STRATEGIC DIRECTIONS—TOWARDS AN INTEGRATED DELIVERY SYSTEM

Healthcare organizations are forging a unique blend of powerful data and document warehouses, integration tools, and Legacy HIS Software to gain a competitive advantage.

The healthcare world has been dominated by a few turnkey HIS (Hospital Information System) vendors in the last two decades who have primarily focused on providing "operational application" to meet the day to day hospital clerical and tactical needs. Their core competence has been "transaction" based legacy applications for an inpatient acute care hospital setting, which continues to be essential in running many aspects of today's healthcare environment. Yet, the world of healthcare is also rapidly changing since the last decade. The acute care service component has shifted towards ambulatory care, with increasing emphasis on chronic and long-term care management. There is also a tremendous need to integrate all components of the local healthcare delivery system. The traditional HIS vendors have struggled to handle this evolving healthcare model. They have also struggled with adaptation of emerging technology to meet the changing needs of the marketplace.

MARKET REALITIES

As the financial and marketplace pressures force healthcare organizations to better integrate all the components of the local healthcare delivery system, many forward-looking organizations have recognized that these Health Information Systems (HIS) are lacking many key advance technology features that are critical to the success of an Integrated Delivery System (IDS). The concept of IDS is to integrate all critical service lines and the associated underlining technology to create a healthcare delivery system that offers customers the best experience, in a high quality and cost effective manner. The IDS can be as simple as a single hospital with electronic linkage to its entire services and all its key providers in the community, or a combination of multiple hospitals and communities across a region. Regardless of its size and complexity, the key principle of creating an 'open', 'intelligent' and 'universal' electronic infrastructure that allows organizations to create a best practice workflow, lowers cost, and enhances quality and care is the foundation of an electronic IDS.

Table 1: Comparison of Paradigm Shift in Healthcare Organizations

Old Paradigm	New Paradigm
♦ Hospital Focus	♦ IDS Focus
♦ HIS System	♦ Enterprise-wide systems
♦ Single Platform	♦ Multiple Platform
♦ Transaction based	♦ Document based
♦ Hierarchical Database	♦ Relational Database
♦ Programmer-centric	♦ End user-centric
♦ Silo-based	♦ Process-based
♦ Character based	♦ GUI/WEB based
♦ Fragmented Decision Support	♦ Holistic Decision Support

LEADERSHIP AND PARTNERSHIP IS KEY

Leadership in healthcare organizations is struggling with the business demands for Physician Alignments, Ambulatory Care Centers, HIPAA, and HIS system integration to improve customer satisfaction, enhance compliance, eliminate charge denials and so forth. Consequently, most organizations now realize that they must seek new Information Technology (IT) tools that are based on 'open systems', and have the capabilities to successfully deploy emerging technologies such as Web-to-Host Connectivity, Thin Client Computing, and integrate PACS and other clinical systems in a user-friendly manner.

In stride, the information technology (IT) marketplace is exploding with options and software that allow organizations to add-on to their current HIS systems and make it more useful, more productive, and less costly, thereby, allowing organizations to leverage their current investment all at the same time. For example, physicians and clinical users coping with difficult to use clinical applications can be deployed hand-held devices using a browser based on Windows CE or Palm Pilots, enabling access to data in PCI with the ease of a stylus. Empowering physicians with useful tools and zero training!

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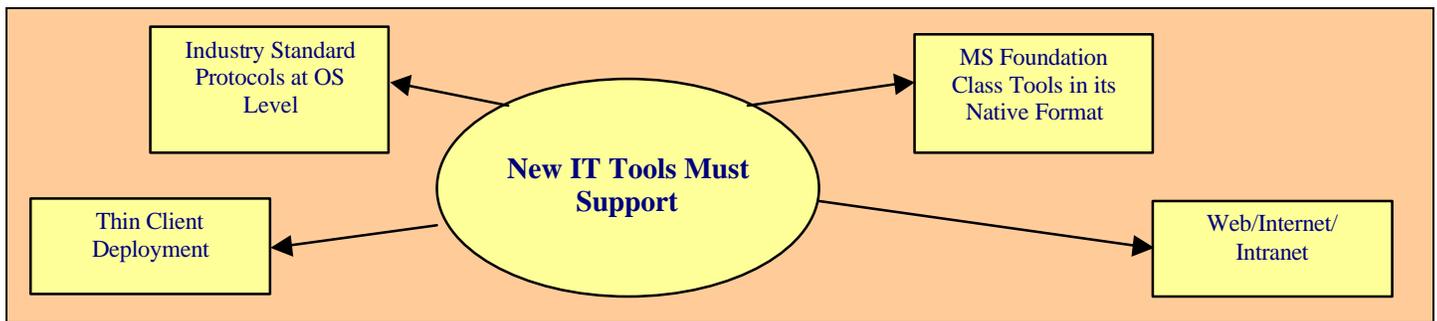
IF YOU CANNOT MEASURE, YOU CANNOT IMPROVE

The boom in data warehousing (DW), disease/case management, and the growing interest in low cost document imaging systems and quality improvement technology are evidence that a whole new set of options exist for progressive healthcare organizations today.

