement for the new data system.

Participants with LIMS should not be required to manually re-enter the data from the LIMS into the EQA system. We do not currently have a high level of detail for this requirement. The current expectation is that the data will be extracted from the LIMS into a text file and then imported by the EQA system. The current expectation is that the data will be simple row data containing the result values that are required on the PT results entry form. The software developer will not be required to estimate the LIMS side of the cost. The cost of this import does not need to be included in the phase one cost.

Results entry for the round should be closed down when the end date for the testing period had passed. There may be a need for an administrative override to allow results entered after the close of the testing period.

In order to facilitate remote data entry by the participants we would like to explore the use of remote data collection via a smart phone or other methods. This is not a requirement of the first phase and should not be included in the estimate but we would like the software developer to be thinking about possible options as they implement the first phase.

Program administrators will also need to be able to send reminders via Email or SMS to participants to remind them of the submission deadlines as the testing end date approaches. This should be able to be done in individual or batch mode.

Determination of Outcome

This is the procedure to determine if the participant performed the PT correctly. The general concept is that the test result entered by the participant is compared with the value entered in the Expected Results step. As stated earlier this varies according to the PT.

The exact details for determining the outcome will be determined at the interview with the PT administrator when their PT is implemented within the system. However, enough information is provided for the software developer to give a reasonable estimate of the level of effort to include in the cost. More detailed examples are discussed in the individual program descriptions later in this document.

As specified in each program section below, some outcomes cannot be determined until all or the majority of results have been entered into the data system because the range of possible outcomes is based on the standard deviation. Therefore, as part of determining the outcomes for the participants for
a round of testing there will need to be a process initiated which performs the necessary calculations and database updates to indicate the outcomes. We have not currently identified an exact location within the application for this but one possibility is a separate screen for each PT with this requirement created whereby a button is pressed to perform the outcome formula for the round as well as display all of the data to the user.

Please note that for the batch outcome updates there are some additional requirements. After the determination of outcome has been performed the program administrator should be able to finalize the data for a round. This means the determination of outcome cannot be redone. The participant outcome reports should not be able to be generated if their results have not been finalized. A flag will be necessary to indicate if a participant’s PT has already been finalized and when it was finalized.

**Outcome Reports**
The outcomes of the tests performed at a facility will be returned to the person configured as the person responsible for the managing that test panel at the facility. The current format of the report is expected to be in PDF format. Currently, there will be three methods for supplying those outcome reports.

- Email
- Posted on the website (and only accessible by the person configured)
- Paper

It has not yet been determined what the preference will be in regards to whether the report will be sent an attachment to the email or whether it will be posted on the web and a link sent in the email. We are currently taking comments from the user on this. *See section below on Report Delivery regarding security.*

The program administrators should have the ability to send notifications via email or SMS to notify participants when outcome reports are available for viewing. This should be available to send to a single participant or in batch mode for multiple participants.

While it is efficient to have the results returned via email or accessed via the web, it is expected that many results will simply be printed at the administration level and physically returned to the appropriate manager at the participant facility. Therefore, some mechanism to easily print batches of results will be desirable for programs with large quantities of participants.

Each proficiency test will have its own format for this report because they often return the overall outcomes along with the result values entered by the participant and information about the expected results. The report will need to be formatted to be printed nicely on a regular sheet of paper. Please note the general requirement that there are a couple PT which will require simple graphs on the outcome report.

**Reporting**
There are three general categories of reports: participant outcome reports, individual facility reports for each PT program and system-wide summary reports. Some of the reports are defined in more detail while others are not yet defined in detail. Below we give general estimates for the number of reports and the software developer should consider a general estimate for the level of effort to produce this number of reports. Some report template formats will be able to be reused with slight modifications between programs but we have not stated this here.
The program administrators should have the ability to send notifications via email or SMS to notify participants when these types of reports are available for viewing.

The participant outcome reports report the outcome of an individual PT for a participant. There is expected to be one of these for each PT.

