President's Emergency Plan for AIDS Relief

LIS Software Provider Report

APHL ASSOCIATION OF
PUBLIC HEALTH LABORATORIES

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Section 1.   About the LIS Documents

This LIS Software Provider Report is one component in a set of documents provided by the Association of Public Health Laboratories (APHL) in support of the activities of the President's Emergency Plan for AIDS Relief (Emergency Plan) for the purpose of enhancing laboratory testing for the treatment and prevention of HIV infections and AIDS. The U.S. President's Emergency Plan for AIDS Relief through the Office of the Global AIDS Coordinator (OGAC) has provided funding for this project. This document is a cooperative effort of APHL and the Centers for Disease Control and Prevention.

Acknowledgments

APHL would like to gratefully acknowledge the LIS team members that made this project possible:

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Comments, questions, and other correspondence regarding these documents may be sent to APHL in care of Patina Zarcone, Director, Strategic Initiatives and Research, at pzarcone@aphl.org. Information and assistance regarding the use of these documents by country HIV/AIDS programs or national laboratory programs may be sent to APHL in care of Ralph Timperi, Acting Director, Global Health Programs, at rtimperi@aphl.org.

About This Document

The Software Provider Report is one component of a nested set of resources developed by the Association of Public Health Laboratories (APHL) for the President's Emergency Plan for AIDS Relief (Emergency Plan) to support the development of Laboratory Information Systems (LIS) in resource-limited settings. Users of this document are encouraged to become familiar with the content of each of these references. We recommend that the users start with the Guidance Document to familiarize themselves with the overall approach being described in this set of references.

The Software Provider Report is a continually updated list of commercially and publicly available laboratory software applications and providers that have been identified and meet the HLR or meet basic requirements for Interim (RM) LIS solutions. Providers and their applications are placed in one or more of four groups to aid users in efficiently finding appropriate providers:

- Fully capable network solutions
- Limited functionality solutions that meet core HLR
- Basic application solutions that have limited functionality and do not meet all core HLR
- Freeware (e.g., Epi Info) or software not designed specifically for LIS (e.g., MS Access) that can be programmed to meet LIS functionality (and does not meet all core HLR).

Revision History

No changes are to be made to this document unless approved.

Date	Revision	Description
07-2005	1.0	Initial draft release
10-24-2005	2.0	Initial public release - Updated look and feel - Updated content to fit with other documents in LIS Implementation set

Section 2.   Methodology

The methodology used to select a list of software providers began with the development of a Request for Information (RFI) document. This RFI was provided to software providers and their responses were evaluated to determine if their products were likely to meet the defined LIS needs of one or more of the Emergency Plan countries. Because the laboratory and information technology infrastructure of these countries varies significantly, we looked for a range of software solutions, some of which would be appropriate for basic applications only, some for robust systems only, and some that would be suitable for a range of infrastructure environments.

Because the funds available in a country program for LIS, in many cases, were limited, and information technology systems tend to be costly to acquire and maintain, we recognized that this effort would be challenging. However, we also recognized that this information was critical to success and to supporting cost-effective acquisition of LIS for Emergency Plan countries. A significant effort was made to identify all potentially useful LIS applications currently available. In addition, APHL continues to use its communication network to find additional providers who may meet LIS needs, and will add these to the list of providers.

We then began the process of identifying possible providers by taking the following steps.

Initial Steps

1. The team conducted web-based research on known LIS solutions
2. Team members reviewed laboratory and healthcare business and resource magazines that target laboratory information systems communities. Periodicals that were included for review are listed below along with links to their websites.
    a. CAP Today (CAP site)
    b. Healthcare Informatics (Healthcare Informatics)
    c. Advance for Administrators of The Laboratory (Advance for Lab)
    d. Advance For Health Information Executives (Advance for HI)
    e. Health Data Management (Health Data mgmt)
3. The team conducted broad-based browser searches in an attempt to root out LIS solutions.
4. GAP country participants were asked to identify local software providers and programs known to them to be included in the selection process.
5. Web sites were visited for those software providers identified in (2), (3) and (4) above to review product offerings.

This broad search identified 63 LIS software providers that were then sent an RFI.

Next Steps

6. The RFI was posted at V. T. Regina & Associates Inc. web site so that all respondents could download it.
7. In an effort to publicize the existence of the RFI to other prospective software providers once the RFI was posted to the web site, the team established a posting on the LIMSFinder website (popular site where LIS and LIMS providers list their products) that briefly describes the project and directs and software providers interested to the Questionnaire/RFI at the V. T. Regina & Associates web site to download the RFI.
8. GAP/Emergency Plan country staff were contacted again and asked to identify local programs and software providers and direct these software providers to the V. T. Regina & Associates web site to download the RFI.

Following these additional efforts, a total of 70 software providers were identified. See Figure 1.

