

# KEEPING YOUR BEST-OF-BREED LIS WHEN THE C-SUITE LIKES EPIC'S EMR/LIS BUNDLE.

Considerations of Epic's "Beaker" LIS as a Case Example

Dennis Winsten

Dennis Winsten & Associates, Inc.

Healthcare Systems Consultants

Tucson, Arizona

[www.dwinsten.com](http://www.dwinsten.com)

## The Issue:

Many CIO's are requiring labs to install an enterprise-wide system's laboratory application e.g. Epic's "Beaker", as part of a hospital-wide or health system-wide solution.

Will this make sense for your laboratory?  
How can issue this be addressed?

# Topics

- Background – Why is this an Issue?
- Current State of Affairs
- C-Suite and CIO rationale and perspectives
- Point and Counter Point to those perspectives
- Generic Comparison Beaker vs. Best-of-Breed LIS
- Tactics to obtain evidence to rationally support retention of your B-o-B LIS-or not-and, if so, to further support your case
- Examples of “gap” data tables used as evidence
- Alternative Strategies for moving forward
- Do’s and Don’ts
- Conclusions



# An Evolving Tension:

## EMR vs. LIS

The contemporary “best-of-breed” LIS model is being challenged by the reality of fully-integrated *primary vendor* EMR solutions, which promise to provide functional equivalence of the “best-of-breed” LIS with the added benefits of:

- Simplified enterprise complexity
- Simplified deployment logistics
- Reduced total cost of ownership
- Simplified long-term stewardship of both software, hardware and data
- Enhanced patient safety

Courtesy: *The Pathology World-View as a Cornerstone of the Next-Generation EHR - Implications for Design, Procurement and Management* by Ulysses J. Balis, M.D.

# A Topic of **EPIC** Proportion

- Epic is dominating the market for new EMRs.
- The “Beaker” LIS can be included in an enterprise-wide system.
- Laboratories may feel “pressure” from the C-Suite to accept “Beaker” as a “single-vendor solution.
- “Beaker” LIS is a “work-in-process”.
- Not all laboratories will find “Beaker” suitable for their needs – some may.



THE CHALLENGES OF "BEST OF BREED"

# CIO Perspectives

## ❑ ENTERPRISE-WIDE EMPHASIS

- Fit with other institutional systems
- Support hospital's financial and service level initiatives
- Achieve higher level integration
- Homogeneous applications
- Use common standards, e.g. Communications, data exchange, information nomenclature
- Seamless data flow between hospital's administrative, clinical and financial systems

## ❑ USER CONSIDERATIONS

- Focus on needs of physicians/clients
- Provide ease of access and of use
- All staff (Users and I.T.) see the same data presentation
- The lab professional wants maximum computer functionality with integration as a secondary goal.
- Outreach laboratory business is a very important revenue generator

## ❑ UTILIZE LIS THAT “FITS” BEST WITH

### EXISTING OR PLANNED:

- Other information systems
- Hardware, database, operating systems, SW tools
- Network protocols

# CIO Perspectives

## ❑ INTERFACING

- Interfacing is unreliable and costly
- Minimize interfaces
- The laboratory space is mature, interface transactions are well-defined and straightforward
- Integrated, single vendor systems may not be sufficiently adaptable to changing business conditions
- Integrated systems don't necessarily work well in a multi-entity business model. Its components, e.g. lab, pharmacy, etc. typically cannot be readily modified to adapt to required business or regulatory changes without affecting the entire integrated system
- Loosely-coupled systems can be advantageous

## ❑ VENDORS

- Vendor should validate their system's actual benefits
- Best-of-breed" vendor should be accountable and take leadership responsibility for any problems that may occur in inter-system operations



