

Filling Functionality Gaps of Your Current LIS with Supplemental Applications

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Supplementing Your Current LIS

- Workflow/Productivity Improvements
- Quality Improvements
- Service Improvements
- Revenue/Profitability Improvements



Workflow Optimization

- Processing Workflow Optimization
 - Balance volume of incoming specimens to throughput capacity
 - *Move from batch to continuous flow processing*
 - Smooth out backlogs and optimize technical staff productivity
 - *Staff scheduling based on workloads (PRN)*
 - Positive sample identification/container ID
 - *At point of contact*
 - Integration between LIS software, front-end system software and manual processes
 - *Remove re-entry of any information*
 - Automated systems for sample receipt & specimen prep
 - *One step pre-processing*
 - Automated Sample storage and retrieval
 - *Access and Retrieval for add-on tests*





Productivity Improvements

- Workflow
 - Specimen management (Collection, Storage, Retrieval)
 - Courier management
- Instrument/System Connectivity & Productivity
 - Middleware/Standalone
 - Work Area Managers (WAMs)
 - Rules/logic
- Robotic Sub-Systems
 - Pre-Analytic, Analytic, Post-Analytic processes



Example - Courier Service Optimization

- Business Modeling
 - Owned Courier vehicle fleet or use 3rd party services
- Courier Operations :
 - Route optimization & Fleet maintenance
 - Capacity to handle Stats and special cases
 - Positive specimen ID at source
 - Integrate with Call Center
 - Some vendors
 - medicalcourier.com (Elite)
 - pbtnow.com (Logitrac)
 - sunquestinfo.com (Outreach Advantage)
 - softcomputer.com (SoftExpress)
 - axeda.com (Fleet management development tool)
 - cerner.com (Gajema)
 - arclogistics.com
 - aircliv.com (Clinical Perform)



Optimize and Edit

August, 2010

Su	Mo	Tu	We	Th	Fr	Sa
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Tasks

Import Orders

Build Routes

Views

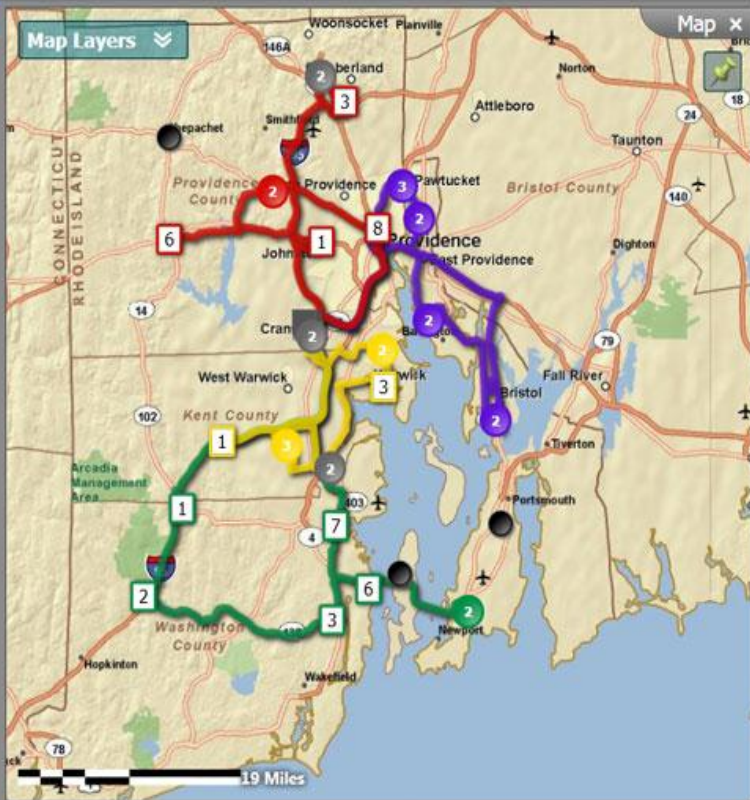
Orders Time

Routes Versions

Map Find

Quick Help

Add or import orders and then Build, edit, and sequence routes. Compare different route versions and view orders in List, Map, or Time views. More Info.