4Medica	Medcom Information Systems Inc.
American HealthNet	MediSolution
Antek Inc.	Meditech
Atlas Medical Software	MedPlus
Automated Document Services	Misys Healthcare Systems
Axolotl Corp.	Modulus Data Systems Inc.
Bika Lab Systems	Multidata Computer Systems Inc.
Brunston Integrated Systems Corp.	NCPHI
CareEvolve.com	Netlims NJ LLC
CCA (Creative Computer Applications Inc.)	Northern Software Inc.
Cerner Corp.	Opus Healthcare Solutions Inc.
Clinical Information Systems Inc.	Orchard Software
Clinical Software Solutions	Park City Solutions
ClinLab	PathLogix Corp.
Comp Pro Med Inc.	Perkin Elmer (Labworks)
Computer Service & Support Inc.	PHIL
CPSI	Progimed
Custom Software Systems Inc.	Psyche Systems Corp.
DiagnosisOne	SAIC
DISA Lab	SCC Soft Computer
eTeleNext Inc.	Schuyler House
Fletcher Flora Inc.	Seacoast
GE Healthcare Systems	SGS Cortex Quality Software N.V.
Hex Laboratory Systems	Siemens Medical Solutions
Impac Medical Systems Inc.	Softov
Inlog SA	Specialty Laboratories
Isys/Biovation	StarLIMS
Keane Inc.	Sysmex America Inc.
LabSoft Inc.	Sysmex Belgium S.A.
Labtest Systems	Sysware Healthcare Systems
LabVantage Solutions, Inc.	Technidata
LabWare Inc	Telcor
M/MGMT Systems Inc.	Visual Access Health Systems Pvt. Ltd.
M2 Information Systems	WamTechnology
McKesson Provider Technologies	Zix Corp.

Figure 1. Software Providers Identified

Section 3.   RFI Responses

Sixteen software providers responded to the RFI and their responses were evaluated. In evaluating the software providers we considered the high-level requirements that were captured by the software and the laboratory environment in GAP/Emergency Plan countries. This environment stretches across a continuum from the most basic screening facility to high complexity diagnostic laboratories. In terms of electronic laboratory information systems, this array of laboratories can be described by three main levels as defined by the WHO.

Peripheral Level

Perform some tests such as microscopy, simple diagnostic methods using kits and quality control records may be kept in electronic format.

These are laboratories that require the capture of patient and test information for the following actions:

- Perform screening tests locally
- Collect specimens to be sent to a regional laboratory for further testing.

These systems must also provide:

- Basic patient reporting
- Specimen identification via system generated accession numbers
- Methods for transferring patient and specimen data to regional laboratories
- Local result and QC data capture and storage.

Provincial/District Level

Laboratories that perform some high complexity and definitive diagnostic testing, and receive specimens referred by Peripheral Level laboratories and/or from in-patients.

These laboratories would require a LIS or LIMS to:

- Manage specimens and specimen flow
- Manage the more detailed result data capture including data calculations, online data capture from lab instrumentation. This would also require worksheet and work card management
- QC and QA data collections and validation
- Patient reporting including; cumulative patient reports, specimen reports, remote reporting, etc.
- Methods for transferring data to either local or national laboratories
- Methods of receiving data from local laboratories.

Central Referral Level

Perform definitive diagnostic test methods as well as screening and other basic test methods and test specimens referred by the other level laboratories.

These laboratories would also require a LIS or LIMS on a larger scale to:

- Manage specimens and specimen flow including specimen tracking into storage for future data analysis
- Manage the more detailed result data capture including data calculations, online data capture from lab instrumentation. This would also require worksheet and work card management
- QC and QA data collections and validation
- Patient reporting including; cumulative patient reports, specimen reports, remote reporting, etc.
- Methods for transferring data to either local or regional laboratories or other government agencies via high speed Internet

- Methods of receiving data from local or regional laboratories
- The need for data analysis to for identifying population trends
- Allow system administrators the ability to setup new test procedures, reporting formats, system parameters etc.

Level	Types of Testing	LIS	Connectivity	Full Time Laboratorian
Peripheral	Screening	No	No	Sometimes
Provincial/District	Some diagnostic testing	Rarely	Mostly	Yes
Central Referral	Full diagnostic testing	Sometimes	Yes	Yes

