Kiosks in the Healthcare Marketplace

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Kiosks Overview:

Medical kiosks are also finding a place in the public health sector. The City of Long Beach Department of Health and Human Services, for instance, implemented a customized version of CSI's Health Station in the South Bay region of Los Angeles County, California. The goal: to increase HIV awareness among high-risk populations and provide accessible health screening, education, and referral information to an estimated 60,786 individuals living with HIV/AIDS in those areas. In addition, the system provides referral information for health and social services in any community and allows users to schedule medical or counseling appointments on the spot.

The kiosks get people into care, get them tested, and help them understand what is available. The kiosk provides a technological way to access care to this terribly medically underserved situation.

Medical kiosks have proven particularly effective for behavioral health screening, such as for teen depression and substance abuse. Because patients are interacting with a touch screen rather than a person, they feel more comfortable answering questions regarding their emotional state or drug use. It has been proven that with kiosks, people will provide better answers because it's more private.

The application of this technology continues to expand. Healthcare is proving that is wants to bring in the kiosk for the same full function capabilities as an ATM offers to banking. Utilizing the kiosks for education purposes is just the beginning.

Kiosks Functionality:

Hospital kiosk solutions must be designed especially for healthcare organizations and are unlike other Kiosk products in the financial and travel industries. Healthcare related Kiosks must be integrated with existing hospital information systems and physician practice management systems to make the check-in and check-out processes more convenient for patients, to reduce costs and errors for the organization, and to reduce operating costs. Based on our research, healthcare Kiosks provide operational benefits in the following areas:

- **Patient Check-In** streamlines the process of checking patients in for hospital stays, lab visits, and/or physician office appointments. By simply swiping a membership card, credit card, or driver's license at the kiosk, patients are automatically checked in and
- placed on an automated checked-in list. Kiosks minimize wait times and congestion at the front desk, reduce the need for the clipboards and lessen the risk of patient misidentification and clerical errors at data entry. Patient Check-in features uniquely enable patients to sign-in for appointments without waiting in long lines, filling out forms on clipboards or giving the same information over and over again. By swiping a membership card, credit card or driver's license at the kiosk, patients can be automatically checked-in, presented with their appointments, given the opportunity to sign consent forms and even prompted for their co-pay. Once the patient is checked in, the kiosks can display patient education, collect medical history information and provide way-finding directions. Registration or front desk personnel can then view and manage patient checked-in lists, monitor patient flow through the organization and much more.

- **Appointments** can be presented on the kiosk to allow patients to confirm scheduled appointment(s) and to check-in. Patients at check-out can use the kiosk to schedule future appointments.

- **Consent Forms** allow organizations to present various consent and HIPAA forms. Patients can read the information and sign the forms using an electronic signature pad at the kiosk.

- **Co-Pay Collections** allows patients to use a credit card to pay their co-payments at the kiosk. In addition, the kiosk can also present and request payment for patients' outstanding balances. Kiosks can also request and collect co-pays for office visits and outstanding patient balances. Many healthcare organizations have already discovered how collecting co-pays at check-in can impact to the revenue cycle. Now, Kiosks makes it easier and more effective, and can even help reduce awkward staff/patient interactions for an improved patient experience. To make payments, patients can simply use a credit card number on file, or scan another card of their choice. The kiosk can print out a receipt and alert the staff of payments made through the kiosks

- **Wayfinder** hospital kiosks help patients find directions to specific facilities and locations. These kiosks provide a convenience for patients and their families. The same kiosk software can be accessed on PCs by volunteers and staff to print easy-to-read directions for those who ask for assistance. A Kiosk way-finding module is a comprehensive solution for enterprise level wayfinding. Built upon a user-friendly, Web-based interface, it allows a large enterprise to create, maintain and publish maps that are easy to read and

understand. Kiosk's WayFinder module is built on an open architecture with ease of maintenance in mind. Adding and updating custom maps, locations on the maps, and paths between the locations is achieved via an easy, intuitive user interface within the WayFinder application. The system is also able to map paths from multiple start points (kiosks) to multiple destinations (rooms/departments) across multiple floors and multiple buildings. The sample screen shot depicts the path builder module, showing a conference area consisting of departments and vendors in those departments. The nodes on a map are driven by simple configuration settings and are easily extensible.

- **Positive Patient Identification** features are also supported by the Healthcare Kiosk technology. Thumbprint, electronic signatures, and card scanners can be utilized to provide multiple patient authentication options for patients.

- **Kiosks Forms:** Capturing consents electronically offers significant benefits for healthcare organizations. Not only does it reduce costs associated with printing, duplicating, filing, storing and retrieving paper consents, but it also provides an easily accessible record of which forms have been signed, where and when, so that patients aren't asked to sign the same forms at every stop in the healthcare process. In addition, electronic Consent Form features ensure that all consent forms are current, and can even alert patients and staff when forms have expired. Forms that are stored in server can be passed along to the healthcare organization's CDR, EMR or other electronic imaging and storage system.

- **eSignatures**: eSignature electronic document management solution allows hospitals and clinics to digitally capture, authenticate and store documents that require a patient signature, including admission and consent forms, privacy statements and other notices. eSignature functionality is designed to alleviate the burden of managing paper forms across the healthcare enterprise. By eliminating the need to print, copy, scan, file and store documents, users can automate labor-intensive manual processes and achieve a paperless workflow.

  When patients are presented with forms, their signatures are captured via eClipboard functions or signature pad device and then saved as an image that can be transferred to an organization's electronic medical record or document management system. The application's built-in rules ensure that all documents are saved in the correct location. As a result, staff can easily access forms electronically, helping to improve data accuracy and reduce time spent tracking down paper documents.

  eSignature is a simple, cost-effective way to better manage the growing amount of paperwork associated with HIPAA and Joint Commission requirements. All signatures are legally binding and securely stored with the document so that they cannot be altered or changed. In addition, eSignature features an audit log that creates a record of each instance a document is accessed for added security. This paperless workflow eliminates time-consuming manual processes, resulting in increased efficiency and lower administrative costs.

- **Online Bill Pay -** Improve your revenue cycle by offering your patients the ease of managing their accounts online. Patients will appreciate the ease of use while taking advantage of their credit card reward programs. Payments made online are transacted real time and eliminate the expensive and time consuming manual processing of checks and credit cards. Reduce your organization's AR days by collecting funds in an automated and timely manner.

Kiosks self-service payment solution authenticates the patient or patient guarantor and provides them with an easy to understand view of their financial obligations with your organization. Patients are able to send secure messages to your staff with billing questions and receive secure responses via the portal.

Kiosk Value and Benefits:

Those groups who have the most need for healthcare services -- the elderly, the disabled, and the very young -- are just the populations that have the least access to new technologies. To address this, there has been some development of kiosk systems, medical smart cards, RFID, and other methods of simplifying healthcare delivery to these defenseless populations. The tradeoffs are concerns with security and ease of use.

Health care has been slow to accept self-service technology and currently accounts for less than five percent of the self-service technology market.

Kiosks offer a user-friendly interface, 24 x 7 reliability and robust security

For the organization

- Costs related to printing and storing paper forms are reduced
- Check-in time decreases by as much as 50% for new patients and 75% for existing patients
- Accurate identification improves patient safety
- Patient throughput increases
- Patient satisfaction improves

For the staff

Saves time spent manually checking in patients

Congestion at front desk is minimized

Duplicate data entry is reduced

Management and filing of paper forms is eliminated

Revenue cycle management processes are streamlined

Accuracy of information gathered at check-in is increased

For the patient

Wait times are shorted

Speeds the check-in process

Redundant paperwork is minimized

Satisfaction levels increase

Privacy is enhanced

Appointment time is reduced

Hospitals, clinics and physician practices that deploy self-service can also improve revenue cycle management by reducing the number of denied claims and increasing collection of co-payments and account balances.

Self-service applications in particular have demonstrated some of the best ROIs for customer or patient-facing technologies; answering a question online costs 4 to 40 times less than responding through a call center or help desk.