Routes

Routes	Color	Orders	Cost	Distance	Weight	Volume	Time
Route 2	Green	8	\$189.24	88.18 mi	950 lb	235 cu ft	9.6
Route 4	Red	8	\$194.79	89.34 mi	825 lb	240 cu ft	9.8
Route 1	Purple	9	\$194.06	96.85 mi	875 lb	230 cu ft	9.7
Route 3	Yellow	9	\$182.93	69.03 mi	975 lb	260 cu ft	9.5

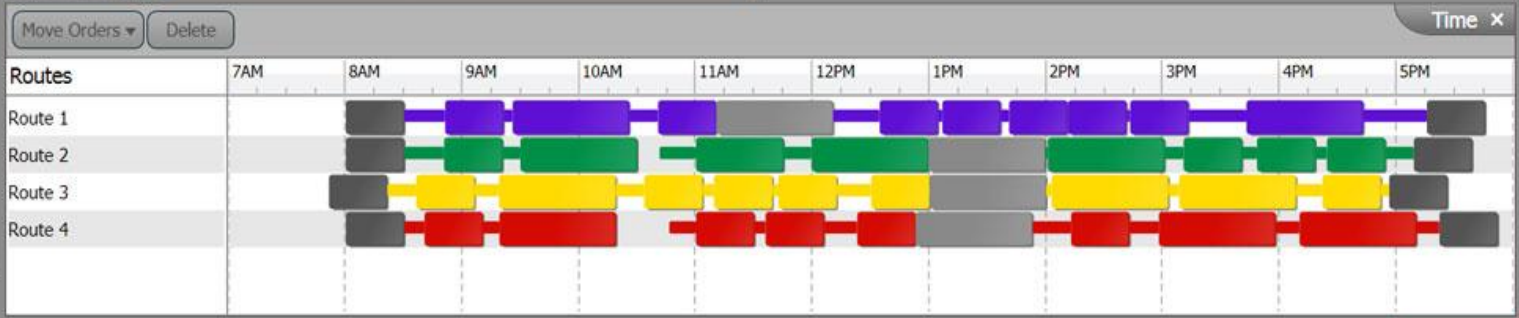
Click here to add a new Route

Se...	Name	Arrive Time	Address	City	State
●	Depot	7:51 AM	80 Hope Rd	Cranston	RI
● 1	John Doe	8:36 AM	41 DIVISION RD		RI
● 2	John Doe	9:18 AM	182 Chestnut Dr		RI
● 3	John Doe	10:33 AM	46 LANGLEY ST		RI
● 4	John Doe	11:09 AM	256 LAKE SHORE DR		RI
● 5	John Doe	11:42 AM	6 PINE EDGE CT		RI

Orders

Name	Address	State	Zip	Service Time	Volume	City
John Doe	15 BLUE MIST DR	RI	2838	60 m	50 cu ft	
John Doe	10 DOUGLAS HOOK RD	RI	2814	60 m	50 cu ft	
John Doe	130 BEACON AVE	RI	2835	60 m	50 cu ft	
John Doe	570 MIDDLE RD	RI	2871	30 m	15 cu ft	

Click here to add a new Order



4 Route(s), 4 Order(s).

Messages





Quality Improvements

- Standardize all QC processes in a single database
- Specify quality objectives and monitor results
- Provide for peer comparisons
- Include proficiency testing, PM and other QA
- Monitor compliance
- Maintain documentation
- Positive Patient Identification



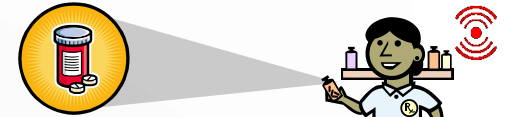
Quality Improvements

- CAP Today survey shows 13 vendors with positive patient ID solutions.
- Companies with other QC/QA products include Westgard, Athlecon, Bio-Rad, Atlantis Labs, and CAPMedialab, MasterControl, clinicallaboratoryconsulting.com, Quality America, SoftTechHealth, WSLH, & others



A Single Solution For Real Time Operational & Safety Net with RFID

RFID system links all patient, clinician, equipment, blood and specimen to create an “intelligent safety bubble” around the patient.