Between the peripheral and the central levels, there is considerable variability in the services provided and the sophistication of the LIS used, or needed. In some cases, the complexity of the services and resources in provincial laboratories can be similar to that at central referral laboratories.
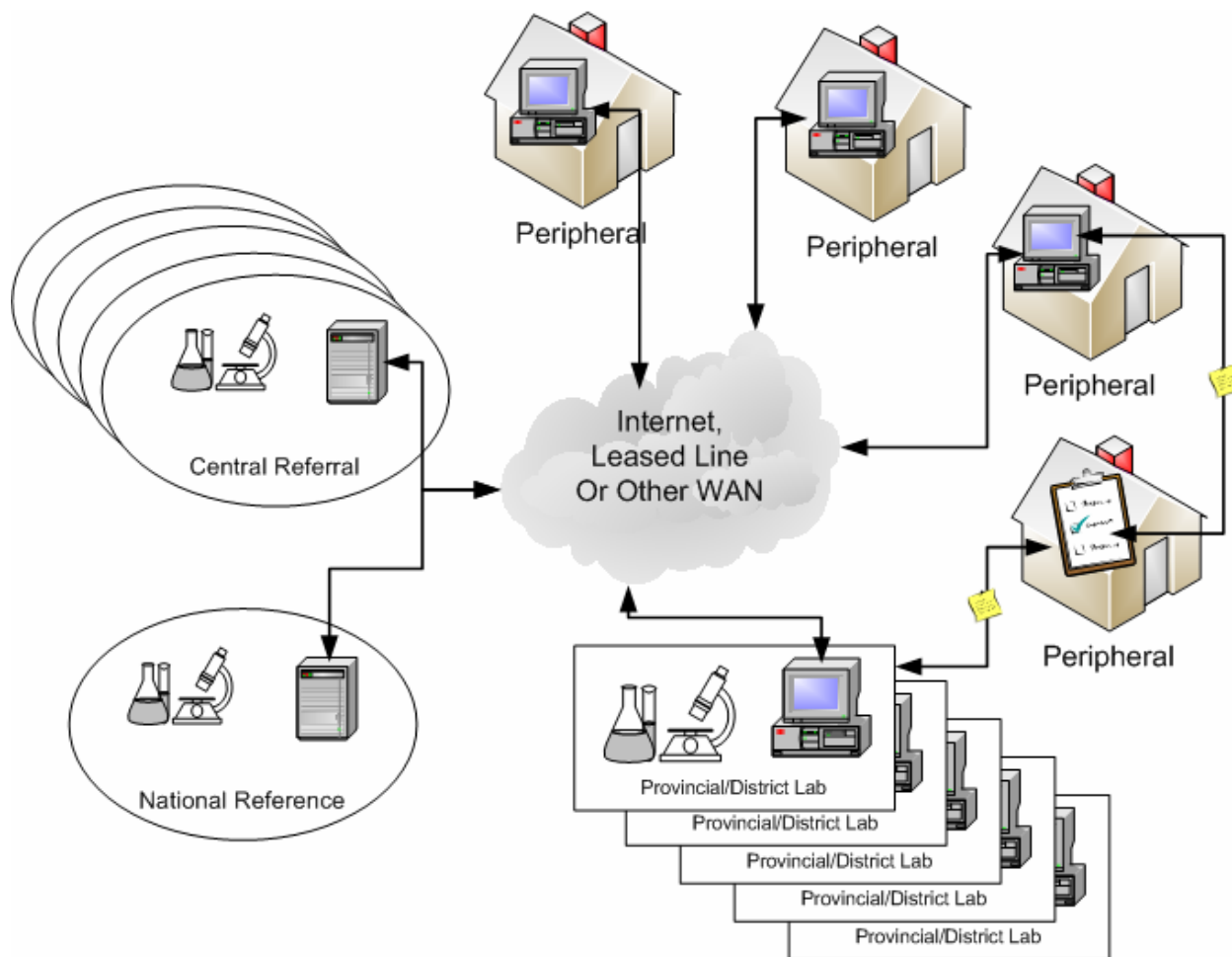

Figure 2. Model High Level Infrastructure Country Laboratory Information System

Because the environment stretches across a continuum from the most basic screening facility to high complexity diagnostic laboratories, we determined that a range of options for an LIS solution would be needed. Although Figure 2 depicts an ideal solution that is feasible in the long term for some countries, this solution may not be a sustainable option for some environments. We classified software providers according to their ability to support one or more of the three major levels, i.e., peripheral, provincial or central level.

In classifying software providers we took into account:

- Software functionally
- Technology
- Costs (Both acquisition and support)
- Support requirements and complexity

The following table divides software providers into the categories described above. Keep in mind that many of theses providers could be used in more than one category and depend on the site requirements, expertise and budget.

Systems and Services for Peripheral Laboratories	Systems and Services for Regional/Hospital Laboratories	Systems and Services for National or Large Regional Laboratories
DiagnosisONE	**M/MGMT** - Limited Internationalization functionally (Focus Public Health Labs)	**Cerner**
DISA	**NETLIMS**	**Meditech** - Limited Internationalization functionally.
PekinElmer	**STARLIMS** (Focus Public Health Labs and non clinical labs)	**Medisolution**
	LABWARE (Large base of Pharmaceutical company clients)	
	LabVantage – HL7, LOINC, SNOMED custom, (Large base of non-clinical clients)	

Five software providers that responded are not included above:

- **SAIC** – RFI response was not complete.
- **4medica** – Only provides a hosted (ASP) solution unsuitable for low-resource environments plus can not support internationalization functionally.
- **OPUS** - Only provides a hosted (ASP) solution unsuitable for low resource environments plus can not support internationalization functionally.
- **NCPHI** – The system does not have enough laboratory and internationalization functionally currently to support the service levels above. With some resources for development, it may be able to support the service levels above. To support the Peripheral Laboratories it would have to be made a standalone product currently web based.
- **BIKA** - The system is missing some laboratory and internationalization functionally plus does not support HL7, LOINC or SNOMED. This product may be acceptable for the Regional / Hospital laboratories if the deficiencies are not needed.