The individual facility reports for each PT program will cover a more general summary of the PT program at the facility. There are expected to be approximately three general reports in this category for each PT. Some efficiency will be gained by utilizing one PT’s template as a base for use within another PT; but often they will contain data specific to the data within the PT.

The system-wide summary reports are more general reports for monitoring the system as a whole. There are envisioned to be at least eight of these reports. These reports are currently being designed but are not expected to be complex; primarily summary reports groups by different means and then graphed versions of some of the reports. For example, participation and pass rates for a year and or round for each program. Another example might be a summary by county of participation and pass rates. Another example report would be to list the programs across the top and then each row to contain the participation and pass rates for each program each participant is enrolled (it could also have subtotals by county or other grouping). Another important report is the historical data for a laboratory by test using an L-J graph.

The software developer is urged to include the development of the specified number of reports identified above. Please consider the reports that are unique to each program and how many programs are being implemented in the first phase.

Reports posted on the web will only be accessible by people with the correct permissions. See user permissions requirements section.

Program and Round Specific Data Review
The program administrators will need a screen to review the complete dataset collected from the participants for the round of testing done for their specific PT. This will include the raw data collected, outcome values, flags and any other information relevant to the PT data. This screen may be similar to the PT which requires outcomes to be determined in a batch mode. It may also be the screen when the user can select which reports to generate. We leave it open to the developer to present options for this screen during the design phase of the project.

Data Extraction for External Analysis
There should be some mechanism for extracting a defined set of data into a delimited text file which can be imported into other data analysis software. A simple set of query parameter options should be provided on this administration screen in order for the user to limit the data extracted. Note that which columns are extracted might vary from the PT to PT. This does not have to be configurable but can be hard-coded in the extract routine.

Notifications
An administrative screen for sending general notifications via email or SMS should be available. The ability to select which participants receive the message should be given; e.g. Participants in a specific round of a proficiency testing.
Administration Screens
There will need to be a number of system administration screens for various configuration tasks. The following are some of the known administration forms.

- Facilities
  - Facility name
  - Facility code
  - County name
  - Mailing address
  - GPS Coordinates
- Equipment
  - Equipment Name (should include manufacturer and model)
  - For each PT there is a list of valid equipment
- Individuals
  - Name
  - Primary Facility
  - Manager at Facility (selected from dropdown of existing people at facility)
  - County name
  - Email address
  - Phone number
  - Password – It is expected there will be automated functionality for the user to reset their own password if forgotten.
- List of specimen types which will be used in dropdown boxes
- List of possible result values/answers for a PT if the PT has those types of values
  - E.g. Microscopy Answer Codes; HIV Rapid test kit names; HIV test kit answers.
- Associating people and facilities with programs in which they are enrolled
- Identifying who is the EQA coordinator for a program at a facility
- Configure an individual’s access to different parts of the system and their data access.
- Enroll participants in EQA programs
  - Participants should be sent an email and/or SMS notification of their enrollment.

User Permissions
There are a number of different roles individuals will fill within the system. Control to functionality and data will need to be controlled. Following is a list of different access requirements. We are open to how the access is configured and controlled but expect to review the software developer’s proposal about how to administer these permissions. All screens for managing these permissions will be supplied as part of the phase one requirements.

Participants will need access to data entry screens for the programs they are enrolled.

EQA program administrators will need access to all of the workflow screens for their program.

EQA program administrators will be able to see all reports for their program; this includes summary reports at all levels and individual participant reports.

EQA program administrators will need to be able to enroll participants in their PT program.
EQA program administrators will need to be able to create new participants.

Country level managers will have access to all the workflows and reports for all EQA programs.

A participant should be able to see their own reports. Because participants can be facilities or actual individuals the facilities should have a person who is designated as the EQA program coordinator for each program. This is the person who will be sent notifications.

The participant EQA coordinator will have access to all the reports for their program for their facility and for all individuals (if people are tested individually).

A county EQA manager should have access to all data related to participants in their county.

A national EQA manager should have access to all the data for the public (MOH) laboratories. This person is designated by the Head, Laboratory and Diagnostics Unit.