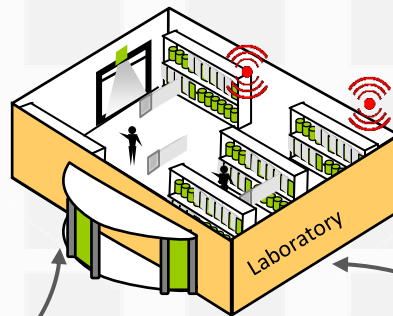


Physician Office
Home
Healthcare

Specimen are labeled and tagged at the point of collection.



Specimen are stored in racks.
automatically catalogs and
manages stored specimen



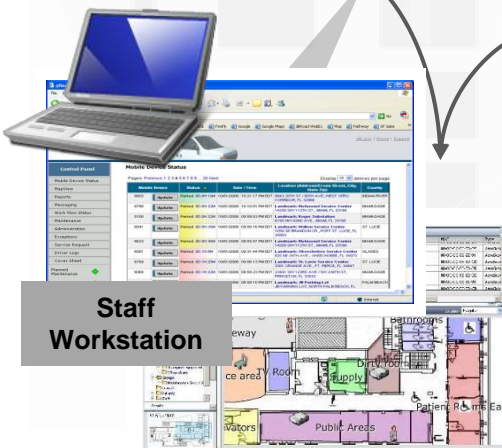
Auto-Accessioning with
zero data entry
Auto-Specimen Receive
Locate Specimen

Specimen are collected and
labeled with barcode and RFID
tag

Tagged
specimen



Locate any specimen in real time. Decision
maker can access trace specimen movement,
chain of custody and inventory reports.



Staff
Workstation



RFID vs. BARCODES COMPARISON

	RFID	BARCODE
Line of Sight	Not required	Required
Read Range	Passive UHF RFID: - Up to 40 feet (fixed readers) - Up to 20 feet (handheld readers) Active RFID: - Up to 100's of feet or more	Several inches up to several feet
Read Rate	10's, 100's or more simultaneously	Only one at a time
Labor Time in Use	Virtually None. System operates automatically	Typically users must scan each tube individually. Exception of robotic lines
Read/Write	Many RFID tags are Read/Write. Can also modify and/or update	Read only
Technology	RF (Radio Frequency)	Optical (Laser)
Interference	some RFID frequencies don't like Metal and Liquids. They can interfere with some RF Frequencies.	Obstructed barcodes cannot be read (dirt covering barcode, torn barcode, etc.)
Automation	Most "fixed" readers don't require human involvement to collect data	Many barcode scanners require a human to operate (labor intensive)
Event Triggering	Capable: Can be used to trigger certain events (like door openings, containers arrived, alarms, etc	Not Capable
Penetration	Increasing utilization for more costly items	Widespread usage in hospitals
Cost/Unit	RFID Tag: 5¢ to 15¢ ; Readers range from \$100 to \$2000; Printer to print barcode + RFID tags approx. \$2000	Labels 0.5¢; Laser Scanners \$200-\$500; Barcode Printer \$250- \$1,000



Service Improvements

- Client Services
 - Portals
 - Call Centers
- Patient Services
 - Access
 - Scheduling
 - Information