Section 4.   Software Provider Matrix

This section contains a Software Provider Matrix. This matrix lists key items from the RFI and a synopsis of each provider's response. Because of the size of the matrix and the number of providers we have broken the matrix into three software provider groups

In addition, we have evaluated the Epi Info freeware and MS Access independently because these applications are widely used as fallback development platforms for many uses in low-resource public health environments, including basic laboratory systems, and because they are affordable and familiar. However it is not feasible to identify an appropriate individual to provide a response to the formal RFI. Both of these products may be able to play a role at the local level; however, our concern with these products is local expertise for development and support. Because these are not laboratory applications they have to be customized to provide the needed functionality. Typically, the IT and lab expertise needed to develop effective laboratory systems using these products will not be available in the Emergency Plan countries. There will also likely be a shortage of expertise needed to support and update any systems developed using these applications. To develop, deploy, and support an effective and useable LIS application, it and the supporting organization should have an:

- Established database structure

- Have build in security features

- Already functional lab application functionality

- Protocols and rules for system to system and system to instrument interfacing

- Already established and User Interface and help functionality.

With Epi Info and MS Access these items would need to be developed by the laboratory, which will require significant additional laboratory and IT resources.

Software Provider Group 1

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Admin and security	*ASP Implementation*					
Role-based user access	Available	Available	Available	Available	Available	Available
Data storage						
File system	Available	Not Available	Available	Available	Available	Available
Database	Available	Available	Available	Available	Available	Available
Multi-tier architecture	Available	Available	Available	Available	Available	Available
Distributed processing	Available	Available	Available	Available	Available	Available
Scheduled and batch processing	Available	Not Available	Available	Available	Available	Available
Two-phase commit of transactions	Available	Available	Available	Available	Available	Available
Automatic transaction recovery	Available	Available	Available	Available	Available	Available
Distributed processing and load balancing	Available	Available	Available	Available	Available	Available
All user interactions logged	Available	Available	Available	Available	Available	Available
Communication adapters (please list all available)	TCP/IP, HL7, HTTPS	ODBC, Firebird, Interbase, Oracle, MySQL	TCP/IP, HL7	DISA Needs More Detail	ODBC,JDBC, JMS, Web Services	ODBC, JDBC, XML, OPC, HL7, ASCII, DDE, OLE, COM, DCOM, Web Services
Enterprise integration adapters (please list all available)	None Listed	PostGreSQL	Cerner Object API	DISA Needs More Detail	HL7, EDI	None
Data communication protocols supported	None Listed	HTTP, FTP, WedDav	TCP/IP, HL7	TCP/IP, IPX, RS232 C	HTTP, HTTPS, SOAP	ODBC, JDBC

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Functionality						
Electronic order entry	Available	Available	Available	Available	Available	Available
Automatic routing of an order to different labs	Available	Custom	Available	Available	Available	Available
Printing of lab's requisitions	Available	Available	Available	Available	Available	Available
Duplicate patient/order checking	Available	Available	Available	Available	Available	Available
Onsite label printing	Available	Available	Available	Available	Available	Available
Results stored as a block of text	Available	Not Available	Available	Available	Available	Available
All items (result, reference range, units) stored as individual data elements	Available	Available	Available	Available	Available	Available
Supports cumulative reporting	Available	Available	Available	Available	Available	Available
Displays new results for patient and/or clinic	Available	Available	Available	Available	Available	Available
Display current report with historical data on same screen	Available	Custom	Available	Available	Available	Available
Graph historical results with current results for trend analysis	Available	Custom	Available	Available	Available	Available
Supports orders of supplies from host lab	Available	Available	Available/ Gajema Solution	Not Available	Available	Available
Supports billing, collections, accounts receivable	Available	Available/ AR in Development	Available	Available	Available	Available/ AR Not Available
Supports Inventory and usage management	Available	Available	Available	Available	Available	Available

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Technology						
Development technology	C/C++, PHP, JAVA SCRIPT	Python & Plone	J2EE, VB, C++, Dynamic HTML, VB Script	Delphi 2005	J2EE, .NET, ASP.NET, VB 6, MSAccess	J2EE, MSAccess, Smalltalk
Operating systems supported						
• **Windows XP**	Available	Available	Available	Available	Available	Available
• **Windows 2000**	Available	Available	Available	Available	Available	Available
• **Linux**	Custom	Available	Not Available	Custom	Available	Available
• **Unix (all flavors)**	Custom	Available	Available	Not Available	Available	Available
• **Mac OS**	Custom	Available	Not Available	Not Available	Not Available	Available
• **Other**			OpenVMS			
Databases supported						
• **Oracle**	Available	Available	Available	Custom	Available	Available
• **Sybase**	Custom	Not Available	Not Available	Custom	Not Available	Available
• **SQL Server**	Custom	Avail./ODBC	Not Available	Custom	Available	Available
• **My SQL**	Custom	Available	Not Available	Custom	Available	Available
• **Cache**	Custom	Not Available	Not Available	Custom	Not Available	Not Available
• **dBase**	Custom	Not Available	Not Available	Not Available	Not Available	Not Available
• **Other**	Custom	MSAccess/ODBC, ZODB, PostGreSQL		Pervasive SQL	MSAccess, any JDBC/ODBC	Any ODBC database