# Point – Counter Point

CIO	Best-of-Breed Advocate
We get “Beaker’ license for free - included with enterprise-wide Epic system. Much lower cost!	Not “free”. License is “bundled” and must pay a large implementation fee and other costs. Also, Must consider impact of “gaps” on operations.
Enterprise LIS still less expensive than Best-of-Breed LIS! Our budget is very tight.	Must consider “value” compared to “cost”. Impact on quality, productivity and other key indicators, e.g. B-o-B outreach improves competitiveness, service levels and generates more revenue for the hospital. We’ll provide data to support this.
Why should I take the risk?	Probable that your B-o-B LIS has successfully interfaced to the enterprise system at “nn” other health systems comparable to yours
I don’t want to deal with too many Databases, Operating Systems, Hardware vendors!	It is possible that your B-o-B LIS runs on the same DB e.g. Cache, OS, Hardware as your enterprise system.
Want integration and “seamless’ dataflow between administrative, operational , clinical and financial applications. All staff (users and IT) should look at the same data.	Proven interfaces support such dataflow. Data presentation “customized” by user. Provide physicians clearer, easier to interpret data presentation from which to make clinical decisions.
Don’t want “finger-pointing if problems – just one Vendor and number to call.	Clear service-level agreements. Lab and LIS vendor initiative and responsibility to determine root cause of any issues that are related to LIS operations
Can you prove that “Beaker” LIS jeopardizes laboratory operations, quality, services, etc? What guarantees are there that your system will deliver on its promised benefits?	Function/feature “Gap” analysis will indicate significant impacts. e.g. outreach, automation. Will conduct an independent operational benefits realization analysis and remedy any shortfalls

# “Beaker” LIS

- Epic has been forthright about “Beaker” LIS capabilities.
- Development “roadmap” has been established.
- More existing capabilities than generally perceived.
- Not as function/feature “rich” today as existing, mature LIS.

# “Beaker” LIS is Not Free...

<b>COST ELEMENT</b>	<b>BEAKER “LIS”</b>
License Fee – GenLab/Micro	May be Included/discounted with Enterprise license
License fees – AP, other additional modules	Additional Cost
Instrument Interfaces – Data Innovations	Additional Cost
Operating System/Database - Caché	Additional Cost
Implementations	Additional Cost
Hardware	Additional Cost
Support	Percentage of system cost

... BUT MAY STILL BE LESS COSTLY THAN A “BEST-OF-BREED” LIS

# Generic Comparison- My View Today

	Beaker LIS		Best-of-Breed LIS	
COST	<	Bundling may lower costs, economies of scale	>	Licenses, Implementation
RISK	>	Multi-Site, Complexity Variations	<	Interfacing
INTEGRATION	>	Yes, except blood bank	<	No, Interfaces
OUTREACH	<	Missing some components	>	Typically robust
IMPLEMENTATION	<=	Good tools, common nomenclature, Future TBD with rapid growth	>=	Variable depending on company
FUNCTION	<	Available	>	More Mature, Proven
FEATURE	<	In Process	>	More Sophisticated
FIT	>	Integrated	<	Variable
FEEL	> =	Common look and feel	<=	Different Views
FOLLOW-UP	=	TBD as base grows	>	Depending on company
FINANCIAL	>	Strong	<	Some strong
FUTURE	<=	EMR +, LIS TBD	>=	B-o-B LIS companies TBD

# Tactics

- Arrange for onsite demonstration of “Beaker”
- Identify “Gaps” in function and feature:
  - From demo as noted by lab staff
  - From CAP Today guides (LIS, AP, etc.)
- Prioritize “Gaps” e.g. critical, high, moderate, low
- Quantify impact of “Gaps” on lab and hospital
- Are “Gaps” significant enough?
  - Timeliness?
  - Productivity?
  - Staffing?
  - Quality?
  - Patient Safety?
  - Service Levels?
  - Revenue?