Individuals should be able to indicate whether they only want view reports electronically and not receive paper copies of the reports.

**Historical Data**
As much historical data from the existing PT programs as possible should be imported into the new system. We do not have specifics on the extracts and imports; however, the software developer should indicate hourly charges associated with developing this import functionality. The software developer will be part of the discussion with the existing EQA data system provider in order to specify the file format the data will be supplied.

**Program Specific Requirements**
The first phase of implementation will be to implement four programs (HIV Rapid HIV Test, CD4 general, CD4-Hematology, CD4-Biochemistry). While we do not expect the addition of new programs to be completed automated via configuration screens, some configuration is desirable. The process and all details about how to implement new programs will need to be documented and supplied as part of the phase one release.

**HIV – Serology**
- HIV Rapid Test
- HIV Elisa (EIA) Assay

The HIV – Serology section currently administers the HIV Rapid Test proficiency panel. In the future they will also be administering the proficiency panel for the HIV Elisa test.

**HIV Rapid Test**
Serology section of the National HIV Reference Laboratory administers a PT program for testing a participant’s proficiency at performing the HIV Rapid Testing algorithm. The serology section staff currently perform all workflow steps associated with the program. This is by far the largest program administered by the NPHLS. This panel is currently administered to individual participants rather than being administered at the facility level. There are approximately 7000 currently enrolled participants and they are currently expecting to scale up to 10000 by October 2014.
Because of the size of the program it is important the results returned by participants are entered in an automated fashion. Panels are dispatched with paper forms designed to be electronically scanned and then translated to electronic values using Optical Character Recognition (OCR) software. The current software in use is Teleforms. It is a requirement of the project to continue using the same paper forms and scanning technology. After scanning the Teleforms, the data clerks need to verify the data and eliminate any wrong interpretation by the Teleforms software. Once corrected and verified correct the data will be available within the data system.

Please note that the Teleforms sent to the participants are generated by the Teleforms software and some of the data is pre-filled by the software. Therefore, there is a requirement for the new system to be able to send the Teleforms software the data that needs to be prefilled. We do not currently have the interface specifications for Teleforms but the developer must consider the time to work with this software. The existing software for interfacing with Teleforms is available to the selected developer and the current developer working with Teleforms will be available for consultation. An example Teleforms for the HIV RDT program is given in Annex A – HIV RDT Teleform. This example should inform the developer of the data elements and types required to be captured on the results entry form.

The current system is developed and maintained by the HIV NRL and screenshots for various portions are included in Annex B – Screenshots for Existing System to Manage HIV Rapid Test Program.

Six samples are sent to each participant three times per year.

Test Panel Description
The participants must follow a specific algorithm for each sample to perform the PT. If the first test is positive, they are required to perform a second test using a different test kit. If the second test is negative, they are required to perform a third test with a different test kit. The final result for the sample (the test algorithm states a final result may be reported after one test (negative result), two (first and second positive results) or three tests (third test result reported). is then determined by the participant. Notice for each possible test (1-3) they are required to enter the type of test kit, the lot and expiry for the kit, and the final result.

Outcome Determination
The overall outcome of the PT panel is scored based on different criteria.

- Have they correctly filled out the requested information on the form?
- Have they performed the algorithm correctly using the correct test kits?
- Have they determined the correct result for each sample?

The scoring algorithm (and source code) is not listed in this document but can be provided at the time the program is implemented along with the current source code for performing the algorithm.

Note the requirement to save the scanned image in order to allow the data clerk to view the image and the editable scanned data for correction at the same time. It is preferable the image not be stored directly in the database but outside of the database.

The existing participant information will need to be imported into the data system.
**HIV – ELISA**

There is not currently an HIV ELISA PT program administered. There are six labs who will receive the PT panel.

The final result is the primary outcome determination but the participants will also be required to send the OD and cutoff values use for the determination on each sample.