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Standards supported						
• **HL7 (list version levels)**	Available 2.2, 2.3	Custom	Available 2.3	Available /2.4/3.0	Available (No Version Given)	Available / 2.5 or lower
• **LOINC**	Custom	Not Available	Not Available	Available	Available	Available
• **SNOMED / SNOMED CT**	Custom	Not Available	Not Available	Available	Available	Available
Connectivity						
• **Web-based access**	Available	Available	Available	Available	Available	Available
• **Asynchronous operation**	Available	Not Available	Available	Available	Available	Available
• **Standalone thick client required**	Available	Not Available	Available	Available	Custom	Custom
• **Dial up, VPN**	Available	Not Available	Available	Available	Available	Not Available
Deployment and Support Capabilities						
Allows support personnel to diagnose problems online	Available	Available	Available	Available	Available	Available
Current version of system	V4.4	V 2.0	V2005.01	V416.02	V2.2.18d	V 5.02
The earliest (lowest number) version that you still support	ASP/update every QTR	V 2.0	V3.06	V415.03	No other Versions	Version 3 or higher
A staging/testing license is provided as part of your quoted cost	ASP included	Not Available	Available	Available	Not Available	Available
User group	No/ In Process	Not Available	Available	Not Available	No/ In Process	Available

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Internationalization						
Can support multiple languages	Not Available	Available	Available	Available	Available	Available
Can support multiple currencies	Not Available	Custom	Available	Available	Available	Available
Can support multiple currency symbols	Not Available	Custom	Available	Available	Available	Available
Can support multiple date formats	Not Available	Available	Available	Available	Available	Available
Can support multiple date systems	Not Available	Not Available	Available	Available	Custom	Available
Business Relevance						
Public or private company	Private	Private	Public	Private	Private	Private
Public Health installations	None	No Response	1	1	1	14
Hospital installations	30	No Response	125	13		5
Asia and Africa installations	None	1	Asia 3/Africa 0	Asia 1/Africa 13	None	Asia 21 / Africa 10 (Many are pharmaceutical companies
Number of staff:						
• **Development**	27	3	73	5	15	12
• **R&D**	4	1		4		
• **Install/support**	8	3	118	6	9	120
• **Sales**	5	1	8	2	1	25
• **Other**	4	1	25	3		18
How many systems in backlog	12	1	57	2	1	10-15
Legal proceedings have been initiated against company by a customer	No	No	Yes	No	No	No

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Cost	ASP					
License						
• **Open Source/No licensing cost**	N/A	NO/ Yearly & One time Fee		No Response	Available	Not Available
• **Perpetual, based on # of CPU's**	N/A	Not Available	Available	No Response	$500-$90,000+ Per Processor	Not Available
• **Perpetual, based on # of users**	N/A	Not Available	Available	$3500 per workstation	Custom	Not Available
• **Periodic, based on # of users /sites**	N/A	Not Available	Available	No Response	Custom	Available/ Concurrent Users
Support and maintenance	N/A	$60 per hour	TBD	18% of Software Cost Per Year	18-21% of Software Cost Per Year	No Response
Installation and customization		$60 per hour	TBD	$1,000 per day	Variable	Between $1,400 and $1,600 per day
Lowest total cost for any deployment to date	$59K + $3750 per month	$25K	TBD	No Response	$50,000	10 Concurrent / $100,000
Highest total cost for any deployment to date	$150K + .50 per transaction but minimum of $3750 per month	$40K	TBD	No Response	$1,000,000 +	200 Concurrent / $1,000,000

ITEM	4medica	BIKA	CERNER	DISA	DiagnosisOne	LABWARE
Hardware Requirements						
Specific hardware requirements.	Internet connection/ PC with MS Windows OS/ MSExplorer 5.5 or higher.	Server Rack/ UPS P4 - 3GHz, 1GB ECC RAM Gigabit /Ethernet + Gigabit switch 120-250 GB RAID, CD/DVD Burner - or DLT tape backup	Require More Information About the User Site	Uses Novell or NT Networking	Require More Information About the User Site	Many Configurations / Review of LABWARE "Hardware Requirements for LabWare LIMS and WebLIMS in RFI Response?
Performance using such hardware	ASP/NA?					
• **# of concurrent users**		100	Hardware Dependent	Up to 1000	Hardware Dependent	Hardware Dependent
• **# of transactions per second**		(read) 2000	Hardware Dependent	No Response	Hardware Dependent	Hardware Dependent
• **# of transactions stored online**		(write) 50 (trans per stored content) 50	Hardware Dependent	Stored in Perpetuity	Hardware Dependent	Hardware Dependent
Customization						
Screens can be customized	Available/ Limited	Available	Available/ Limited	Available	Available	Available
Business logic can be customized (e.g. with scripting or alteration of code)	Available	Available	Not Available	Available	Available	Available
The source code available for free or included in license fees	Not Available	Available	Available/ Included	Not Available	Not Available	Not Available