Benefits

- 24 x 7 Access for Patients to pay via credit card or electronic check
- Simplified view of patient statements
- Ability to pay multiple accounts with one transaction
- Automatic payment reconciliation with billing system
- Ability to offer payment plans and recurring payments
- Insurance payment and adjustment information
- Works with multiple billing systems where necessary
- Secure communication with financial staff
- Email notification of new bills and billing updates
- Utilize your existing merchant services
- Robust FAQ and glossary to reduce business office call volume
- Branded to your organization
- Standard and configurable reports

- Transaction results showing 76% of all transactions are successfully completed at kiosks, and this percentage is steadily increasing.
- Savings - The VA has concluded that they save 1.5 FTEs per kiosk overall
- Data improvement - Allowing patients to correct demographic data has had impressive results in improving the information accuracy of patient records. As a side benefit, the VA reduced returned mailings (due to inaccurate addresses) by 8000 pieces in a single region. This resulted in a savings of $150,000 per year
- Acceptance - Initial acceptance of a new kiosk implementation is very high. 54% preferred to use the kiosk (this moves to a higher level quickly ... see 76% above).
- Demographics - The average age of a kiosk user in the VA is 62. To achieve this average, many thousands of patients well over age 62 use the kiosk.
- Increased compliance with data accuracy goals and positive identification standards
- Increased compliance with pre-registration, JCAHO, positive identification mandates

- Source: The Pittsburgh VA Medical Center

Kiosk Competitor Pricing / Pricing Strategies

Pricing methodology varies by vendor and by offering. Generally, pricing components include a one time perpetual software license fee; hardware costs; customized services, and on-going maintenance fees.

For hospitals, pricing is based on licensed bed-size. For clinics and physician practices, it is based on number of physicians / practitioners. The pricing model for a radiology setting would be per exam; and for a lab, pricing is based on volume of tests. Pricing can also be per-kiosk based and can be determined based on the level of customization throughout the various flows.

Another vendor's format sets an annual subscription fee and pricing is set at a fixed amount per patient record accessed per year; maintenance is also factored in.

A medium-size clinic can expect to spend $200,000 to $300,000 for kiosk technology and the related integration, but the return on investment is speedy, given the ability to see more patients, and the overall improved efficiencies. Because the patient is entering his own data, the accuracy of the information increases and the reliance on the front desk staff lessens.

According to Clearwave's Danielle Misko, practices that purchase their stand-alone kiosk typically see a $15,000 to $25,000 return on investment within the first year, while groups that integrate kiosks into their existing practice management systems

can expect an average ROI of $30,000 to $40,000 per year. Georgia's Clearwave Corp. charges roughly $3,000 per kiosk, plus a one-time $1,500 installation fee and a $200 monthly fee for access to Web-based applications; it also offers monthly leasing plans.

For return visits, the check-in time has been decreased by up to 75% with patients validating their own information. For new customers, there is a reported 25% - 50% savings, because the patient does the entry versus telling someone else who then enters the information. Kiosks are a very effective method for a physician practice or a large clinic to involve the patient, and also off-load some of the work that historically has involved the time of a nurse or technician. Providers have said it saves 50% of a nurse. This use of technology has proven to not only make the office run more efficiently, but to increase patient satisfaction levels. Furthermore, the EHR integration strengthens existing patient relationships and attracts new patients.

Hospital IT Vendors

There are only about 7 Hospital IT vendors that control about 85% of today's healthcare marketplace. They include:

Company	Annual Revenues	Main Market Presents	Products	Estimate Clients	Issues
Cerner	$1.52B	800 of the top hospitals that want strong clinical. Mostly hospitals with over 500 beds	Complete suite of Financial, Operational, and Clinical Products. Best known for their Clinical products	800	Very hard product to get installed. Requires extensive IT support. One of the Best Clinical in the marketplace
Eclipsys	$478M	Hospitals that are clinically oriented with > 500 beds	Complete suite of Financial, Operational, and Clinical Products. Best known for their Clinical products	300	Strong Clinicals make them the "Outcomes Company". Expensive product limits market share. Marketing has not as strong as it should be
Siemens	$1.5B	Strong Hospital HIT vendor for hospitals over 300 Beds	Complete suite of Financial, Operational, and Clinical Products. Products were built by SMS.	2000	They have a large market share but their "Digital Hospital of the Future" approach has not down well.
McKesson	$1.91B	Separate products for 100-300 beds and over 300 beds	Complete suite of Financial, Operational, and Clinical Products. Over 100 products from different vendors now sold under one company name.	2300	Strong competitor but the market is interested in new products and new offerings
GE Healthcare	$1.0B	IDX hospital product clients	Complete suite of Financial, Operational, and Clinical Products from IDX. The GE products are more for Physician Practices	200	Very few new sales in the inpatient market place.
Meditech	$376M	Hospitals between 150 and 300 beds	Complete suite of Financial, Operational, and limited Clinical Products	1800	Strong vendor in the small hospital marketplace. But the products are basic and their clinical are somewhat weak compared to the competition
Epic	$503M	Epic sells to the top Healthcare Organizations in the US. The best of the best who want the best. High cost solution	Complete suite of Financial, Operational, and Strong Clinical Products	100	Main issue is costs and that Epic only sells to the Top healthcare organizations. They really do not want the average hospital, they only want the best
QuadraMed Corporation	$138M		Complete suite of Financial, Operational, and base-line Clinical Products	2,000	Sells mostly to smaller hospitals between 150 and 300 beds

The EMR vendors such as Epic, Eclipsys and McKesson do offer proprietary self-service solutions. However, their solutions are only operational with their own PM / HIS / EMR software, if that.

McKesson:

McKesson's core systems used with Horizon Patient Kiosk Release 13.0 were STAR 2000™ and Series 2000™. Historically, McKesson has had major challenges getting its own suite of products to interoperate correctly and successfully. Recently, McKesson has been involved in an integration roll-out within their own product offerings. The following integration points are included in Release 13.0:

- Pathways Healthcare Scheduling™ Release 7.0 and later
- Horizon Patient Folder™ Release 6.2 and later
- Pathways Compliance Advisor™ Release 10.1 and later
- Horizon Practice Plus™ Integration
- 3rd Party Integration - The 13.0 release of Patient Kiosk offers a 3rd party HIS integration.

As of mid-2008, the company has 11 customers live on Horizon Patient Kiosk (translating to 16 kiosks) with another three implementing now. All integration to McKesson systems is performed with API calls and connectors and no HL7

messaging or screen scraping is needed. Also, McKesson is working on the following enhancements for the 14 release due out in early 2009:

- Additional Device Options (Tablets, Integ Peripherals, etc.)
- Debit Card with Pin payment
- Patient Demographic Update sent to STAR work list
- Patient Compass integration
- Emergency Department check-in workflow
- Integration with the EDIS and Tracking Board
- MPI Search for Walk-Ins
- Enhanced Way-Finding
- Monitor Security
- UI Improvements for Kiosk Monitor
- Account Balance for Series
- Automation of the Organization's manual tasks with HzERM integration

McKesson has no business/development relationships with any niche kiosk vendors, who they consider competitors, given their Horizon Patient Kiosk offering.

Related to pricing, McKesson uses its operating expense metric to calculate software license fees.

Epic Systems Corp

Epic Systems Corp, with no known kiosk vendor partnerships, has developed its own solution, a touch-screen computer system. Epic's Welcome Patient Kiosk is a multi-lingual application that lets patients or their parents and guardians complete routine tasks themselves when they arrive at a clinic: checking in, making payments, printing an appointment itinerary with a map, and providing a digital ink signature for consent forms and other documents. The kiosks are locally made, with software designed by Epic Systems, and hardware manufactured by D2 Sales LLC out of Mequon, Wisconsin.

Nemours Children's Clinic Jacksonville has expanded its Welcome Patient Kiosk pilot project to include all preregistered patients of the clinic. About 590 appointments were checked in at the kiosk from November 2007 through March 2008. Once registered in the system, users can swipe a credit card at the kiosk, which retrieves the clinical and insurance information and charges the user the necessary co-pay for each visit.

Nemours paid about $8,000 for the software from Epic and hardware from D2 Sales LLC. When Nemours debuted the kiosk to visitors, it was one of four organizations in the nation using Epic's software.

Nemours is now one of only five organizations to go live with Epic's Welcome Patient Kiosk, which means they are allowing patients to use the system, but about 30 organizations have bought the software and are at various stages of implementation, said Steve Larsen, application development lead for Epic. He added, "We've seen a pretty simple adoption by users."

After analyzing statistics and reviewing feedback forms, Nemours will decide whether the Welcome Patient Kiosk will become an enterprise initiative for its other clinic sites. They could also add features to the kiosk software, allowing patients to take appointment information home and schedule follow-up and future appointments. As they extend the product to additional locations, they can turn on the functionality as appropriate.

At 20 participating specialty clinics at UW Health West Clinic, the specially designed monitors prevent anyone other than the person standing directly in front of the screen to see the information displayed, and credit card payment information is secured through VeriSign. UW Health is only the third Epic client to install this technology.

Group Health Cooperative of South Central Wisconsin has also launched Epic's Welcome Patient Kiosk product in its Hatchery Hill Clinic Eye Care Center. Thirty-one percent of patients opted to check in for their appointments with the kiosk; according to Epic, that is a record percentage for a first-day launch of the product. According to Eye Care Center Manager Linda Waier, "Patients just walked right up to the kiosk and did not seem hesitant to use it. The patients seemed drawn to it."