**HIV - CD4**

The CD4 section has four proficiency panels that are administered; CD4, Chemistry, Hematology, Pima CD4. The Pima program is not currently in place but is planned in the near future. Two samples are tested four times per year.

There are 36 facilities participating in the CD4, Chemistry, and Hematology panels and the number is gradually increasing up to a goal of 72 sites.

The program for the three current tests is currently referred to as the Sample Split program because the same sample is aliquotted and the three samples used for all three panels.

More specific details about data elements gathered during the testing will be given during the detailed analysis when the program is implemented but in general they follow similar structure as defined in the overview. Below are some specific details to assist in the overall design

**CD4 General Panel**

Results for both CD3 and CD4 are collected and analyzed for the panel and only a single numeric value is collected for both results. The name includes General because this same panel is administered to a participant regardless of the equipment they are using (excluding Pima); the instrument used for the test will need to be recorded as part of the results entry workflow step.

The outcome of the PT is determined based on the results of all answers returned from participants. If the reported value returned deviates two or more standard deviations from the expected value the result is considered failed. The formula for calculating the SD and variations is currently done with a formula within Excel and will be provided to the software developer during the detailed analysis when the program is implemented.

Information about the kits used for the test will be collected; e.g. Lot number, expiry. The instrument used for the test will also be recorded. It is expected the same lot will be used for all samples in the panel.

This will be one of the panels where the outcomes are determined in a batch mode.

An example of the outcome report returned to the participants is available for replication; it will contain a graph of all participant SDs for the round.

**CD4 - Biochemistry**

As part of the Sample Split program a sample will be tested for a number of biochemistry analytes. Currently only three analytes are included but there is a possibility of adding more. This is not a full
biochemistry panel administered; a larger biochemistry panel may be administered under a different PT name.

The sample will be analyzed for ALT, AST, and Creatinine.

The equipment utilized will be logged.

Reagent information will be required to be logged for each analyte in the panel; lot number, expiry, and normal ranges.

Normally, the outcome of the test will be based on utilizing the standard deviation calculated based on all results returned by participants using the same piece of equipment. However, the option of using only a set of selected laboratories as a baseline is also necessary. A SD of 2 or more will result in a failure. Before this comparison can happen all participants’ values must be converted to the same units of measure. A table will be provided on how to perform the units of measure conversion. The units of measure field on the form will need to be a dropdown list of the units of measurement available for conversion.

As noted, this will be a case where the outcomes will be determined during a batch outcome procedure.

The outcome report will contain a graph of the values and SDs logged as part of the participant’s peer group who use the same equipment.

**CD4 – Hematology**
As part of the Sample Split program a sample will be tested for HB level (hemoglobin).

The equipment utilized will be logged.

Reagent information will be required to be logged. A single lot is expected to be used for all samples. The lot number, expiry, and the normal ranges. There reagents are general to the entire test and not specific to each analyte.

Normally, the outcome of the test will be based on utilizing the standard deviation calculated based on all results returned by participants using the same piece of equipment. However, the option of using only a set of selected laboratories as a baseline is also necessary. A SD of 2 or more will result in a failure. Before this comparison can happen all participant’s values must be converted to the same units of measure. A table will be provided on how to perform the units of measure conversion. The units of measure field on the form will need to be a dropdown list of the units of measurement available for conversion.

As noted, this will be a case where the outcomes will be determined during a batch outcome procedure.

The outcome report will contain a graph of the SDs logged as part of the participant’s peer group who use the same equipment.
**CD4 – Pima**
Please refer to the CD4 panel above. The primary difference is that the CD3 component will not be included for analysis, only CD4. Two samples will be tested four times per year.

The two separate sets of reagent information are to be collected, one set for the Pima cartridge used and one for the control beads; the control beads also have high and low range values which will be recorded.

In a future phase we will require the electronic data from the PIMA be imported directly into the database.

**HIV – Viral Load**
The HIV Viral Load PT will be implemented in the near future and administered to five laboratories on a quarterly basis.

The outcome will be determined by comparing the result value to a fixed range entered as part of the expected results entry.