Software Provider Group 2

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Admin and security					*ASP Implementation*	
Role based user access	Available	Available	Available	Available	Available	Available
Data storage	Available	Available	Available	Available	Available	Available
• **File system**	Available	Not Available	Available	Available	Available	Available
• **Database**	Available	Available	Available	Available	Not Available	Available
Multi-tier architecture	Available	Available	Available	Available	Available	Available
Distributed processing	Available	Available	Available	Available	Available	Not Available
Scheduled and batch processing	Available	Available	Available	Available	Available	Not Available
Two-phase commit of transactions	Available	Custom	Not Available	Not Available	Available	Not Available
Automatic transaction recovery	Available	Custom	Not Available	Not Available	Available	Not Available
Distributed processing and load balancing	Available	Available	Available	Available	Available	Not Available
All user interactions logged	Available	Available	Available	Available	Available	Available
Communication adapters (please list all available)	FTP, NFS, SOCKETS, TCP/IP	Any HL7	None Needed	See Response of Provider Listed Instrument Interfaces	Available/None Listed	TCP/IP, XML, File OPC
Enterprise integration adapters (please list all available)	IBM BisTalk, NEON, Cloverleaf, Artifact	No Response	None Needed	Have interfaced with SCC & Mysis	Available/None Listed	Active Directory, LDAP
Data communication protocols supported	ASTM, HPRIM, HL7	Serial, TCP/IP	TCP/IP	HL7, ASTM	Available/None Listed	TCP/IP, XML, File OPC

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Functionality						
Electronic order entry	Available	Available	Available	Available	Available	Available
Automatic routing of an order to different labs	Available	Available	Available	Available	Available	Available
Printing of lab's requisitions	Available	Available	Available	Available	Available	Available
Duplicate patient/order checking	Available	Available	Available	Available	Available	Available
Onsite label printing	Available	Available	Available	Available	Available	Available
Results stored as a block of text	Available	Available	Available	Available	Available	Available
All items (result, reference range, units) stored as individual data elements	Available	Available	Available	Available	Available	Available
Supports cumulative reporting	Available	Available	Available	Available	Available	Available
Display of new results for patient and/or clinic	Available	Available	Available	Available	Available	Available
Display current report with historical data on same screen	Available	Available	Available	Available	Available	Available
Graph historical results with current results for trend analysis	Available	Available	Available	Available	Available	Available
Supports orders of supplies from host lab	Available	Available	Need More Info	Not Available	Available	Available
Supports billing, collections, accounts receivable	Available	Available	Available	Available	Available	Available
Supports Inventory and usage management	Available	Available	Available	Available	Available	Available

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Technology						
Development technology	J2EE, C/C++	Delphi/Borland C++, CACHE Server Pages	C++, Magic	.NET, ASP.NET, VB 6, MSAccess, XML-XSL	C/C++	NET, ASP.NET, .NET Win, VB 6, MSAccess
Operating systems supported						
• **Windows XP**	Available	Available	Available	Available	Not Available	Available
• **Windows 2000**	Not Available	Available	Available	Available	Not Available	Available
• **Linux**	Available	Custom	Available	Available	Available	Available
• **Unix (all flavors)**	Available	Custom	Not Available	Available	Available	Available
• **Mac OS**	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
• **Other**	Windows 2003	Windows 2003	Windows 2003	Windows 2003		
Databases supported						
• **Oracle**	Available	Available	Not Available	Available	Not Available	Available
• **Sybase**	Not Available	Not Available	Not Available	Not Available	Not Available	Available
• **SQL Server**	Available	Available	Available	Available	Not Available	Available
• **My SQL**	Custom	Available	Not Available	Not Available	Not Available	Available
• **Cache**	Not Available	Available/ Preferred	Not Available	Available	Not Available	Available
• **dBase**	Not Available	Not Available	Not Available	Not Available	Not Available	Available
• **Other**			Meditech MUMPS	MSDW,ODBC Compliant Databases	Postgres SQL	

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Standards supported						
• **HL7 (list version levels)**	Avail./ 2.3& 2.5	Available/2.3-2.5	Available/2.4	Available	Available/2	Available
• **LOINC**	Available	Available	Available	Available	Not Available	Available
• **SNOMED / SNOMED CT**	Available	Available	Available	Available	Not Available	Available
Connectivity						
• **Web based access**	Available	Available	Only if using Citrix or VPN	Available	Available	Available
• **Asynchronous operation**	Available	Available	Available	Not Available	Available	Available
• **Standalone thick client required**	Only for Instrument Interfaces	Available	Available	Available	Not Available	Available
• **Dial up, VPN**	Available	Available	Available	Available	Available	Available
Deployment and Support Capabilities						
Support personnel can diagnose problems online	Available	Available	Available/ ISDN or VPN	Available	Available	Available
Current version of your system	V 20.01	V 6.0.1	V 5.4, SR2	V 2.42	V 1.8	V 5.8
Earliest (lowest number) version that you still support	V 13	V 5.13	Magic V 4.4	V 2.30	Only One Version Back	ALL
Staging/testing license provided as part of your quoted cost	Available	Available	Available	Available	Available	Available/ Optional
Do you have a user group?	Available	Available	Available	NO/ In Process	Available	Available