Eclipsys

While Eclipsys does not have a Kiosk offering today, the company offers self-service functionality in its Web-based portal solutions, released over a year ago. Using the portal means our customers have not needed to invest in additional interfaces, Gretchen Robinson, Eclipsys Ambulatory and Portals Solutions Director told us. She added that Eclipsys is currently exploring Kiosk hardware companies to partner with to expand their solution set.

Sunrise Patient Portal is integrated with Sunrise Acute Care™, Sunrise Ambulatory Care™, Sunrise Enterprise Registration™, Sunrise Enterprise Scheduling™ and Sunrise Patient Financials™ to form an extensive portal framework that allows healthcare organizations to build substantial online connections with their patients. In addition, patients with chronic conditions that require long-term monitoring can use Sunrise Patient Portal to record ongoing health indicators, such as blood-glucose levels, pain management or blood pressure, which physicians can access anytime from any Web-enabled device; this functionality has invigorated patient portal interest from Eclipsys' customer base.

The next software release, due in Spring 2009, will incorporate consent forms and signature capture, health maintenance, patient education materials, care plans, and immunization records; follow-up visit functionality will be part of a future release.

Cerner

Cerner has partnered with NCR/Galvanon for its kiosk offerings. Integrated with *Cerner Millennium, c*heck-in and registration are the primary "bottleneck" areas where Cerner clients (including the Health-e Clinic on campus at Cerner headquarters) are using the kiosks. They are used to verify patient demographics and in some cases, to complete check-in forms electronically; e-signature is used to sign consent-to-treat forms. The Cerner/Galvanon capability includes co-pay collection.

NCR/Galvanon also offers a mapping application called "way-finding" that allows patients to print out a map or directions of where they need to go in the hospital for their procedures.

Additional specialized interfaces created by S&P Consultants optimize the benefits of both Galvanon and Cerner. Galvanon to Cerner Scheduling Update - If in a "Checked in" status in Galvanon, then the Cerner system will:

- Update the appointment
- Activate all orders associated with the appointment

Galvanon to Cerner status update allows the patient to be programmatically moved through the Cerner Check In activity logs (on-line work lists) so that the front end staff and back end staff can track the process of the patients electronically, and the progress of placing the patients into a room and the notification to the doctor can be streamlined.

Cerner to Galvanon ADT interface provides a one-way update of all patient demographic information entered into the Cerner system and then sent to Galvanon. Admissions, deletions, transfers, or updates are all interfaced.

Galvanon to Cerner ADT update interface allows updates to the Cerner system for very limited set of data elements. The patient will be allowed to review their record and update the specific data elements.

Custom Reports and Check in Audits are on-line and in real time which streamlines the registration and check in process.

GE Medical

GE Medical and NCR/Galvanon aligned in late 2009 and with Kryptiq, deployed an in office patient self-service kiosk to a 70-physician practice in White Plains, NY. GE's relationship with NCR/Galvanon continues today.

GE Medical's Centricity Business Self-service Kiosk was implemented in University of Colorado Hospital for Day Surgery check-in; the phased-in pilot project began a year ago. Volumes here are 30-50 patients daily; about 40% of the day's patients are at Check-in at the initial hour of each day.

Registering at a hospital or clinic was third on the list in an NCR/Galvanon consumer study on Most Frustrating Waits, appearing above renting a car,

checking in for an airline flight, standing in line at the post office, restaurants and other regular activities.

GE's fully integrated Kiosk solution bypasses the need for 3rd party middleware. All of the monitoring capabilities generally found in the middleware exist within the Centricity inpatient and ambulatory products.

Packaged and sold as a single solution; the NCR/Galvanon hardware/software is a requirement for this solution.

NCR/Galvanon Hardware and software includes:

- Kiosk hardware
- Kiosk software
- CVM enterprise software
- Wayfinding and Add-ons

To create the integrated solution, these components are within the GE Software:

- Web Services
- Credit Card
- Appointment Manager

Required in order to leverage the solution:

- Centricity Business 4.0 or higher
- Advanced Web
- EWS Appointment Manager or HPA/VM Visit Manager
- Cache 5.4.20 or higher
- Credit Card Module, which enables credit card and electronic check processing for automated posting

The three main form factors with this solution all include the wireless swipe readers:

- Freestanding – ideal for high-traffic healthcare environments; ability to add peripherals, such as printers
- Desktop – works well in space constrained areas; tabletop to wall mounts
- Wireless – lightweight and mobile e-clipboard; most similar to paper-based registration processes

While NCR/Galvanon offers an ER solution, this GE Centricity Business Kiosk solution is not currently developed as an Emergency Room solution.

ROI at University of Colorado:

- Can now check in 6 patients simultaneously using 2 FTEs (previously 2 patients simultaneously with 2 FTEs)
- Fewer bad addresses using kiosk demographic validation

- Reduced average-days-to-final-bill by almost 2 days
- 36% reduction in denial rates
- 40% increase in co-pay collection rate

Additionally, the more experienced front-desk staff can now be re-allocated to more value-added tasks; the less-experienced staff can now man the front desk, which becomes more of a concierge service when using the kiosk features.

The future for kiosk technology, according to GE's CMO, is the opportunity for devices in the home. GE says it is involved in research and development in this arena to make it so that there are devices in the home for chronically ill patients, and those devices could actually start gathering data. They may still need to get to the Internet, but the patient actually won't have to have that depth of knowledge of technology to make them work, according to GE's plan.

Siemens Medical Solutions USA, Inc

Siemens Medical Solutions USA, Inc. announced its NCR/Galvanon authorized reseller agreement in July 2008. The Galvanon MediKiosk solution extends to existing and new Soarian and INVISION customers. The MediKiosk is currently operational at 5 Siemens customers.

The kiosk can provide the following functions:

- Patient Check-in
- View and change demographic information
- Appointments
- Consent Forms
- Scan ID and referral forms
- Co-Pay Collections
- Wayfinder (Directions to facilities, buildings)
- Positive Patient Identification

"Today's consumers are extremely tech-savvy and are already using self-service technologies in their daily lives, such as the self-checkout lines at the grocery store and automated check-in kiosks in airports and hotels," said Marilyn Marchant, vice president, Foundation Enterprise Systems, Health Services, Siemens Healthcare. She added, "We are pleased to now be able to offer self-service solutions to our customers through our agreement with NCR. We anticipate that many benefits will be realized by our customers and their patients."

To date, Siemens has not yet collected customer satisfaction / survey information.

The Siemens Healthcare Sector is one of the world's largest suppliers to the healthcare industry. With its laboratory diagnostics acquisitions, Siemens Healthcare is the first integrated healthcare company bringing together imaging and lab diagnostics, therapy, and healthcare information technology solutions, supplemented by consulting and support services. Siemens Healthcare delivers solutions across the entire continuum of care – from prevention and early detection, to diagnosis, therapy and care. The company employs more than 49,000 people worldwide and operates in 130 countries.

QuadraMed Corporation

QuadraMed Corporation is a NCR/Galvanon development partner and reseller of its consumer-focused Medi Kiosk self check-in kiosk. It was late 2005 when QuadraMed) Corporation signed the agreement. In addition to the standard features of QuadraMed Corporation's Enterprise Scheduling, clients can implement a number of optional modules to further enhance the product's functionality. These include a comprehensive surgery and peri-operative documentation system.

Meditech

While not a reseller or development partner of the Kiosk companies, Meditech has interfaced with NCR/Galvanon, DynaTouch and SeePoint solutions.

The Credit Valley Hospital delivers health care to the people of Mississauga, Ontario and the surrounding regions and serves a large out-patient population, with some 50 clinics. In January 2005, the hospital's IT team initiated a pilot project to automate the registration process using five self-serve kiosks and barcode scanners. Beginning as a screen-scraping scripting technology in the kiosks, BizTalk Server improved the application by communicating directly with each kiosk, and sending HL7 messages from the kiosks to Meditech. The Credit Valley Hospital improved its return on investment with the kiosks by using them for a variety of other things, including the sharing of educational materials.

Kiosk Product Comparisons

Patient self-service kiosks are outside of the realm of core competencies for the large hospital HIT vendors, and as such, the proprietary solutions they offer are perceived by some to be developed as an afterthought. Make in May of 2008, AC Group conducted a survey of Kiosk product capabilities. The RFI was sent to 49 vendors but as of July 10th, we have only received responses from seven vendors. The vendors responding included:

1. eClinicalWorks LLC,
2. IBM,
3. Medfusion, Inc.,
4. NCR Corporation,
5. McKesson RelayHealth,
6. SeePoint Technology, LLC, and
7. Vecna Technologies, Inc.