More information will be forthcoming once the program is actually implemented and when the program is implemented in the data system.

**HIV – EID**
Early Infant Diagnosis of HIV is done using a dried blood spot (DBS) and a PCR test.

This will be a qualitative result (positive, negative and possibly indeterminate) and compared directly to the expected result entered for each sample.

**Malaria**

**Malaria Microscopy Slide Cross Checking**
This program workflow is slightly different than some of the others and works a bit in reverse. In this program, participants are required to send 10 slides they have already analyzed along with what they have detected. The reference laboratory then checks the slides and determines if the participant was correct in their analysis.

In this case, the results entry form will require the participant results to be entered and then the reference laboratory results. Then a determination of the scoring can be performed.

The overall outcome of the overall proficiency test (scoring) has not yet been determined. It may consist of simply a ratio of the right number of answers to the total number of samples.

**Malaria Microscopy**
This program sends ten slides to the participants. The program is not yet implemented but is expected to follow the format of the current EQA being administered by a third-party. The forms used for the
current program are listed in Annex C. Please use this as reference for the data to be collected for each sample.

Ten samples are sent to each participant

Some of the information on the paper results entry form needs to entered in the system and then preprinted. This adds the requirement to the Shipping step where they will need to print these forms out of the data system. See the example form in Annex C where the white cell count is preprinted.

The scoring of the individual and overall outcomes of the test is currently unknown but is expected to be a relatively straight forward formula.

An additional requirement for this test may be the ability for the program administrator to enter notes about corrective action to be taken by participants who had problems. This might be pre-entered text which the user can select to be automatically inserted as part of the outcome report. Note: If this becomes a requirement it will require an additional administration screen to edit the pre-entered text.
### Part F: RESULTS

<table>
<thead>
<tr>
<th>Test 1 Results</th>
<th>Test 2 Results</th>
<th>Test 3 Results</th>
<th>Final Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(optional)</td>
</tr>
</tbody>
</table>

#### Test 1
- **PT-11-D1**
  - Non-reactive
  - Not done
- **PT-11-D2**
  - Non-reactive
  - Not done
- **PT-11-D3**
  - Non-reactive
  - Not done
- **PT-11-D4**
  - Non-reactive
  - Not done
- **PT-11-D5**
  - Non-reactive
  - Not done
- **PT-11-D6**
  - Non-reactive
  - Not done

#### Test 2
- **PT-11-D1**
  - Reactive
  - Invalid
- **PT-11-D2**
  - Reactive
  - Invalid
- **PT-11-D3**
  - Reactive
  - Invalid
- **PT-11-D4**
  - Reactive
  - Invalid
- **PT-11-D5**
  - Reactive
  - Invalid
- **PT-11-D6**
  - Reactive
  - Invalid

#### Test 3
- **PT-11-D1**
  - Reactive
  - Invalid
- **PT-11-D2**
  - Reactive
  - Invalid
- **PT-11-D3**
  - Reactive
  - Invalid
- **PT-11-D4**
  - Reactive
  - Invalid
- **PT-11-D5**
  - Reactive
  - Invalid
- **PT-11-D6**
  - Reactive
  - Invalid

#### Final Results
- Negative
- Not done
- Positive
- Discrepant
- Invalid

---

### Part F: COMMENTS

The above facility was closed and I was given the rapid test to test by HIV.

---

### Part F: SITE IN-CHARGE DETAILS

- **Site in-charge Name:**
- **Designation:** Medical Officer
- **Other designations:** Lab. Tech.
- **Site in-charge Signature:**
- **Date:** DD/MM/YYYY

---

### Form # 40110410
Annex B – Screenshots for Existing System to Manage HIV Rapid Test Program

This is the main page when you login:

Form information captured from the form. To the right is the original scanned form:
These are the test results as were entered on the form to the right:

A sample of the general summary report:

Annex C – Malaria Microscopy Sample Forms
This is not the form which will be used when the MOH takes over the administration of the program. It is only supplied here as an example of similar data which will be collected.
IMPORTANT INFORMATION ABOUT THIS PT SCHEME