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Internationalization						
System supports multiple languages	Available	Not Available	Not Available	Available	Not Available	Available
System supports multiple currencies	Available	Not Available	Not Available	Available	Not Available	Available
System supports multiple currency symbols	Available	Not Available	Not Available	Available	Not Available	Available
System supports multiple date formats	Available	Available	Available	Available	Not Available	Available
System supports multiple date systems	Available	Not Available	Available	Available	Available	Available
Business Relevance						
Public or private company	Public	Private	Private	Private	Private	Public
Public Health installations	None	16	3	None	None	3
Hospital installations	See Ref. List	2	1900	3	52	None
Asia and Africa installations	See Ref. List	None	Asia 1 / Africa 27	Israel/ 3	None	Asia 2 Mainly Pharmaceutical Companies
Number of staff						
• **Development**	69	4	438	56	24	4
• **R&D**	78			11		6
• **Install/support**	23	4	1254	33	60	24
• **Sales**	6		239	6	12	10
• **Other**	4	2	111	10		5
Number of systems in backlog	11	1	40	3	4	2
Legal proceedings have been initiated by a customer	No	No	No	No	No	No

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Cost					ASP Implementation Need Site Information Estimated Cost $7,050 per month for 36 months	
License						
• **Open Source/No licensing cost**	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
• **Perpetual, based on # of CPU's**	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
• **Perpetual, based on # of users**	Available	Available/ Concurrent Users	Available	Based upon Volume, # of Users, # of Interfaces/ Drivers	Not Available	Available/ Concurrent Users Base System S30,000 plus $2,000 per Concurrent User Plus other Modules
• **Periodic, based on # of users/ sites**	Not Available	Not Available	Not Available	Not Available	Available/ ASP	Not Available
Support and maintenance	20% of Software Cost Per Year	18% of Software Cost Per Year	Not Given	1.5 Per Month of Software Cost	ASP Included In Fee	15% of Software Cost Per Year
Installation and customization	$150,000	Site Dependent	Not Given	Site Dependent	$60,000 up Front Can be Added to Monthly Fee	$500 to $2,000 per day (country dependent)
Lowest total cost for deployment	$200,000	Not Included	Not Included	$50,000	$313,800	$90,000
Highest total cost for deployment	$550,000	Not Included	Not Included	Over 5 Million	$375,000	Over $500,000

ITEM	MediSolution	MMGMT	MEDITECH	NETLIMS	OPUS	Perkin Elmer
Hardware Requirements						
Specific hardware requirements	See Hardware Requirements	Microsoft approved. Servers Recom. O/S is Windows 2003 Server.	Require More Information About the User Site	Require More Information About the User Site	Require More Information About the User Site	Require More Information About the User Site, Database, Etc.
Performance using such hardware	Performance is Base on Configuration	Configuration Based Upon User Site				
• **# of concurrent users**		Unlimited				
• **# of transactions per second**		No Software Limitations				
• **# of transactions stored online**		Limited only by Available Storage				
Customization						
Screens can be customized	Available	Not Available	Available/ Limited	Only By NETLIMS	Available	Available
Business logic can be customized (e.g. with scripting or alteration of code)	Available	Available/ Limited	Available	Only By NETLIMS	Not Available	Available
The source code is available for free or included in license fees	Not Available	Placed in Escrow	Placed in Escrow	Not Available	Not Available	Placed in Escrow
The source code is available for an additional fee	Not Available	Not Available	Not Available	Not Available	Not Available	Placed in Escrow

Software Provider Group 3

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Admin and security				
Role based user access	Available	Available	Available	Available
Data storage				
File system	Not Available	Available	Not Available	Available
Database	Available	Available	Available	Available
Multi-tier architecture	Available	Available	Available	Available
Distributed processing	Available	Available	Not Available	Available
Scheduled and batch processing	Available	Not Available	Not Available	Available
Two-phase commit of transactions	Available	Available	Not Available	Not Available
Automatic transaction recovery	Available	Not Available	Not Available	Available
Distributed processing and load balancing	Available	Not Available	Not Available	Available
All user interactions logged	Available	Not Available	Not Available	Available
Communication adapters (please list all available)	SQL, TCP/IP, Web Services	ABI3100, ABI3700, ABI3730	PHIN MS for HL7 messaging and Hibernate for Object to Database	ASCII, RS232, OLE2, Active X, XML, COM, CORBA, JAVA, .NET, Instrument Interfacing
Enterprise integration adapters (please list all available)	Can Interface with COM Compliant APPs	Not Available/Custom	Not Available	OLE2, Active X, XML, COM, CORBA, JAVA, .NET
Data communication protocols supported	TCP/IP, RS232, HTTP, Web Services	HTTP, HTTPS/SSL, RMI, LDAP	enXML using PHIN MS	TCP/IP