When evaluating product functionality, we created a Relative Value Unit (RVU) based on 107 Kiosks Functions. The results of the functionality ratings are listed below:

Overall Functionality Rating	*eCW*	*McKesson*	*Medfusion*	*IBM*	*NCR*	*Seaport*	*Vecna Technologies, Inc.*
Patient Kiosk	58%	69%	77%	53%	91%	82%	72%
Patient Portal	90%	79%	95%	58%	100%	29%	100%
Provider / Referring MD Portal	0%	0%	16%	47%	53%	0%	100%
Pharmacy Portal	100%	100%	100%	50%	100%	0%	100%

Language	56%	31%	56%	100%	81%	100%	100%
Total	***68%***	***64%***	***78%***	***62%***	***91%***	***55%***	90%

Based on overall Kiosks Functionality, two companies stand out: NCR and Vecna Technologies. eClinicalworks' Portal requires the user to purchase their ambulatory EHR product. Therefore, based on most hospital's criteria, eClinicalworks should be eliminated. Vecna Technologies, Inc. rates high in functionality but is the smallest copy of the six that responded. NCR weakness is in Provider/Referring MD portal information while Vecna Technologies weakness is in general patient Kiosk functionality. To help better understand the vendor's in the healthcare Kiosks marketplace, the following is a summary of the company and the product.

NCR/Galvanon

NCR/Galvanon's strategy and solution feature-set, for example, is seen as more robust. Customers approach NCR/Galvanon with these goals: to improve their revenue cycle; to decrease volume of paper; to offer their patients/customers privacy, speed, and convenience. NCR Vice President of Industry Marketing Bob Tramontano has said, "The use of self-service kiosks in healthcare has been shown to reduce wait times up to 75 percent, while significantly improving patient care".

They identify their top 5 competitors in the Health Care space as; Epic, McKesson, Aurillion, Vecna, and Otech. These organiztions vary greatly in size, market presence, and stability - however they must all be treated with a healthy level of competitive respect. Some of their core strengths that differentiate us from the

competition are as follows: 1) We are the Global Leader in multiple Self Service delivery channels, 2) We have the stability and capital of a 124 yr old Fortune 500 organization, 3) We have the strongest IT background with a culture of innovation, 4) our solution incorporates Proprietary hardware that is proven successful with 45,000 deployed Easypoint Kiosks across multiple verticals, 5) our in house Worldwide Customer Services team is recognized for Best in class support. NCR, not having come from a legacy Health care background, has focused intently on this new Market with their partnerships and acquisition of Galvanon. We have learned a tremendous amount from each other's businesses. We continue to learn from our clients & Strategic Partners. NCR knows your client base from many different industry verticals. Our background can also be an advantage in that we are willing to look at ways to solve problems that have worked in other industries. An organization that lacked this cross functional exposure may not have this capability.

"NCR/Galvanon helps healthcare organizations enhance the patient experience at home, in the hospital and in the physician's office through self-service solutions and Web applications that streamline everyday patient interactions and improve patient flow throughout the healthcare process.

Founded by a team of professionals with keen insight into the challenges facing the healthcare industry, NCR/Galvanon has developed a comprehensive suite of products and services designed to help hospitals and physician practices improve workflow, enhance efficiency, reduce costs and build stronger patient relationships. As a part of this product suite, Galvanon introduced the first commercially available patient self-service kiosk solution, which simplifies the patient registration process, eliminates unnecessary paperwork and reduces lengthy wait times for patients. With almost 200 organizations using NCR/Galvanon self-service technology, we consider ourselves the healthcare market leader.

With its introduction of patient self-service applications, NCR/Galvanon has provided its customers with an effective method for meeting the shifting demands of patients and consumers as they continue to be exposed to similar applications in other industries-whether checking in for a flight, pumping gas or buying groceries. Now, NCR/Galvanon offers healthcare providers a way to leverage this trend, just as consumers are beginning to expect these applications in all types of settings, including doctor's offices and hospitals."

NCR/Galvanon helps healthcare organizations enhance the patient experience at home, in the hospital and in the physician's office through self-service solutions and Web applications that streamline everyday patient interactions and improve patient flow throughout the healthcare process. Founded by a team of professionals with keen insight into the challenges facing the healthcare industry, NCR/Galvanon has developed a comprehensive suite of products and services designed to help hospitals and physician practices improve workflow, enhance efficiency, reduce costs and build stronger patient relationships. As a part of this product suite, Galvanon introduced the first commercially available patient self-service kiosk solution, which simplifies the patient registration process, eliminates unnecessary paperwork and reduces lengthy wait times for patients. With almost 200 organizations using NCR/Galvanon self-service technology, we consider ourselves the healthcare market leader.

"NCR/Galvanon has industry leading experience in both Inpatient and Ambulatory areas:

Inpatient – in our experience, most of the check-in workflows for inpatients include the electronic forms piece only. The normal interview process with the patient is completed by the staff, and then the patient is handed a wireless tablet device to complete any documents that are required for that specific visit. Ambulatory – most patients in this space are walk-ins, and we have implemented numerous walk-in workflows to accommodate walk-ins that have been to the facility before (review

demographics, insurance, etc.) and new patients (collect information to arrive as a new patient in their registration system)".

NCR has experience interfacing its products to systems from GE, Cerner, QuadraMed, Siemens, Meditech, McKesson, Sage, Picis, Allscripts, NextGen, Epic, and others using HL7, flat file, XML, and/or direct database queries.

Cerner, GE Medical, Siemens, Quadramed and others are business partners of NCR/Galvanon and they resell the NCR/Galvanon self-service kiosk and mobile-based patient self-service technology. Kiosks are placed in any or all physical locations for patient convenience and the patients also enjoy the benefits of the CVM strategy deployed to their mobile phones and PDAs. Announced in early April 2008, NCR/Galvanon's HIPAA-compliant CVM Mobility is a suite of services that lets patients use their mobile devices to receive appointment reminders and other alerts, pay bills and access lab results.

In addition, NCR/Galvanon , who "can operates in *anyone's* sandbox", has implemented its self-service offerings in organizations installed on EMR/EHR products from NextGen, Epic, Quadramed and Meditech, and other companies that are not formally partnered with NCR/Galvanon.

NCR/Galvanon "lives and breathes" this technology daily. With 18,000 service engineers out in the field supporting its customers, NCR/Galvanon becomes a very appealing company to many healthcare organizations that are currently operational with a major marketplace vendor's HIS, Practice Management or EMR system.
The confidence level for the purchase decision is bolstered based on NCR/Galvanon's longevity in this arena, its share of the healthcare market, and

solid successes with the solution in this space, and the solid financial stability of the company.

Competitor niche companies come and go over the years. Currently, NCR/Galvanon names Aurillion, a comparatively small organization, as a competitor in this space.

Insofar as EDI and/or real-time eligibility processing, NCR/Galvanon attempts to simplify the process for the client by interfacing to whatever clearinghouse is currently in place for the organization. If new to EDI, given NCR/Galvanon's longstanding relationships with many Clearinghouse companies, NCR/Galvanon recommends from among those, enrolls the organization and implements.

NCR/Galvanon Reseller and Development Partners include:

- Cerner
- GE
- Quadramed
- Sage
- Siemens

Vendors' shared customer solutions are interfaced; however NCR/Galvanon has no current Business Partnership with:

- Eclipsys
- Epic
- Meditech
- McKesson
- NextGen

SeePoint

SeePoint, with a 10-year history in the kiosk marketplace, offers interactive, Internet-ready, fully integrated kiosk systems. SeePoint offers a full line of standard products with a variety of mounting options, all of which may be customized and integrated with a full range of peripheral devices.

SeePoint pricing is based on the nature of customization, the size of the facility and the per-Kiosk fee; SeePoint also offers an ASP model. This vendor offers its third-party middleware business-partner companies to customers lacking their own systems integrator organization. SeePoint also offers full service engineering, design and manufacturing services to create custom developed solutions for customers with unique specifications.

Children's Hospital of Boston, a leading children's care facility, deployed this vendor's kiosks as part of a pediatric asthma treatment study in the emergency room. Using the kiosks, parents directly enter data and critical information about their children's' symptoms, medications, and needs to assist in the evaluation of care options. The doctors conducting the study view the kiosks as an important

data entry portal to leverage patient-entered information and drive correct clinical decision making. Based on the success of the asthma kiosk project, expanded use of the kiosks is planned for a multi-site research trial.

Currently, SeePoint has no formal business partnerships in place; however the company interfaces with applications from Epic, Allscripts, NextGen, Athena, Meditech and others, and is in the beginning stages of developing these strategic relationships.