# Hypothetical “Gap” Analysis – Core Lab

CORE LAB – HEMATOLOGY - CHEMISTRY FUNCTIONS/FEATURES DESIRED OR REQUIRED	Available?	Importance
• Ability to update automatically reference range of finalized results if correction made to patient age/gender	Now	C
• Multiple delta check range criteria including logarithmic range	Now	L
• Expert rules to prevent or allow add-on tests based on user-defined criteria	Now-Partial	M
• Dashboard presentation of key operational parameters in real-time (TAT, Pendlings, STATs)	Now	H
• Inclusion of scatter diagrams in hematology reports (more images such as Electrophoresis)	2014	L
• Validity check sample age before allowing add-on test	2014	C
• Patient age recordable as hours	Now	C
• Two different specimen types on the same test	2014	C
• Ability to receive a PDF report over an interface from a reference lab	Now	M
• Ability to verify and release partial results, e.g. components of profiles or panels (Prompt to release final results of a panel when the panel contains multiple results)	Now-Partial	H

**NOTE:** Functions/Features, Availability and Importance above are examples only and do not represent the actual capabilities of Beaker LIS

# Hypothetical “Gap” Analysis – Anatomic Pathology

ANATOMIC PATHOLOGY FUNCTIONS/FEATURES DESIRED OR REQUIRED	Available?	Importance
• Specimen in-process tracking within lab, e.g. as received at cutting, embedding, staining work stations	Now	M
• Manual case number assignment or override	Now	C
• Slide etcher/labeler device interfaces	Now	H
• Cassette/Block labeler device interfaces	Now	H
• Word processing—standard tools (Word or vendor-specific)	Now-Partial	H
• Images/illustrations/external reports integrated in reports; ability to annotate images	Now-Partial	C
• Pathologist co-sign report	Now	M
• Report format flexibility, rich text results, variable fonts, etc.	2014	H
• Automatic diagnosis coding	Now-Partial	M
• RFID specimen tracking for high value/risk specimens	Future TBD	L

**NOTE:** Functions/Features, Availability and Importance above are examples only and do not represent the actual capabilities of Beaker LIS

# Hypothetical “Gap” Analysis – Lab Outreach

LAB OUTREACH FUNCTIONS/FEATURES	Available?	Importance
• Client Services Module	Now-Partial	C
• Client-level comments available for client services	Now-Partial	H
• Alerts of client-specific instructions to technologist or client services staff	Now-Partial	H
• Web based connectivity for laboratory test catalog	Now	H
• Client supply inventory usage and replenishment alerts	Not Planned	H
• Telephone call monitoring, e.g. multiple issue logging, statistics by purpose, client, duration	2015	H
• RFID specimen labeling	Future TBD	L
• Auto-Fax automatic alert of transmit failure	Now	C
• Auto-Fax automatic log of success/failure	Now	C
• Send-Out reference lab interface include a "received" at performing lab status	Future TBD	L

**NOTE:** Functions/Features, Availability and Importance above are examples only and do not represent the actual capabilities of Beaker LIS



# Tactics

- In order to optimize, to the greatest degree possible, while meeting an objective of minimizing the number of vendors required, develop several optional “scenarios” with various vendor system combination with associated “pros” and “cons”.

System Components	Vendor	Pros	Cons
Core Lab	Epic “Beaker”	Provisional Vendor-of-Choice	Needs improvements-gaps filled
Microbiology	Epic “Beaker”	Provisional Vendor-of-Choice	Needs improvements-gaps filled
Anatomic Pathology	Vendor “A”	Already in use at some sites	Ranked 2 <sup>nd</sup> in demos
Outreach	Vendor “A”	Ranked 1 <sup>st</sup> in demos	Different database – not Caché
-- Ref Lab Billing	Vendor “A”	Caché database-same as Epic	Ranked 3 <sup>rd</sup> in demos
Blood Bank	Vendor “B”	Caché database-same as Epic	Ranked 3 <sup>rd</sup> in demonstrations
Molecular Diagnostics	Vendor “A”	Proven product	Different database – not Caché

# Strategies

1. **“Wait and See”** - Epic Beaker Applications as Primary
2. **Hybrid** – Epic “Beaker” LIS Plus 3<sup>rd</sup> Party for Time Critical Applications
3. **3rd Party** – Selected LIS Applications as Primary