Client Communication

- Web-based laboratory portals (Orders, results, supplies)
 - Include interfaces to MD Office instruments and manual results
- Transparent interface with Clients' EMRs, Practice Management Systems
 - Part of portal or as separate product
- LIS company Portal offerings – All Major Vendors
- 3rd party Portal offerings -
 - Atlas
 - CareEvolve
 - MitemBlue Iris
 - 4Medica
 - + many more (See CAP Today POLL survey April, 2011)
- Third party Interface offerings
 - Ignis Systems
 - Lifepoint
 - Laboratory Data Systems
 - Bostech
 - Halfpenny
 - Atlas
 - + many more



Mobile Outreach Applications



Mobile Outreach Applications

- Lab Order Entry
- Inbox presentation of lab results, AP reports, radiology reports, and clinical messages
- On-the-go lab results, AP reports, radiology reports and clinical messages
- Visual and audio alerts of critical values
- Push model eliminates waiting for synchronization
- Ready-to-view results
- Physician configurable alerts and result filters
- HIPAA compliant security model
- Dynamic result value trending
- Ability to add physician notes to test results
- Secure forwarding of test results
- Supported devices: iPhone, iPad, Android, Blackberry and others



Mobile Outreach Services

- Support of Various iPhones, Androids, Blackberrys, iPads, Xooms other PDAs to provide accessibility to/from clients wherever they may be
- Some Vendors Include:
 - 4Medica
 - Atlas
 - Brunston
 - CareEvolve
 - VitalAxis
 - ARUP
 - Medplus
 - Qwest (Gazelle)
 - Labcorp (Beacon)
 - ThompsonRueters (Clinical Expert)
 - Patientkeeper (Mobile results)
 - Iqmax, CgateHealth
 - Many More....



FDA Regulatory Draft Guidance for Mobile Medical Applications-July 2011

<http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm263280.htm>

APPLICATIONS CONSIDERED FOR GUIDANCE

- Extension of one or more medical device(s) by connecting to such device(s) for purposes of controlling the device(s) or displaying, storing, analyzing, or transmitting patient-specific medical device data. e.g. remote display of data from bedside monitors, display of previously stored EEG waveforms, and display of medical images
- Transform the mobile platform into a medical device by using attachments, display screens, or sensors similar to those of currently regulated medical devices. e.g. a transducer to a mobile platform to function as a stethoscope, attachment of a blood glucose strip reader to a mobile platform to function as a glucose meter, attachment of electrocardiograph (ECG) electrodes to a mobile platform
- That allow the user to input patient-specific information and - using formulae or processing algorithms - output a patient-specific result, diagnosis, or treatment recommendation to be used in clinical practice or to assist in making clinical decisions. e.g. a questionnaire for collecting patient-specific lab results and compute the prognosis of a particular condition or disease, perform calculations that result in an index or score, calculate dosage for a specific medication or radiation treatment, or provide recommendations that aid a clinician in making a diagnosis or selecting a specific treatment for a patient.

APPLICATIONS NOT CONSIDERED FOR GUIDANCE

- Electronic "copies" of **medical textbooks, teaching aids or reference materials**, - used to provide clinicians with training or reinforce training previously received.
- Solely used to log, record, track, evaluate, or make decisions or suggestions related to **developing or maintaining general health and wellness**. **not** intended for curing, treating, or diagnosing a specific disease
- **General office operations** with functionalities that include billing, inventory, appointments, or insurance transactions.
- **Generic aids** that assist users but are not commercially marketed for a specific medical indication.
- Functionality of an **electronic health record system or personal health record system**.



Customer Service “Pressure” Points Call Centers

- The Client wishes to:
 - Obtain information about tests and specimen handling requirements
 - Notify if supplies need replenishment
 - Request maintenance services
 - Determine if a courier has been scheduled to make their pick-up
 - Report that their specimens were not picked up as scheduled
 - Ensure that specimens have made it to the lab,
 - Inquire about the status of the testing and estimated time for results
 - Follow-up on incorrect or incomplete billing.
 - Be alerted on key issues, abnormal or critical values in a proactive manner (Email, phone, etc)
- The issues above are often dealt with by different departments in the lab
 - Client might have to call two or three different departments to get all of their questions answered.
 - Any one department may have no idea the Client is having multiple issues
 - Effective, efficient coordination of Client issues may not occur
 - Calls by lab techs take away from performing tests