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Functionality				
Electronic order entry	Available	Available	Available	Available
Automatic routing of an order to different labs	Available	Available	Not Available	Available
Printing of lab's requisitions	Available	Available	Not Available	Available
Duplicate patient/order checking	Custom	Custom	Not Available	Available
Onsite label printing	Available	Custom	Not Available	Available
Results stored as a block of text	Available	Not Available	Available	Available
All items (result, reference range, units) stored as individual data elements	Available	Available	Available	Available
Supports cumulative reporting	Available	Custom	Available	Custom
Display of new results for patient and/or clinic	Available	Available	Available	Available
Display current report with historical data on same screen	Custom	Custom	Available	Custom
Graph historical results with current results for trend analysis	Available	Custom	Not Available	Available
Supports orders of supplies from host lab	Available	Available	Not Available	Available
Supports billing, collections, accounts receivable	Available	Some	Not Available	Available/ Not Accounts Receivable
Supports Inventory and usage management	Available	Available	Not Available	Available

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Technology	V 10			
Development technology	J2EE, .NET Windows, ASP.NET, .NET, C/C++	J2EE,C/C++ for equipment interfaces	J2EE, VB,	J2EE, .NET Windows
Operating systems supported				
• **Windows XP**	Available	Available	Available	Available
• **Windows 2000**	Available	Available	Available	Available
• **Linux**	Not Available	Available	Not Available	Available
• **Unix (all flavors)**	Not Available	Available	Not Available	Available
• **Mac OS**	Not Available	Available	Not Available	Available
• **Other**				
Databases supported				
• **Oracle**	Available	Available	Not Available	Available/9i supported
• **Sybase**	Available	Available	Not Available	Available
• **SQL Server**	Available	Available	Available	Available
• **My SQL**	Not Available	Available	Available	Not Available
• **Cache**	Not Available	Not Available	Not Available	Not Available
• **dBase**	Not Available	Not Available	Not Available	Not Available
• **Other**	Not Available	PostGreSQL	HyperSonic/HSQL	Not Available

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Standards supported				
• **HL7 (list version levels)**	Available up to 2.5	Not Available	Available 2.5	Custom
• **LOINC**	Available	Not Available	Available	Custom
• **SNOMED / SNOMED CT**	Available	Not Available	Available	Custom
Connectivity				
• **Web based access**	Available	Available	Available	Available
• **Asynchronous operation**	Available	Available	Available	Not Available
• **Stand alone thick client required**	Available	Not Available	Not Available	Available
• **Dial up, VPN**	Available	Available	Not Available	Available
Deployment and Support Capabilities		Did Not Respond to These Items		
Support personnel can diagnose problems online	Available		Not Available	Available
Current version of your system	V9.4 Version 10 late 2005		V 2.0 Available 9/05	Sapphire R4.3
The earliest (lowest number) version that you still support	Two Versions Back		Everyone Is Current	Two Version Back
Staging/testing license is provided as part of your quoted cost	Available		N/A	YES
User group	Available		Not Available	YES

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Internationalization		Did Not Respond to These Items		
System supports multiple languages	Available		Not Available	Available
System supports multiple currencies	Available		Not Available	Available
System supports multiple currency symbols	Available		Not Available	Available
System supports multiple date formats	Available		Not Available	Not Available
System supports multiple date systems	Available		Not Available	Available
Business Relevance		Did Not Respond to These Items		
Public or private company	Public		Federal Agency	Private
Public Health installations	12		Plan To Install 90+	Yes
Hospital installations	None		None	None
Asia and Africa installations	Asia 29; all do not appear to be clinical		None	Yes, 8 listed; none appear to be clinical
Number of staff				
• **Development**	25		6	27
• **R&D**	5			7
• **Install/support**	85		4	88
• **Sales**	10			10
• **Other**	15			102
Number of systems in backlog	5		N/A	5
Legal proceedings initiated against it by a customer	No		No	Yes

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Cost		Did Not Respond to These Items		
License				
Open Source/No licensing cost	Not Available		Not Available/ Application is Free	Not Available
Perpetual, based on # of CPUs	Not Available		N/A	Not Available
Perpetual, based on # of users	Available/Named, Concurrent or Enterprise		N/A	Not Available
Periodic, based on # of users /sites	Not Available		N/A	$8,800 per concurrent full use/ 2,500 concurrent virtual (reduced functions)
Support and maintenance	Project Specific		NCPHI Will Need To be Funded By GAP	15% of software purchased per year
Installation and customization	Project Specific		Any Changes for HIV / AIDS Will Need To be Funded By GAP	$1,500 per day plus expenses
Lowest total cost for deployment	$75,000		N/A	Project specific
Highest total cost for deployment	$3.6 Million		N/A	Project specific

ITEM	STARLIMS	SAIC	NCPHI	LabVantage
Hardware Requirements		Did Not Respond to These Items		
Specific hardware requirements.	See Install Guide		Refer to Detailed RFI Response	Refer to Detailed RFI Response
Performance using such hardware				
# of concurrent users	No Specific Software Limit		100 For Each Installation	
# of transactions per second	Depends on Database Selected		Database Dependent	
# of transactions stored online	Network Dependent		None	
Customization				
Screens can be customized	Available		Not Available	Available
Business logic can be customized (e.g. with scripting or alteration of code)	Available		Not Available	Available
Source code available for free or included in license fees	Placed in Escrow	Available	Not Available	Placed in Escrow
Source code is available for an additional fee	Not Available	Available	Not Available	Placed in Escrow