SeePoint Technology, LLC (Continued)

SeePoint believes that their largest competitor in healthcare kiosk industry is Galvanon. Perhaps they are perceived to be our largest competitor because of their purchase by NCR Corporation, and their solution was earlier to market than the KioHealth Healthcare Solutions. However, there are many competitive advantages SeePoint's KioHealth has over its competition:

- **Flexibility and Customizability:** KioHealth solutions provide many options to the healthcare facility- on both hardware configurations and on software functionality. This lowers overall costs and offers unique, personalized solutions for small to large healthcare organizations

- **Easy to Use** - Building on SeePoint Technology's self-service expertise, KioHealth Solutions are designed for simple interaction by patients. The graphic interface is simple and easy to use, the layout is practical and the registration process is

- **Easy to Administer** - KioHealth solutions are easy for hospital staff, including non-technical staff, to administer. The ability for individual

healthcare facility to easily change and modify their software solution saves time and money- resulting in low operating costs over time

- **Scalable** - KioHealth solutions are modular and additional functionality is easily added to the application. This provides dual benefit: First, facilities are not forced to needlessly pay for an "off the shelf" product with functionality they do not require; second, as the medical facility grows, additional automation functionality is easily added- reducing costs and resource strain typical with new software vendor evaluations. They can use the same software solution with added modular functionality- a great solution

- **Support**- KioHealth uses the SeePoint technical support process and resources to provide exceptional customer service and support before, during and after implementation. This focus on the end customer's needs and commitment to properly servicing our customers is critical to KioHealth success. The KioHealth solution is best suited for both acute care and non-acute care facilities. The solutions are easy to use, simple to implement and administer- making it perfect for small or large facilities, inpatient or outpatient healthcare organizations.

The KioHealth units are not only fully secure, durable and reliable, but they are designed to support a variety of deployments and locations. The hardware has been field tested in facilities from prisons to libraries, from theme parks to industrial plants- and performs in all locations. The software is designed to provide optimal flexibility to the care facility- such as allowing administrative changes to the process, questions, form requirements, etc. This software architecture ensures that both acute and non-acute care facilities can benefit from the KioHealth solution.

While our product is very new, we have done interface implementations with McKesson's Medisoft, Medinotes, and MedStar. The Clearspan HL7 interface has

been widely deployed in over 2000 installations worldwide interfacing with most of the major hospital information systems

DynaTouch

DynaTouch, a turnkey kiosk provider, does the majority of their work for the DOD and in the government sector. This company's kiosk expertise in the commercial sector has been in Wayfinding, Directory, and Patient Education. DynaTouch is projecting January 2009 for the roll-out of its Patient Self-Service applications.

According to DynaTouch VP Technology, while the company has a partnership with Lawson, it is not currently working to develop any formal business relationships with the major hospital HIT vendors.

Aurillion

Canadian company Aurillion is working to build out its footprint in the US. The Aurillion Kiosk solution is installed at the University of Pennsylvania Hospital and Pittsburgh, PA hospitals; UPMC, its pilot project, is now fully deployed. The company began discussions with a series of US organizations in late 2007. The vendor is currently polling the population and collecting satisfaction data on the use of the Kiosk technology.

With sales staff currently in Florida and Ohio, Aurillion plans to expand its sales force across the US by year-end 2008.

Vendor agnostic middleware and hardware vendor Aurillion has interfaced its solution with the major vendors. Guillermo Moreno, VP Sales for Aurillion has told us that, while they are having current conversations with Cerner related to a partnership, it is not part of Aurillion's plan to develop formal business arrangements with the large hospital HIT vendors – aside from possibly Meditech, given its large install based in Canada. Aurillion has a working relationship with GE and Eclipsys on an as-needed basis. These major software vendors will be Aurillion resellers, according to Moreno. Aurillion does have a current business partnership in place with Diebold.

This company's pricing is based on number of registrations / kiosk; group packaging discounts are part of Aurillion's pricing strategy.

Medfusion, Inc

Medfusion's largest competitors are Relay Health and Kryptiq. At a high level, they both provide similar functionality in the area of patient communications and patient portals. Because Medfusion's partners primarily serve non-acute facilities, our patient portals and kiosks are most prevalent in those settings. However, our solutions can be applied in acute care settings as well.

Today, Medfusion solutions for both the Portal and kiosk are mostly in use in non-acute facilities. Patients can either utilize the portal functionality from the comfort of their home or office, or use the kiosks in a non-acute setting for patients who don't have internet access at home. Using the kiosk in a hospital or office setting will give the patients the complete functionality at their fingertips - including enrollment, registration, surveys and health questionnaires, patient education, and more. Patients can use the kiosks to find information, complete a pre-visit health questionnaire, electronically sign certain forms, and prepare for their upcoming visit. This functionality can extend to "semi-acute-care facilities" such as Urgent Care. In acute facilities such as ERs, kiosks can be very helpful and reduce staffing ratios and improve quality in two ways. After triage, patients who are not 'emergent' can use the kiosk to enter health information and complete screening questionnaires as above. Also, portal patients who are emergent and arrive at the ER, will have information that is immediately available to physicians and other staff via the portal should it be needed.

Medfusion has thousands of clients utilizing our portal and kiosk solutions in non-acute care facilities as described earlier in this RFI through the case studies mentioned. Extension of Medfusion's capabilities into the acute care setting is described above.

However, the depth and breadth of the Medfusion solution set, combined with the industry's support of Medfusion, sets us apart from the competition.

1) Industry Validation - Medfusion is supported by both the MGMA and the AAFP, two of the largest industry organizations for administrators and physicians.

2) Product Stability - the Medfusion Virtual Office Suite has been in development for ten years, and is in fact in a release cycle for version 28.

3) Partnerships and Market Penetration - currently Medfusion partners with over 30 healthcare IT companies to resell Medfusion products and services. This makes our market reach unmatched by our competition.

4) Responsiveness - because of our rapid release cycle (we deliver a release every month) and SaaS delivery, we are uniquely positioned to respond to changing market dynamics and customer needs in our development cycle.

5) Product Depth and Breadth - throughout the past ten years our solution set has grown to incorporate eleven unique products, plus award-winning website development. The breadth of our solution set is unmatched by the competition.

Competitive Strategies: one of our core competitive strategies is our proven success with industry partnerships and affiliations. For over three and four years respectively, we have built strong relationships and partnerships with both the MGMA and AAFP. Through these partnerships, we have been able to jointly provide immense value to their members in the form of value-added products and services combined with unique pricing programs. We are intimately familiar with the nuances of partnering with industry organizations, and believe that is a true competitive differentiator for Medfusion.

In addition, we provide unique value to our customers to help drive utilization of our products and services in the form of marketing support. Part of our services offering to our customers is to provide them with assistance marketing their Portal to their

patients. This has been wildly successful and has impacted utilization of our products tremendously; it is also a service our competitors do not offer."

We currently have no hospital system vendor integrations. However, our state-of-the-art industry-standard HL7 interface integration capabilities and our Web Services API will allow us to integrate seamlessly with AHA systems.

McKesson RelayHealth

The RelayHealth product operates in both Inpatient and Ambulatory facilities. It provides physicin/patient communications in the non-acute setting and provivdes results to the physciain office and untimately the patient creating a connected community. The RelayHealth service is a robust suite of communications solutions built around a Personal Health Record. These solutions include: Secure Messaging, Results Manager, eScript electronic prescribing, Care Management, and Continuity of Care. Healthcare delivery systems can combine and configure the service to integrate with individual office workflows and address specific needs within each practice.

RelayHealth is designed to serve all of the major parties in healthcare delivery: patients, clinicians, allied healthcare professionals, health plans, employers and pharmacies. The patient, through the Personal Health Record, is placed at the center of care. When all parties share accurate and up-to-date information, and when appropriate offline tasks can be shifted online, powerful benefits are realized: quality of care and practice productivity increase, while cost of care decreases.

RelayHealth is powerful as a stand-alone service. The service also seamlessly integrates with other clinical and administrative systems, such as electronic health record (EHR) systems. By integrating the patient, care providers, and the constellation of information systems in a medical office, the RelayHealth platform builds a “connected community” environment. Making this vision of connected care a reality is at the core of RelayHealth’s mission.Innovating Online Communications for Healthcare: RelayHealth has been a pioneer in online healthcare communications. RelayHealth developed the webVisit, a clinically structured, on-line interview between patient and physician. In 2003, RelayHealth lead the

development of a new CPT code issued by the AMA allowing physicians to be reimbursed by health plans for online medical evaluations. The RelayHealth webVisit remains the leading online consultation in the healthcare industry – clinically structured, reimbursable by 14 health plans, and available for over 140 different symptoms.