Traditional Customer Service

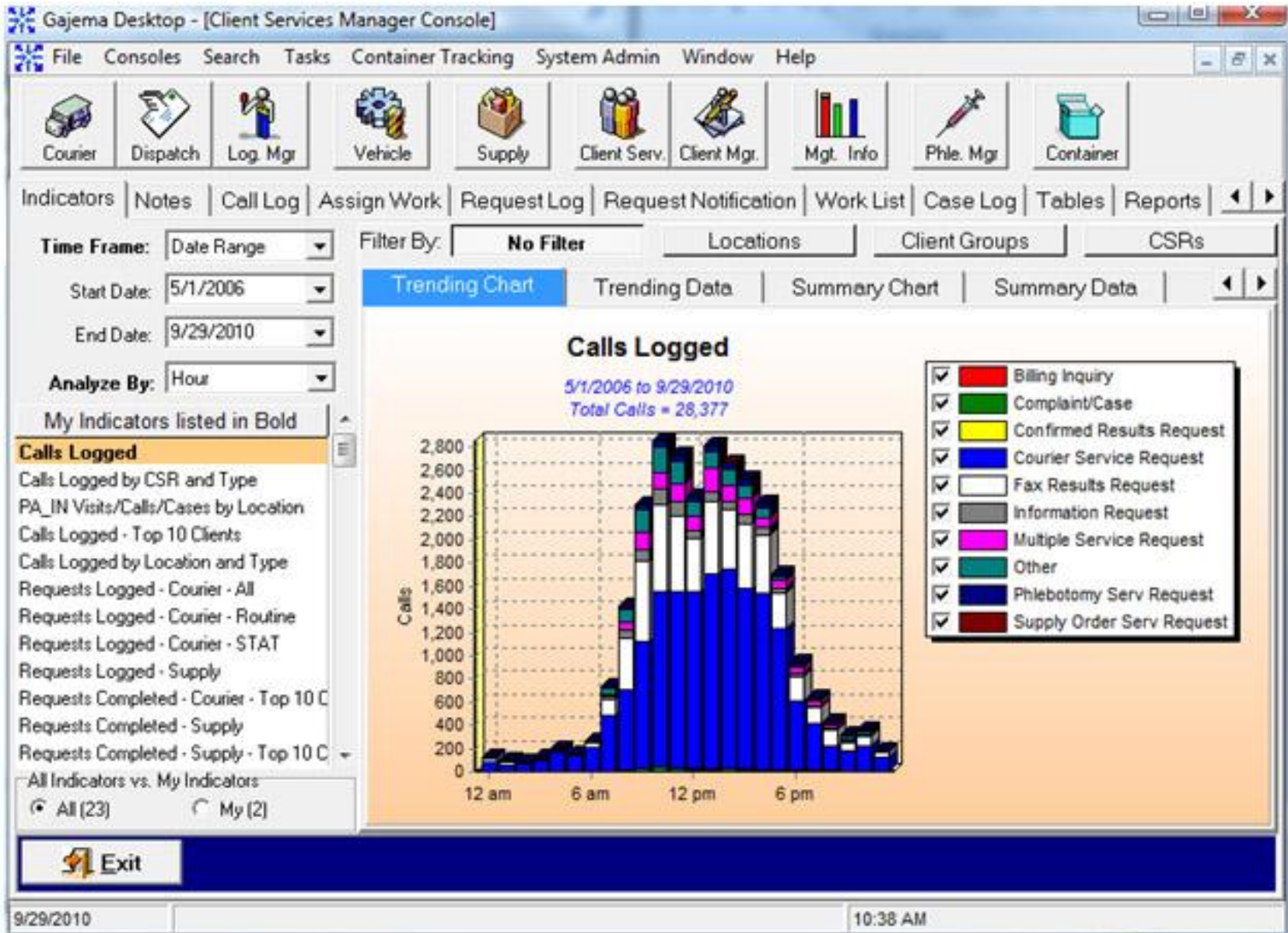
- Phone based Call Centers
 - Client or lab uses phone for contact
 - Have access to prior contacts and open items
 - Most call center/CRM products
 - Many Lab vendors – benefit have access to lab results, schedule pickup, etc
- Managed follow-up
 - Outstanding action items
 - Can set priorities for actions
 - Management reports for TAT, call frequency, call types, etc