This PT Scheme is produced by the Parasitology Reference Laboratory, COTHI of the NICD, NHL.
Head of Parasitology Reference Laboratory: A/Prof. John Fream.
Scheme manager: Miss Bhavani Poonsamy (responsible for authorisation of all reports).
Technical scheme coordinator: Mrs Rita van der Ventur.
Contact telephone numbers: +27(0)11 555-0304/ 0311, Fax number: +27(0)11 555-0446.
Postal address: Parasitology Reference Laboratory, COTHI, NICD, Private Bag X4, Sandringham
2131, South Africa. E-mail: bhavani@nicd.ac.za

Participants are encouraged to keep survey specimens, so that they can be referred to in the
and used as positive reference/teaching material. We encourage participants to perform cor-
actions if necessary to help improve performance.

We welcome your comments (compliments, complaints, appeals); see page 4 for fee
questionnaire. Please contact us for any information you require on the coordination of this Sch

The scheduled PTS dates are given below, but please note that there may be changes should
need arise and you will be informed of any such changes. Any results received after the
deadline will not be assessed.

Survey mailing dates and result deadlines:

<table>
<thead>
<tr>
<th>Survey number</th>
<th>Mailing</th>
<th>Result deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey 1 for 2014</td>
<td>24-28 March 2014</td>
<td>25 April 2014</td>
</tr>
<tr>
<td>Survey 3 for 2014</td>
<td>22-26 September 2014</td>
<td>24 October 2014</td>
</tr>
</tbody>
</table>

Individual participant reports are sent with the next survey material shipment.
All performance data is treated as confidential.

All correspondence relating to changes regarding participation to this PTS must be for
nicdwhoga@nicd.ac.za no later than four weeks prior to the scheduled sample shipping date.
not accept responsibility for results faxed/mailed to the incorrect fax numbers or emails or
incorrect addresses. It is the responsibility of the participant to ensure that the results
received. Results with incorrect/missing laboratory names/ codes will not be assessed.

All responses may be submitted via fax [+27 (11) 555-0430] or email [nicdwhoga@nicd.ac.za]
working days after receipt in your laboratory; to reach us no later than 25 April 2014.

WHO/NICD Proficiency Testing Programme – Malaria Microscopy
If the results were not satisfactory the lab is to do some corrective action and send the following form to WHO:

**MALARIA MICROSCOPY REPORT FORM**

**WHO/NICD PROFICIENCY TESTING SCHEME**

Survey 1 for 2014 (March)

<table>
<thead>
<tr>
<th>Country:</th>
<th>Laboratory:</th>
<th>Survey no: 2014-1</th>
<th>Lab code no.:</th>
</tr>
</thead>
</table>

Date received in your laboratory: ____________

Date results returned to NICD/MEQARL: ____________

Name of technician/technologist reading test films: ____________

**Microscopy answer codes:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>No parasite(s) seen</td>
</tr>
<tr>
<td>P2</td>
<td><em>Plasmodium falciparum</em></td>
</tr>
<tr>
<td>P3</td>
<td><em>Plasmodium malariae</em></td>
</tr>
<tr>
<td>P4</td>
<td><em>Plasmodium ovale</em></td>
</tr>
<tr>
<td>P5</td>
<td><em>Plasmodium vivax</em></td>
</tr>
<tr>
<td>P6</td>
<td><em>Plasmodium species</em> (unable to identify the malaria species)</td>
</tr>
<tr>
<td>P7</td>
<td><em>P. ovale</em> or <em>P. vivax</em> (unable to identify which relapsing malaria species)</td>
</tr>
<tr>
<td>P8</td>
<td>Other blood pathogen [please write the pathogen name next to the code]</td>
</tr>
</tbody>
</table>

**Report form:**

<table>
<thead>
<tr>
<th>Challenge number</th>
<th>Microscopy answer code*</th>
<th>No of parasites counted</th>
<th>No of white cells counted</th>
<th>White cell count</th>
<th>Final answer (parasite)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-1-M1</td>
<td></td>
<td>8,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M2</td>
<td></td>
<td>5,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M3</td>
<td></td>
<td>6,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M4</td>
<td></td>
<td>6,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M5</td>
<td></td>
<td>6,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M6</td>
<td></td>
<td>12,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M7</td>
<td></td>
<td>6,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M8</td>
<td></td>
<td>6,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M9</td>
<td></td>
<td>9,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-1-M10</td>
<td></td>
<td>8,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please note: only the answer codes will be assessed. Do not write the name of the parasite, e.g. using answer code P8.