RelayHealth and McKesson have a large portiion of market share in the Ambulatory and Acute Care healthcare verticals. The RealyHealth Portal is deployed to over 16,000 physicians and over 30 hospitals nationally.

eScript has quickly become the fourth largest electronic prescribing service in the country. It includes powerful features such as formulary and interaction checking as well as point-of-care active medications display. It is also the only electronic prescribing service to include healthcare consumers in the electronic prescribing process. The RelayHealth Personal Health Record (PHR) is the healthcare industry's only "connected" PHR, allowing both patients and any approved clinicians to view, add and update information. The PHR also accepts data uploads from other sources including EHR and health plan claims systems.

In 2007, RelayHealth introduced Results Manager and the Results Distribution System (RDS). RelayHealth's RDS uses standards-based electronic data exchange to transmit lab results, radiology studies, and transcription to affiliated physicians. By completing the patient care picture with results, RelayHealth's RDS gives physicians access to data critical for informed clinical decision-making. At the same time, RelayHealth's RDS gives the hospital the opportunity to leverage its value for fostering strong relationships with the physicians who subscribe to the results.

RelayHealth transmits results directly into many EHR systems, maximizing physicians' systems and increasing the efficiency of their practices. Physicians without EHRs can view results through the RelayHealth application or a physician

portal. In addition, organizations can deploy RDS quickly and maintain it affordably.

User Satisfaction: Best of all, both patients and physicians say they enjoy using RelayHealth. In the most recent RelayHealth annual user survey, conducted in November 2006, an impressive 92% of patients reported a high level of satisfaction with the RelayHealth service. 89% of patients rated RelayHealth as very easy or easy to use. Only 4% rated it as difficult to use, with that difficulty related primarily to remembering passwords. Among providers, 83% are satisfied to extremely satisfied with the RelayHealth Service.

There is no one organization that can provide the comprehensive suite of services that RelayHealth provides. While some organizations provide such funtions as ePrescribing or secure messaging, RelayHealth provides an integrated soltion that is unrivaled in the marketplace.

RelayHealth Interoperability provides a standard capability to securely and reliably access and/or send messages between RelayHealth and other healthcare information systems such as electronic medical records of practice management systems. RelayHealth's integration approach solves what RelayHealth believes is the key clinical and business need: to ensure that all clinically relevant messaging occurring in RelayHealth is reflected automatically in the electronic medical record for a patient without the need for manual work such as cut and paste.

Vecna

Vecna offers kiosk and disease surveillance systems to the government sector and DOD as well as to the commercial sector.

Kiosks in The Healthcare Marketplace
Kiosks Product Comparisons

The most advanced users of kiosks in the world (in both number of installations and uses) are the US Veteran Administration and the MHS, requiring complex multi (government and civilian) systems integration as well as the most demanding security requirement (milspec). The VA, as the largest kiosk user in the healthcare arena, services over 6.5 million patients in over 300 locations in 21 regions across the 50 states and all US territories; this translates to hundreds of thousands of kiosk transactions. Vecna has been the provider of kiosks to the VA since 2002.

In 2006, Vecna began expanded implementations beyond the VA and now continues its aggressive expansion in the private sector. The VA continues to expand the uses of kiosks beyond the uses currently seen in the public sector. Vecna was selected and is now the standard for VA, MHS and DOD healthcare facilities.

With over 600 self-service kiosks in the field and continuous service delivery since 2003, Vecna has a track record of success that outshines the competition. Customers such as Johns Hopkins and the Veterans' Administration value the QC Kiosks' maturity and history of success as a product, and Vecna's expertise in integrating kiosk platforms with multiple hospital information systems. Our Portal service has been accessed by millions of patients worldwide, and kiosks solutions by hundred of thousands. Patients and clinical staff use these tools in order to complete critical business and information transactions ranging from appointment scheduling, bill-pay, clinical information resources, to patient medical information. Vecna has built a reputation as a responsive and innovative R&D-centered company-- we constantly learn from customers, continue to incorporate advanced technology to improve opportunities for automation, and work to satisfy each unique customer request.

Vecna products interface with MISYS, Cerner, McKesson, Siemens, Meditech, VistA, CHCS (DoD) and others. We build our products for maximum interoperability and integration, and can easily add additional platforms.

Vecna has developed the interfaces and is now establishing the formal business partnerships with the EMR/PM market leaders. Vecna is currently implementing its kiosk solution in Baltimore's Johns Hopkins, interfacing to Epic.

Along with years of proven experience in this field and size of the company's install base, organizations look at expanded functionality when considering their options in this market. Some of the more unique functionality offered today includes:

Web portal allows for anytime, anywhere access

Enables secure online communication with care team

Convenience of viewing appointments and outstanding balances

Patients with cancer, diabetes, congestive heart failure and other chronic conditions can use the self-service portal to become better informed about what to expect in the care process; this is proven to lead to better health outcomes and greater satisfaction

In-Hospital solutions

Using a bedside display or television, the in-hospital solution provides secure access to patient information with on-demand entertainment options, Internet access, e-mail and educational services.

A schedule of the day's tests and medications is available to hospitalized patients and their parents/guardians along with notes from the care team

Follow-up Visits

Can be conducted via the Web using a physician-patient connectivity solution, which provides a secure, Web-based connection to facilitate efficient, non-urgent care online.

Using the solution, physicians can conduct clinically structured, payor-reimbursed consultations with their patients in a secure, efficient and affordable manner.

In-home solutions

To support data gathering

Patient monitoring solution that provides chronic disease management for conditions such as asthma and heart disease. Using a small medical device in the home connected to a phone line, patients can receive electronic patient coaching, education and tracking of symptoms, behavior, knowledge and vital signs data

Personal emergency response system

Includes a telephone-based communications unit, wireless transmitter in the home, and a specialized emergency response call center. In addition to promoting more effective self-care and reducing emergency room visits, the solutions reduce provider costs by enabling homecare nurses and medical staff to monitor a larger group of patients.

SOURCE: http://www.fortherecordmag.com/archives/ftr_11132006p20.shtml

SeePoint News Release: _

Children's Hospital Boston Deploys SeePoint Kiosks to Facilitate Better Emergency Department Decision Making

Boston, Massachusetts – Researchers at Children's Hospital of Boston, one of the leading children's care facilities in the nation, have deployed SeePoint Technology kiosks as part of a ground breaking study of the treatment of pediatric asthma patients in the emergency room. Parents use the kiosks to directly enter data and critical information about their children's' symptoms, medications, and needs to assist in the evaluation of care options. The doctors conducting the study view the kiosks as an important data entry portal to leverage patient-entered information and drive correct clinical decision making. Based on the success of the asthma kiosk project, expanded use of the kiosks is planned for a multi-site research trial.

The asthma kiosk study, published in the *Journal of the American Medical Informatics Association*, concluded that the kiosk-enabled data capture provided significant advantages to workflow and patient care. The asthma kiosks capture patient-specific data during real-time care in the emergency department with a mean completion time of 11 minutes. The asthma kiosk also successfully links parents' data to treatment guideline recommendations and identifies data critical to health improvements for asthmatic children that otherwise remains undocumented during emergency department-based care.

The SeePoint kiosk includes a HIPAA compliant privacy filter. This filter allows only the individual using the kiosk system to read the data on the screen and is a key to fulfilling the HIPAA mandate of protecting private medical information while making

it increasingly accessible to the individual patient. The HIPAA compliant filter integrated with SeePoint kiosks limits the viewing angle of the LCD to a narrow field of view without compromising readability for the intended user.

Prior to implementing the study, researchers evaluated several kiosk system options. A number of factors led to the selection of SeePoint's systems. "The SeePoint kiosks presented the best mix of a small, mobile kiosk with good screen real estate to make it easy for patients to use," said Dr. Stephen Porter, the principal investigator conducting the study. "Other technical considerations such as the availability of wireless network connectivity as well as excellent reliability and touch screen functionality also made the SeePoint system a clear choice," said Dr. Porter.

Kiosk and Niche Players Contact Information

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Middleware company Boston Software Systems offers a toolset for workflow automation and software integration. The company serves 2000 end-user hospitals and 150 vendor companies. Boston Software Systems partners with leading application and systems vendors such as McKesson, Siemens, Quovadx, Orion International, NEC/Galvanon, and WebMD/Emdeon. Boston Software Systems' customers include HCA-Midwest, Stanford Medical Center, Charleston Area Medical Center, Lutheran Health Network and Tenet Healthcare. Business processes addressed by this company include clean-up of denied claims, eligibility checking and payment posting.

The Credit Valley Hospital in Mississauga, Ontario (Canada) has implemented Boston WorkStation(TM) to enable its automated patient registration process. Patients are able to check in at a kiosk in the patient care area, which expedites the registration process for patients who frequently visit -- at least three times per week over many months. The Hospital recently opened five kiosks in its new regional cancer center. Credit Valley will eventually install the kiosks in the outpatient and ambulatory care clinics, where the hospital sees the greatest volume of patients in a short period of time.