Pro-active Customer Service

- Electronic-based Customer Services
 - Client access – no phone calls necessary
 - Visibility to those who will service the Client's issue or need
 - Automated critical and other result delivery and confirmation
 - Automatic follow-up to assure resolution
 - Microsoft Dynamics CRM, CRMdesk, Sunquest, SCC, & others
 - Request Tracker, H2Desk, and many other stand-alone systems
 - HIT
- Improved Service Levels
 - Anticipatory alerts, e.g. supplies needed, maintenance required, etc.
 - Avoid problem solving – be a problem preventer
 - Customer satisfaction surveys – with follow-up
 - Faster turn-around time for critical result calls





Courtesy Cerner Corporation



Patient Services

- Online lab result access
 - Patient portals
 - Sophrona, Medlinkix, Medplus, eClinicalWorks, CureMD, e-Telmed, and many more
 - Personal Patient medical records (iPhone/Android apps)
- DAT testing
 - PrePaidLab.com, DirectLabs.com, eStatLabs.com and many hospital labs
 - Some get around state laws by having a Physician encounter with a licensed MD from these companies
 - Many use Labcorp and Quest to do actual drawing and testing
- Appointment Scheduling
 - Self- scheduled appointments & follow-up generation
 - Quest, Labcorp, Itfrontdesk.com, pcmsi, Q-nomy, & others