Result deadline: **24 April 2014**
### Appendix D – Slide Cross-checking Form

#### Proficiency Testing Scheme: Malaria Microscopy

**Corrective Action Form**

If your laboratory did not obtain acceptable results for any challenge in this survey, please fill in this corrective action form and send to Ali Yahaya (aliyahaya@imo.org) or Jean-Benoit Hidhokobwabo (johidhokobwabo@imo.org).

<table>
<thead>
<tr>
<th>Challenge no.</th>
<th>Microorganism</th>
<th>Quantity</th>
<th>Intended response</th>
<th>Your response of observation</th>
<th>Intended response of observation</th>
<th>Corrective action taken to solve the problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-3-M1</td>
<td>Low Loe</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M2</td>
<td>P. falciparum</td>
<td>960</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M3</td>
<td>P. falciparum</td>
<td>960</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M4</td>
<td>P. falciparum</td>
<td>1,170</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M5</td>
<td>NPS</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M6</td>
<td>P. falciparum</td>
<td>654</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M7</td>
<td>P. falciparum</td>
<td>2,650</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M8</td>
<td>P. vivax</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M9</td>
<td>P. ovale</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-3-M10</td>
<td>NPS</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Slide Cross-checking Results Worksheet

<table>
<thead>
<tr>
<th>Patient No</th>
<th>Date</th>
<th>Status</th>
<th>Species &amp; Parasite Stages</th>
<th>Density</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: 001</td>
<td>11/4/2013</td>
<td>Positive</td>
<td>Negative</td>
<td>1/1000WBC or more</td>
<td>Well stained</td>
</tr>
</tbody>
</table>

**Crossexcheck Officer’s Name:** __________________________  **Signature:** __________________________  **Date:** __________

**Verifier’s Name:** __________________________  **Signature:** __________________________  **Date:** __________

**Instructions:**

1. Use short forms Pf (P. falciparum), Pm (P. malariae), Pz (P. ovale) and Pw (P. vivax) to indicate species identified.
2. If more than one species is identified, indicate both species e.g. Pf/Pm or Pf/Pw.
3. Use short forms troph (trophozoites) and gam (gametocytes) to indicate parasite stages identified.
4. If more than one stage is identified, indicate both stages e.g. Pf trophs & gam.
5. Always count parasites against WBC. If not possible, report densities as +, ++, +++ or ++++.
Appendix E – Software Developer Cost Worksheet

Phase I Development Costs
Complete functionality to completely support the following EQA programs as identified in the RFP:
- HIV Rapid Test
- HIV CD4 – General Panel
- HIV CD4 – Biochemistry
- HIV CD4 – Hematology
These programs have the most well defined requirements and it is expected an accurate estimate can be provided with the information supplied in the RFP. This includes the development of the database, overall

Additional Costs
Additional costs are costs which have been identified as requiring addition estimates when more detailed requirements are known. The expectation is that the software developer will submit a per day or per hour cost to perform work outside of the requirements specified. When more specific requirements are gathered the software developer will be asked to submit an estimate of the cost for the proposed functionality.
- Import of historical data
- Functionality for entering proficiency test results via smart phones or other remote data collection methods.
- Updates for sample preparation and shipment workflow steps not currently defined
- Electronic transfer of participant EQA results from their LIMS into the EQA system
- Additional reports – The software developer has been asked to include a pre-specified number of reports in the Phase I Development Costs. This cost is for additional reports beyond the original number specified.