Company Name	Company Address	Company Contacts
MedAssets Inc.	MedAssets Inc. 200 North Point Center East, Suite 400 Alpharetta GA 30022 651-222-7038 678-323-2500 http://www.medassets.com	Amy Dotson Sebero asebero@medassets.com 954-476-2323 Domenick DeRosa dderosa@medassets.com 678-248-8323 G E Collins gcollins@medassets.com

GPO giant MedAssets has thousands of vendor customers and has been approached recently by one of those to look into a Patient Self-Service / Kiosk partnership. MedAssets' POS cash improvement program is willingly exploring this opportunity. Now in mid-2008, MedAssets delivers no functionality via kiosk nor via any business relationship with a kiosk company.

On June 3, 2008, MedAssets completed its acquisition of Accuro Healthcare Solutions, Inc. The acquisition expands the depth and breadth of MedAssets' revenue cycle management solution suite.

Kiosks in The Healthcare Marketplace

Revenue Cycle Niche Players Contact Information

Company Name	Company Address	Company Contacts
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Company Name	Company Address	Company Contacts
CareMedic Systems, Inc.	CareMedic Systems, Inc. 800 Carillon Parkway St. Petersburg, FL 33716 800-508-8494 404-201-6223 727-329-7800 http://www.caremedic.com	Sandra Schafer, VP of Marketing and Product Managment SSchafer@CareMedic.com Mindy Belt MBelt@caremedic.com

According to Sandra Schafer, VP of Product Management, CareMedic does not have a working relationship with any kiosk vendors at this time.

Kiosks in The Healthcare Marketplace
Hospital/IDN Marketplace
Overview

Six Levels of Healthcare IT

Six Levels of Healthcare IT – Integrated Delivery Systems - The healthcare industry will continue to align healthcare IT expenditures with business initiatives. However to improve alignment, the healthcare industry must adapt a comprehensive system for determining IT strategies, expenditures and staffing requirements based on best practices. Healthcare organizations must drive enterprise-wide systems that sustain a constant innovation cycle in the new competitive environment. To accomplish this, they must learn to match their CIO skills and requirements with their current business environment, or face extinction. For HP's IPG division, we expect hospitals and IDN to spend an average of $300M to $360M per year on printers, faxes, copiers, and multi-function equipment and an additional $280M on imaging.

When considering selling Kiosk products and services to hospitals you need to understand the operational breakdown of the hospital marketplace. There are two factors to consider:

- Stand alone Hospital or part of a large IDN (Integrated Delivery Network)
- Size of the hospital (based on bed size)
- IT Decision Making level (IT maturity level)

Even have found that hospitals under 500 beds and hospitals with an IT maturity level below 5 will usually (78.5%) only purchase products from the core HIT/HIS vendor – vendors like Cerner, EPIC, Meditech, Siemens, McKesson, QuadraMed, and Eclipsys. Large hospitals and hospitals with IT Maturity levels of 5 or 6 will usually look for best of breed application for products and services like Kiosks. Therefore, when considering marketing plans, Kiosk organizations should consider a two-prone approach.

1. Direct selling to large hospitals and IT mature organizations (13%)
2. Partnership selling with HIS/HIT vendors to the majority of Hospitals (87%)

In most cases, if the actual Kiosk Product is not part of the HIT/HIS vendor's portfolio, the HIT/HIS vendor will do little to promote the Kiosk product. It's really up to the Kiosk Vendor to help push the product and to encourage the HIT/HIS vendor sales team to present the product to their potential clients. Of course, the best avenue is to try to sell into the HIT/HIS vendor's current client base as an add-on product.

To help understand the IT maturity levels of hospitals, AC Group, Inc. has developed a comprehensive healthcare IT matrix for Hospital organizations. The matrix maps 15 operational indicators including business strategies, healthcare expenditures, application functionality, leadership skills, and staffing issues. The matrix is called "Six Levels of Healthcare IT" (see

Addendum A for details). The purpose of the matrix is to determine an organization's current IT strengths and weaknesses and to determine the appropriate applications, business strategies, and skills necessary to advance to the next level. The six levels are defined as:

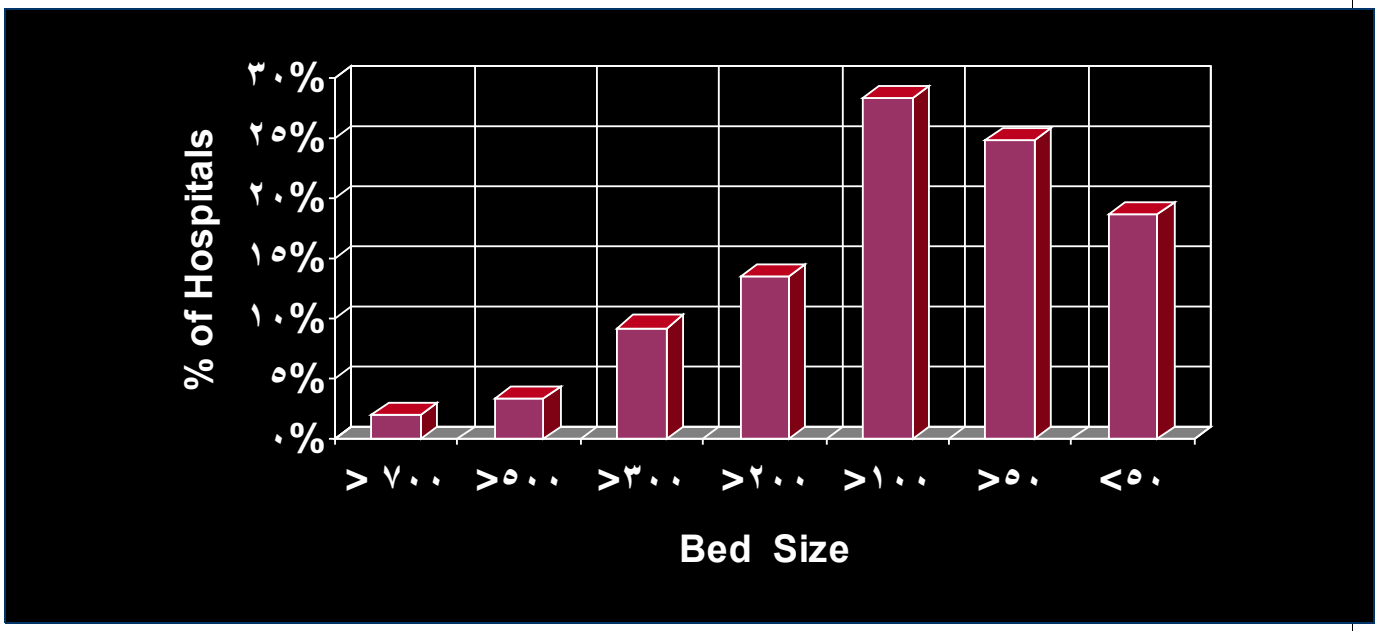
Level	General Description	Basis Description
1	Basic Billing Applications	Hospitals have installed basic billing and accounting applications.
2	Ancillary Department Applications	Hospitals have installed Level 1 plus Department applications (Lab, Radiology, Pharmacy, and Materials Management) and Order Management.
3	Clinical Orders Applications	Level 1, 2 and beginning clinical charting at point of care, clinical process and provider profiling, limited interface to outside applications (Home Health, LTC, GPMS)
4	Point of Care Clinical Charting	Levels 1-3 installed and the organization is concentrating on enterprise wide point of care clinical charting. Applications include EMPI, DW, EMR, and ambulatory clinical charting (Home Care, Clinics, surgery, etc.)
5	CDR, CPOE, CDS, and Knowledge Based Systems	Levels 1 - 4 along with a comprehensive repository of member financial, clinical and demographic data, tied together by one seamless electronic backbone. Allows for CPOE with Clinical Decision Support based on Knowledge based protocols.
6	Clinical Outcomes and Disease Management	All applications have been installed (1-5). Health system's IT budgets is driven by identification and implementation of new clinical outcomes to improve care and extensive implementation of disease management programs.

The ACG team evaluated 23% of the 4,829 hospitals tracked by their service. The results of the survey indicate that all hospitals are not the same in regards to IT structure, and the common factor is NOT bed size, but business strategy. To survive in the future, organizations must align IT strategies with business issues. By 2009, surviving organizations will concentrate on Level 5 and Level 6 applications and strategies. Those organizations who fail to reach level 5 by 2009 will lose market share because of higher operating costs and the inability to clearly document clinical outcomes.

Of the 4,829 hospitals tracked, 2% have more than 1,000 beds, 3.3% have between 500 and 999 beds, 9.2% have 300 to 499 beds, 13.5% have 199 to 299 beds, 28.3% have 100 to 199 beds, and

43.4% have less than 100 beds (Exhibit 1). One misperception is that the majority of the healthcare institutions are large. In reality, less than 16% are larger than 500 beds. According, vendors must designed systems to meet the needs of the majority of the end users (73% have less than 200 beds).