More and more enlightened organizations are empowering their staff, including managers and key stakeholders, with Data Warehouse (DW) based critical thinking and knowledge management tools to completely transform the way they do business. Instead of running the organization from stacks of paper reports received thirty to forty days after the fact, managers are proactively identifying opportunities for cost savings and revenue enhancements by using point and click data mining tools. The backlog of reports that once existed in information systems has been eliminated, and IS moves from being the TOTAL provider of reports to ALL users to being a conduit and a facilitator of knowledge management. The organization moves from frustration to rejuvenation, and

New IT Tools Must Support

- Industry Standard Protocols at OS Level
- MS Foundation Class Tools in its Native Format
- Thin Client Deployment
- Web/Internet/Intranet

the staff is empowered with the right tools to make better and timely decisions for the benefit of the organization.

Coupled with DW is the opportunity to deploy cost effective document scanning/imaging technology, which completes the foundation of document-driven legal records. The digitization of paper using point-of-service scanning devices, with the addition of biometrics for authentication and compliance, is giving organizations the opportunity to embark on major innovation and cost savings. For example, organizations can now have their coders, business office/collections staff and many administrative staff to be located anywhere in the country, and still be totally synchronized with the rest of the organization's workflow and processes.

KEY TO SUCCESS -- 'OPEN' SOLUTIONS

A survey of 200 IT managers responsible for healthcare organizations finds that 55% of them are embarked on some form of search and selection process with key partners who can bring new GUI (Graphical User Interface) technology with enhanced User Interface (UI). Managers are looking for applications that are intuitive, reduce keystrokes/data entry, eliminate errors and add value to their current HIS applications. Almost all survey respondents want the new tools to support:

- Industry Standard Protocols at OS level

- Support application standards like MS Foundation Class Tools in its Native Format

- Support Web/Internet/Intranet (no closed architecture or lipstick on a bulldog)

- Thin client deployment for low cost administrative IT support (savings of up to 30% in IT network staffing cost) (see Figure 1)

Survey respondents are also looking at a broad range of business and clinical functions, led by case management, decision support, easy physician access, enterprise-wide master person index (EMPI), and integration of disparate system.

As technology leaders in healthcare organizations develop plans for a new IT application infrastructure, they recognize that the best approach is to bring a partner who has the synthesis of healthcare business acumen, knowledge of HIS, good understanding of what the new

systems architecture should be, and integration experience.
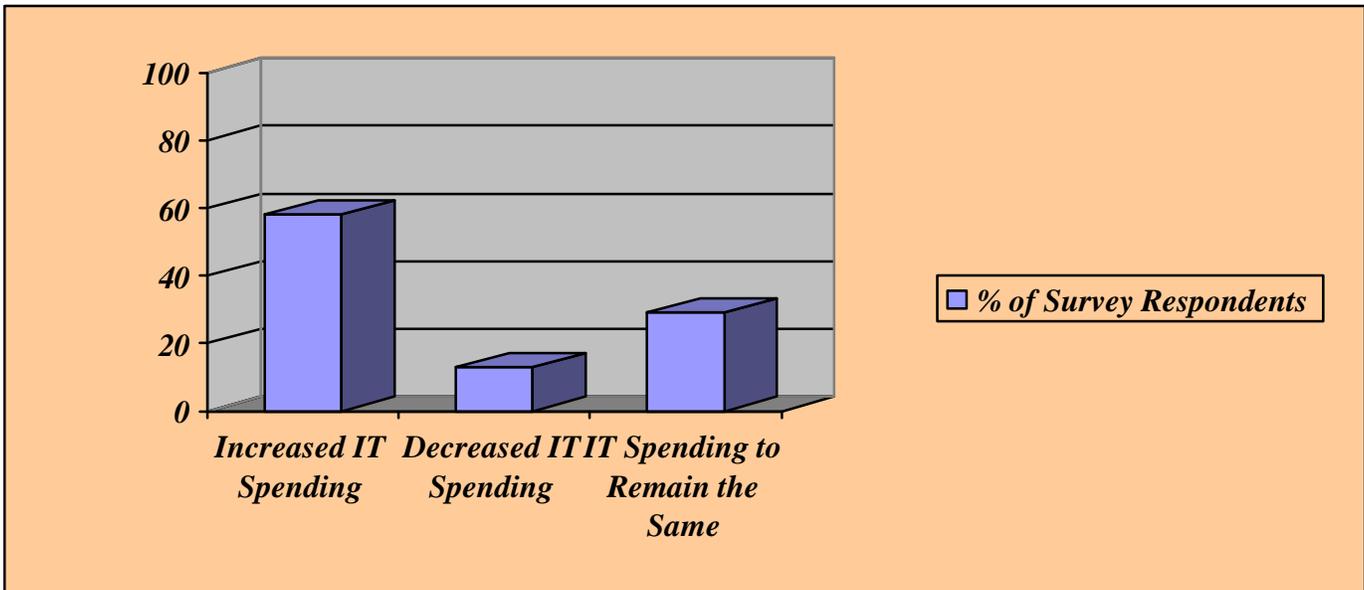
DATA WAREHOUSE CASE STUDIES

One such organization that has successfully embarked on a new strategic direction is Commonwealth Health Corporation (CHC) located in Bowling Green, KY. In 1996, CHC recognized that a Health Information System (HIS) package is an engine upon which new technology can be successfully deployed in a cost effective manner. With the generated cost savings, future IT projects can also be funded, allowing the organization to stay competitive, and to adopt new IT strategies as these unravel in the future years.