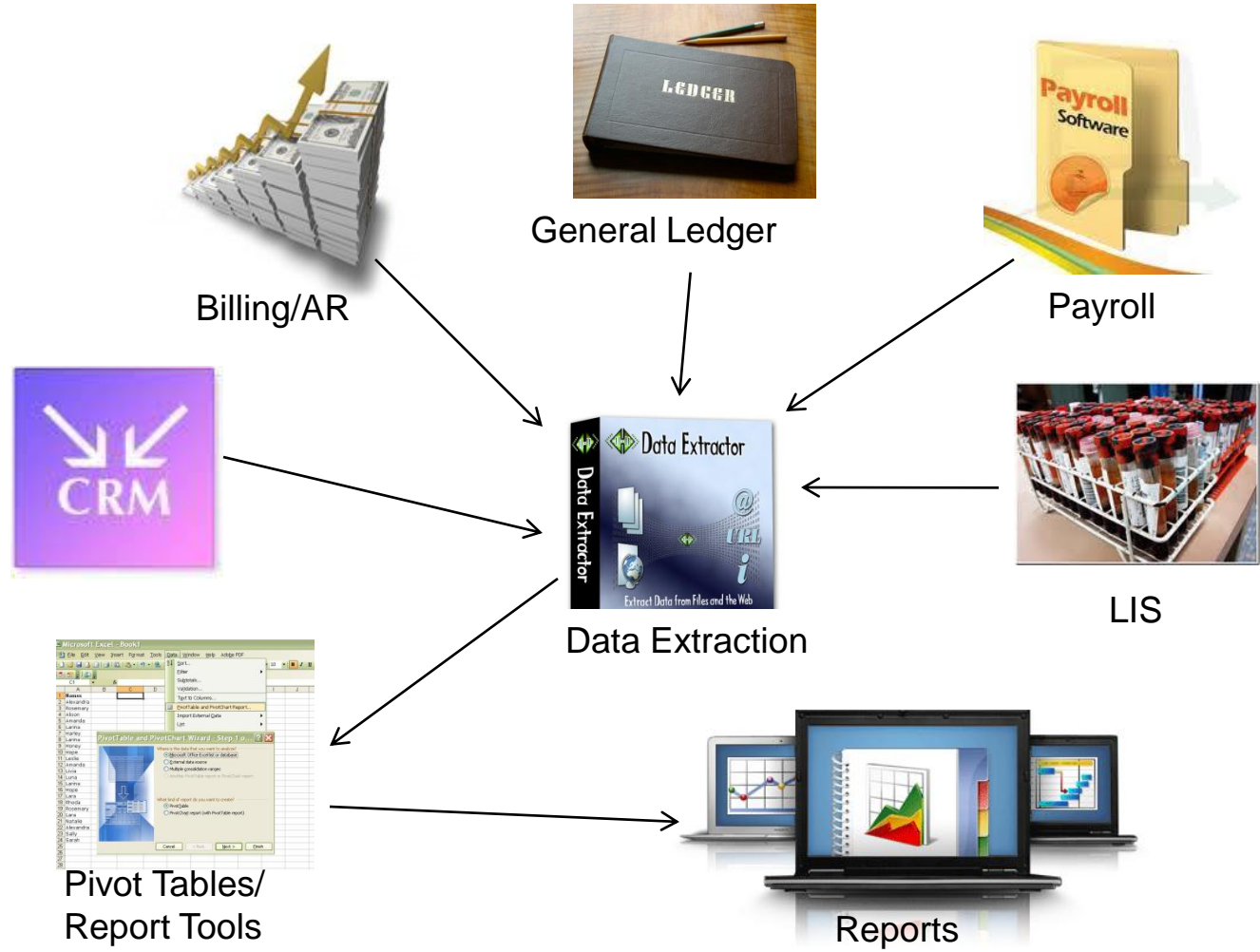


Maximizing Revenue/Profitability

- Revenue Cycle Management Solutions
 - 15 vendors in the May, 2011 CAP Today - Billing Systems Guide including several LIS vendors
 - Consultants to help set up processes (Chi Solutions, Colaborate, laboratoryconsultant.com, others)
 - Many services vendors
 - Operate systems as SaaS
 - Process claims and Collect revenues
 - A few vendors
 - quadax.com
 - laboratorybilling.com
 - pgmbilling.com
 - psapath.com
 - AHS
 - Medigistics.com, Peachtree + 50 more



What If You Can't Change What You Have?



Anatomic Pathology

- Synoptic reporting – mTuitive, CAP
- Voice recognition dictation – Voicebrook, Nuance, Dictran, and others
- Digital pathology – scanning, storage and interpretation – Apollo, Trestle, Ventana, Aperio, Leica, Olympus, Phillips, Bioimagene and others
- Telepathology – PaxCam, Pixeria, Interpath (on Ipad) and others
- Slide management and labeling – SHUR/Mark. ThermoFisher, and others



Additional Applications

- Instrument Interface Middleware
 - Biomerieux Myla, Data Innovations, Dawning Technologies
- Robotic Sub-systems
 - IVD Manufacturers
- Cost Accounting
 - Costflex, SAP, Microsoft, Sunquest, MrDashboard, Telcor & others
- Scheduling (Internal to the lab)
 - AsgardSystems, Labscheduler, McKesson, Medisolutions, & others
- Inventory management
 - CoveLab, StarLIMS, Data Innovations, Cardinal Health, & many others
- Maintenance
 - ChemSW (IMCS), LIS Vendors, FRSoft, DataTracker, & others
- Sales training
 - Clinlabsales, B.J. Ness Consulting, Chi Solutions,
- Others
 - Educational training (Medtraining.org & many free sites)



Summary

- If your LIS does not meet all of your needs
 - You might just “live with it”
 - painful, counter-productive
 - You might replace it
 - Expensive, disruptive
 - You might acquire one or more supplemental applications
 - Many to choose from, choosing, “integrating”



