With the advent of the computer revolution, clinical laboratories were early adopters of information technology. Computers, hardware, and software have been integral to conducting and managing the testing process, as well as reporting and storing results. As stand-alone powerhouses of lab informatics, these original laboratory information systems (LISs) were deployed with little need to interact with other systems. While this strategy was effective a few years ago, changes in lab operation now require solutions that provide more.

Hospitals today recognize lab operations as an essential component of the services they offer to the physician community. The hospital looks to the lab to deliver more revenue and to operate with positive margins. As a result, laboratory management must advance its focus and operations from hospital-centric production facilities to entrepreneurial organizations looking to efficiently and profitably expand the size of their client base, as well as the scope and reach of their services. This requires re-engineering key lab-operations components, including sales, customer service, billing, and functions like order/specimen processing and results dissemination currently handled by the LIS.

The new, heterogeneous face of labs

With the impact of mergers and acquisitions over the last decade, the lab’s mission and strategy has dramatically changed, and lab management has pushed beyond confining legacy infrastructure. Increasing competition from national lab service providers has changed the game for regional and local players, creating a more complex, distributed, and political environment, including formal or informal lab networks.

Although the lab may once have been a homogeneous organization, today many labs are a mix of multiple organizations, processes, and technology solutions. They present new IT challenges as lab operations now manage and interact with multiple LISs, often using competing technology platforms handling different workflows and addressing varied service needs. Two underlying principles should guide lab managers in managing the new, diverse nature of institutional labs and maximizing revenue opportunities: One size does not fit all, and connectivity and communication are critical components for laboratory success. As the lab interacts with constituents beyond its original service area, its ability to provide superior customer service and remote access to lab information requires IT to push the LIS beyond initial design.

The mission of increasing profits, combined with the significant cost in both time and money of replacing the LIS, means that labs seek strategic approaches that enhance current investments and enable them to add desired features and functions for the future. Centering on new technology investments demands that operations pay for themselves by either reducing expenses or expanding the business. Lab-management teams planning business expansion view outreach as a profit opportunity. They justify such expansion, including the cost-benefit of IT solutions to enable it, by citing the return on investment (ROI) of merely entering the outreach market.

Multifaceted ROI

The investment decision is justified by the projected ROI and is influenced by the impact these solutions will have on business. The right solution will deliver and, in many cases, results can be dramatic. The dimensions that labs examine to justify ROI are:
- increasing efficiency in the lab (for example, cost savings realized by electronic order entry as well as “clean orders”);
- reducing user errors through electronic ordering tools that provide advanced data validation, required fields, electronic transmission, and other processes that cannot be enforced on a paper requisition;
- increasing reimbursement rates with automated medical necessity checking; and
- streamlining the specimen-intake process.

In today’s competitive healthcare market, a strong ROI is a critical success factor in all lab investments, and lab managers know that ROI has many facets. New questions drive clinical labs that want to grow their business:
- How will the system affect the FTE load in the future?
- Can the lab continue to operate at its present staffing level, or will the system require additional people down the road?
- Will the system enable recruitment and growth of the business?
- Will the system help attract new customers?
- Will the newly adopted technology help recruit and retain qualified staff members?
- Will the system help retain the present customer base?
- Will the solution help the lab move into new markets?

Labs looking for operational success are fueling the next wave of IT invest-
ment, moving away from the mono-
lithic LIS to solutions. These labs prod
the market to produce sophisticated
solutions that meet and address the
needs and complexities of their individ-
ual markets. At the vanguard are IT
solutions that enable specialized
workflow — including multistage/
multilab order processing — interfaces
with multiple legacy systems (e.g., dis-
parate LIS platforms), and emerging
technologies.

A solution-centric model

Can one vendor provide all the so-
lutions needed to unify these diverse
communities? What is the “glue” that
holds IT investments together? Can a
next-generation solution be imple-
mented without sacrificing the end-
user’s experience or altering existing
workflow processes? These questions
compel the next model of lab excel-
ience: solution-centric IT in which lab
managers identify the business prob-
lems they want to solve and pursue the
components that their operation re-
quires for success. The IT vendor is
challenged to address lab management’s
business goals and to work with their
team as a trusted advisor and partner.
Lab managers are not limited to their
LIS vendor; they can look across the
market for the right solutions. In this
new world, lab managers seek to aug-
ment their existing investments with
the solution sets that will best enable
their business goals.

The solution-centric shift molds
decisions from the hospital IT depart-
ment into individual business units. In
the old model, supporting the mix of
different technology components
across disparate systems seemed
counterintuitive to the notion of effi-
ciency and was deemed inoperable by
IT. In the past, integration of compet-
ing platforms was very difficult; each
solution was a proprietary “black box”
designed to stand alone. Today, with the
market-driven migration to standards-
based technology, communication,
storage and retrieval platforms for
clinical information — including stan-
ards like HL7 and design methodolo-
gies like object-oriented programming
— it is possible to deliver a better, faster,
cheaper, and individually tailored solu-
tion that meets the purchasing lab’s
business needs.

With the ability to reach beyond the
LIS, more flexible solution providers
have entered the market to provide
some LIS features and augment exist-
ing LIS systems. The first wave opti-
imized the user interface, enabling front
ends that focused on remote order en-
ter and results review. The second wave
is a comprehensive evolution in
workflow optimization, including in-
side the lab, between the lab and its
customers, between labs, and across the
hospital.

The difficult challenge for vendors
in this second lab IT wave is address-
ing the lab’s requirement for a system
that is effective out of the box, without
limiting the lab’s ability to accomplish
individualized workflow needs. An ef-
fective solution must be flexible;
“cookie-cutter” style will not work. In-
stead of delivering a hard-wired, auto-
mated business process, next-genera-
tion developers elevate configurability
to paramount importance, enabling
platforms that can support multiple in-
dividualized workflows without sacri-
ficing functionality, performance, or
ease of use. Whether providing support
for mobile PDAs that put information
in physicians’ hands for ordering tests
and reviewing information, or enabling
multistage ordering capability that
steers orders to the patient service cen-
ters by optimizing workflow tasks, the
solution-centric lab provides the fea-
tures and functions its constituents
need to be successful. The lab’s reach
must now extend across multiple sys-
tems via interfaces that allow disparate
LIS systems to communicate and func-
tion together in a unified manner. Or-
ders and results need to be synchro-
nized and available with electronic
health records and electronic medical
records; connectivity is pervasive across
the enterprise.

As markets become more mature,
environments become too complex to
be effectively serviced by one vendor.
Savvy labs see the need to operate un-
der the guise of a single integrated sys-
tem, but approach IT offerings as an
a la carte or “cafeteria” plan, utilizing
features and functions from different
vendors to build a tailored system. This
is the new world of opportunity, en-
abling labs to evolve to higher service
levels without stopping business to
overhaul their systems.

The answer to the lab’s business
problem is solution-centric. Today’s
clinical lab managers must ask: Is the
technology solution right for the hos-
pital, the lab, and the customers? Arm-
ed with years of experience work-
ing with computers in the lab, they now
can critically assess what solutions will
work. They can confidently leverage IT
as a tool — a business driver to raise
customer satisfaction, improve patient
care, increase service levels, boost rev-
ue, and enhance their competitive
advantage. In the bold new world of
healthcare excellence, best-of-breed
information technology solutions offer
labs the choices they need to attain
business growth.

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