CHC started its new IT strategy by performing a "Gap Analysis" as part of the organization's strategic IT planning, which included skills assessment of its IT staff, and their functional transformation into the new paradigm of IDS. CHC then deployed TSG's GALAXY™ Data Warehouse (DW) technology in 1997 as the solution. In the first couple of years of the implementation, CHC saved over 1.5 million dollars by improving its clinical utilization and outcome management of one of the key service lines. Since then, case management and clinical utilization management savings at CHC have climbed to over 4 million, as Jean Cherry, Executive Vice President at CHC, presented these statistics at the MUSE International Conference in Atlanta in May 2000.

"We are convinced that Thin Client and Web-to-Host connectivity are the future. We are getting ready to get there, one step at a time," Jean Cherry, Executive Vice President at CHC in Bowling Green, KY

Another CIO, Wiley Thomas of Good Shepherd Medical Center in Longview, Texas, was facing similar challenges. He responded to these challenges by making DW technology the medical facility's Computerized Patient Records (CPR) foundation using TSG's GALAXY™. The hospital had embarked on a case management program, and data/administrative automation was critical to its success. As the CIO explained, "Appropriate clinical utilization is the name of the game. It is vital that we have software that meets our very special needs of disease and case management, and also has the capability to empower our clinical decision-makers, which includes physicians, to feel comfortable

Table 2: Industry Survey conducted in December of 1999 with 200 healthcare facilities for their perspective on potential growth in the amount budgeted for acquiring strategic applications that enhance current processes in the year 2000.

with the data to make clinically appropriate changes in practice patterns." To-date, the hospital has saved over 3 million dollars in case management and has received acclamation in *Modern Healthcare*. This project and the case management initiative also contributed to Good Shepherd Medical Center's recognition by HCIA and The Health Network as the recipient for the 1999 100 Top Hospitals™: National Benchmarks for Success award.

AMBULATORY INTEGRATION CASE STUDIES

The Management Information Services group at Holy Family Memorial Medical Center in Manitowoc, WI, recognizes that integrating MSO and other ambulatory related data with hospital data at all levels of the organization is the key to achieving success. Holy Family's growing needs for better data mining and reporting tools to gain an accurate understanding of its highly competitive and dynamic healthcare marketplace, led to the adoption of TSG's GALAXY™ DW in 1998. Since then, Holy Family has developed a reputation for excellence in service, quality, and cost effectiveness. As Ed Bauknecht, Director of MIS states, "There are not too many examples of how to implement new emerging software for an Integrated Delivery System. It's a constant evaluation of new technology and determining what is best for Holy Family, and then implementing technology in the most cost-effective manner, making sure that every dollar is an investment towards Computerized Patient Record (CPR)." He also believes that 'open' solutions are the foundation for the future. "We're finding that as more commercial PC based software components become available, we can easily put them together to build our own applications," says Ed, "and with components, we can easily address our own specific needs by building our software."

THINK GLOBALLY AND SPEND WISELY

For most healthcare organizations in the year 2000, the amount budgeted for acquiring strategic applications that enhance current processes is growing at a healthy pace. Specifically, 58% of the facilities surveyed believe spending will increase, 29% state spending will remain the same, and 13% say that they plan to spend less on new software (see Table 2). Of those planning to increase purchase of software in the next 12 months, the main reason given is those healthcare organizations' emphasis on physician and IDS integration, and improving decision-making in a managed care environment.

Many IT organizations also understand that these robust and powerful IT tools are more expensive than the traditional character-based HIS applications. However, if traditional HIS applications do not closely meet the needs of the organization, and if the cost is more in the long run due to inefficiency and difficulty of use, then organizations must invest in new and more robust technology to achieve success. Also for the first time, CIOs understand that the new breed of software has the power to deliver the ROI that has been so elusive in the past.

Most industry watchers, including the Federal Reserve bank, have realized that finally technology is starting to pay off in a big way in terms of improving efficiency, worker productivity, and giving organizations new ways to deliver services in the most efficient manner. In the last few years, corporate America has proven that investing in the right kind of technology leads to low inflation and high productivity. With profit squeeze in healthcare and declining in-patient revenue, the force that will drive organizations to achieve profit goals is the successful implementation of technology that provides efficient and cost-effective solutions. As one economist from Columbia University recently commented, "When businesses do not have any pricing powers, they have to

make profits by becoming more efficient." It is important to remember, "If you cannot measure, you cannot improve." That is the power of Data Warehousing, Disease/Case Management, and other robust IT solutions that are available to you TODAY.

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