## Some Potential LIS Strategies

	<b>Wait and See</b>	<b>Hybrid</b>	<b>Best-of-Breed</b>
<b>Approach</b>	Re-evaluate Epic progress and, if acceptable, plan for implementation in 2014-2015.	Proceed with Epic “Beaker” for core lab, chemistry, hematology and obtain outreach, anatomic pathology and blood bank preferably from a single vendor; Consider replacing “best-of-breed” system(s) with Epic “Beaker” LIS if and when equivalent Epic applications have achieved parity and are operationally and financially favorable.	Defer Epic “Beaker” until mature, complete full range of applications. In the interim, implement (or retain) LIS from a single best fit “best-of-breed” vendor.
<b>Pros</b>	Probable lowest initial cost and annual support costs (TBD); Greatest level of integration. Staff may already be familiar with Epic; Incremental increase in extent of integration as “Beaker” applications are added.	Basic “Beaker” LIS provides initial, but partial Epic integration; Laboratory staff become familiar sooner with “Beaker” user interfaces and transactions; Incremental increase in extent of integration if and when “Beaker” applications are added.	Mature, complete LIS’ s available with proven interfaces to Epic; High priority applications available now. Short-term needs, e.g. outreach, can be met. Least disruptive system transitions.
<b>Cons</b>	High priority, short-term needs, e.g. outreach will not be met; Risk that “Beaker” applications will be delayed and lack full functionality in initial or subsequent releases.	Multi-component/multi-vendor LIS (Epic “Beaker” plus other 3rd party applications) interfacing creates complex, disjointed laboratory operations; Multiple disruptions when additional Epic “Beaker” LIS modules are added; Potential limited return on investments with any 3rd party modules acquired.	Probable higher initial cost and annual support costs; Non-Epic LIS decreases overall enterprise integration.

# Some Do's and Don'ts

DON'T's	DO's
Evaluate only Best-of-Breed LIS	Evaluate Both Beaker and Best-of-Breed LIS
Ignore Valid Issues Raised by the C-Suite	Prepare Rational Responses to C-Suite Issues
Ignore "Gaps" in B-o-B Only-Note Beaker "Gaps"	Identify "Gaps" in B-o-B and Beaker LIS
Assess Virtually All "Gaps" as "Critical"	Assess "Gaps" Realistically, e.g. low, medium, high
Argue Without Backup Data	Collect Evidence to Support Your Case
Rely only on Qualitative Factors	Present Quantitative Impacts
Try doing this all by yourself	Consider having an Independent Consultant help

# Summary

- Although Epic's "Beaker" LIS is presently immature, it is evolving and developments are proceeding along a specified timeline.
- Depending on the laboratory's environment and schedule necessary to achieve its operational, quality, performance and business requirements "Beaker" may not (or may) prove to be a suitable choice for an LIS as part of the enterprise solution.
- An evidence-based assessment can be performed to determine the feasibility or infeasibility of "Beaker" or any enterprise-wide LIS for your laboratory relative to a contemporary best-of-breed LIS.
- Quantify the impact of "gaps" in "Beaker" compared to best-of-breed LIS to establish the relative benefits to the hospital.

# ...and Some Final Thoughts

“Pathology IT divisions in their efforts must partner with enterprise initiatives and there are cogent arguments, including complex lab result reporting modalities, that justify a distinct and separate pathology IT presence. Pathology cannot afford to lose its integral IT capabilities.”

**Ulysses G. J. Balis, MD** Director, Division of Pathology Informatics  
Director, Pathology Informatics Fellowship Program  
Department of Pathology Univ. of Michigan Health System

“Let me emphasize that the primary long-term issue here is NOT whether a best of breed vs. integrated lab system should be deployed, it is that a lab system should be managed by a dedicated, pathologist-led LIS support staff whether or not that system is integrated with the main EHR. It is important to separate this staffing issue from the system issue. ”

**James H. Harrison, Jr., MD, PhD**  
Associate Professor and Director of Biomedical Informatics  
Departments of Public Health Sciences and Pathology  
University of Virginia

Questions?

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