Exhibit 1 - Percentage of Hospitals by Bed Size



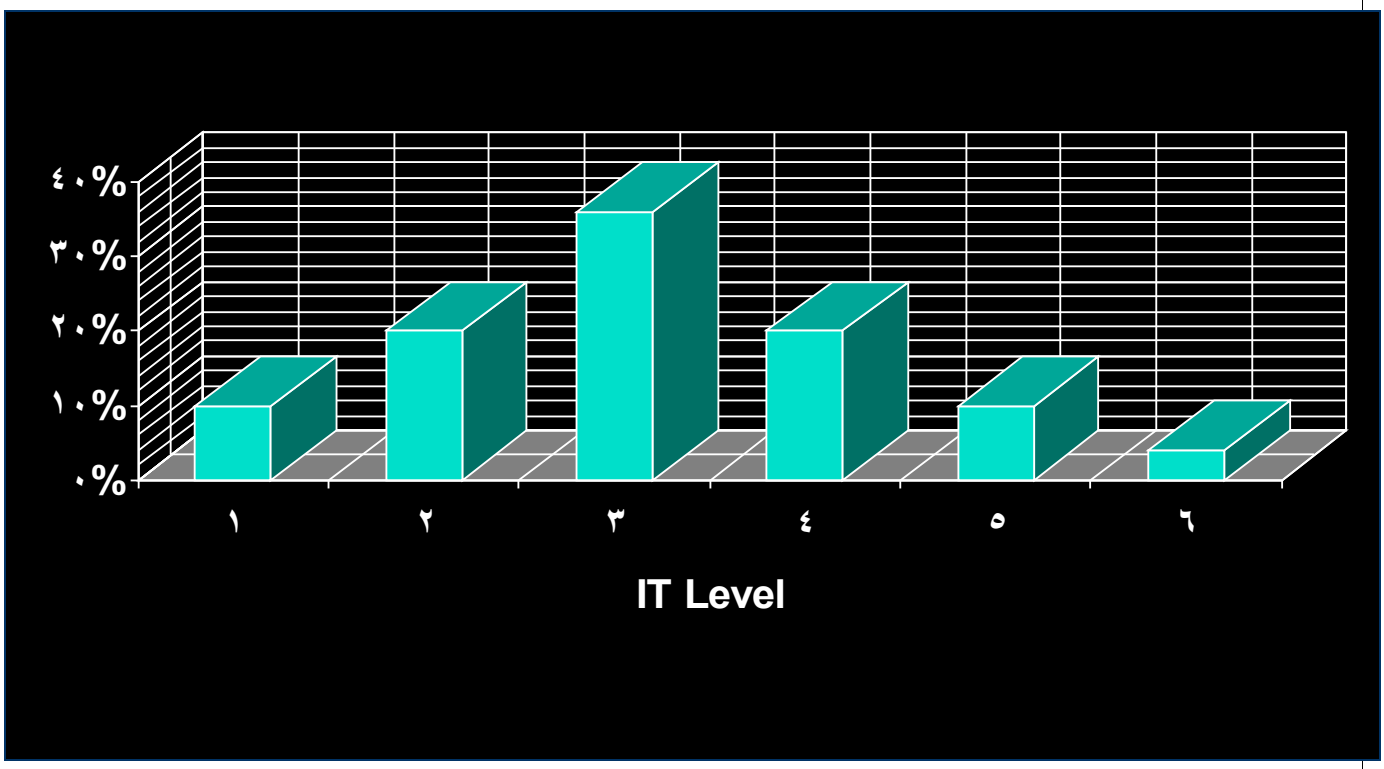
Effect on Kiosks Sales:

Since the majority of the hospitals are less than 300 beds, it would make sense to work with Meditech, QuadraMed, and McKesson for the smaller Hospital marketplace. They have over 74% of the current marketplace. Other companies like Keane and CPSI have a smaller market share, but you might want to consider partnering with them since rarely do they have Kiosk solutions available to their clients.

Kiosks in The Healthcare Marketplace
Hospital/IDN Marketplace
Overview

To be successful, vendors must first determine an institution's current level of Healthcare IT in regards to business strategies, staffing, leadership, funding and reporting relationships. As shown on Exhibit 2, we found that 10% of the hospitals are currently at level 1, 20% at level 2, 36% at level 3, 20% at level 4, 10% at level 5, and less than 4% are at level 6. Therefore, if a vendor has a product that best fits level 3 and 4 organizations, then their potential market share is only 56% of the healthcare organizations. Companies like Meditech which best server level 2 and 3 organizations, have a potential market share of only 56%. Niche vendors who promote Clinical Outcomes and Disease Management Applications are best suited for level 5 and 6 organizations (< 14% of the market).

Exhibit 2 - Percentage of Hospitals by Healthcare Information Technology Level



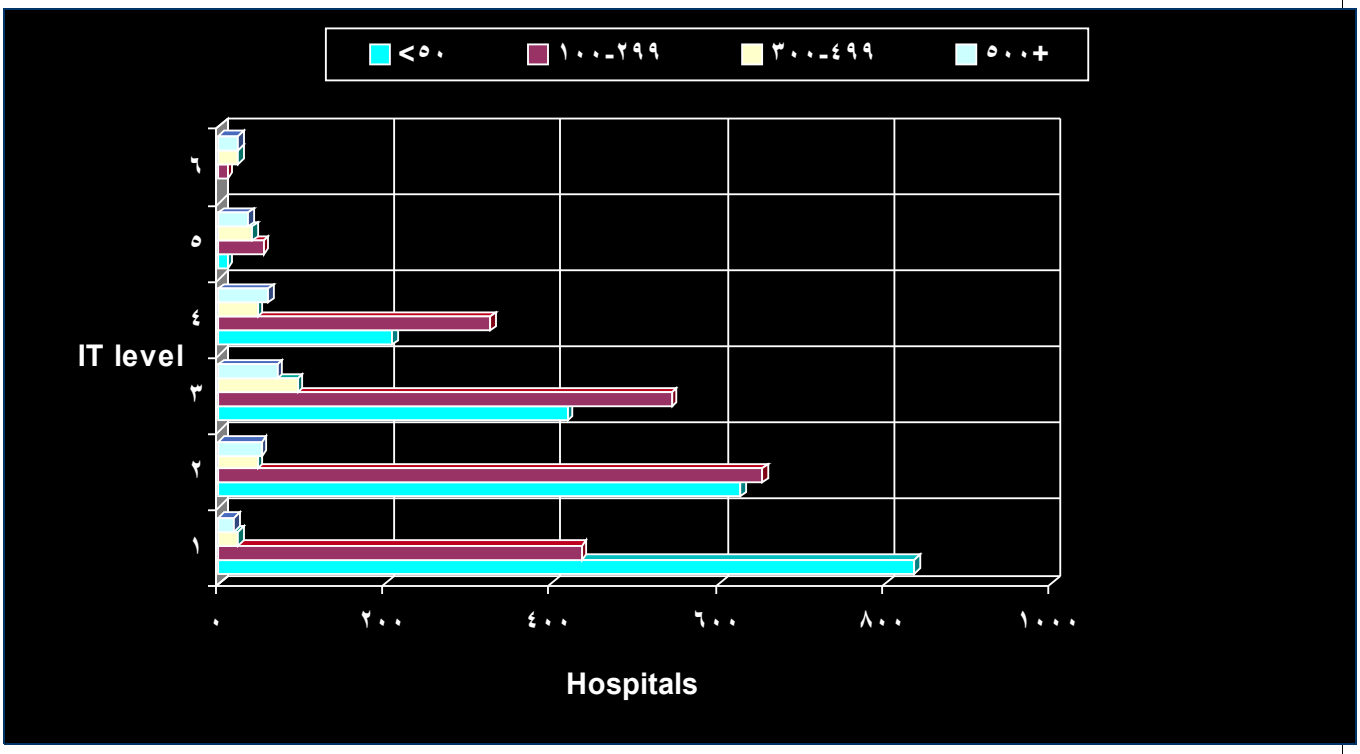
Effect on Kiosks Sales:

Level 1 and 2 organizations are only interested in core applications for registration, billing and patient tracking. They have very few clinical applications. Kiosks sales designed to help with registration and collections would work for this group. For IT maturity levels of 3 and 4, hospitals are interested in tracking of patient issues, satisfaction as well and core Level 1 and 2

functionality. Hospitals with level 5 and 6 IT maturity are interested in expanded clinical information and Patient Education materials in their Kiosks with many of these kiosks placed in direct care-provider areas.

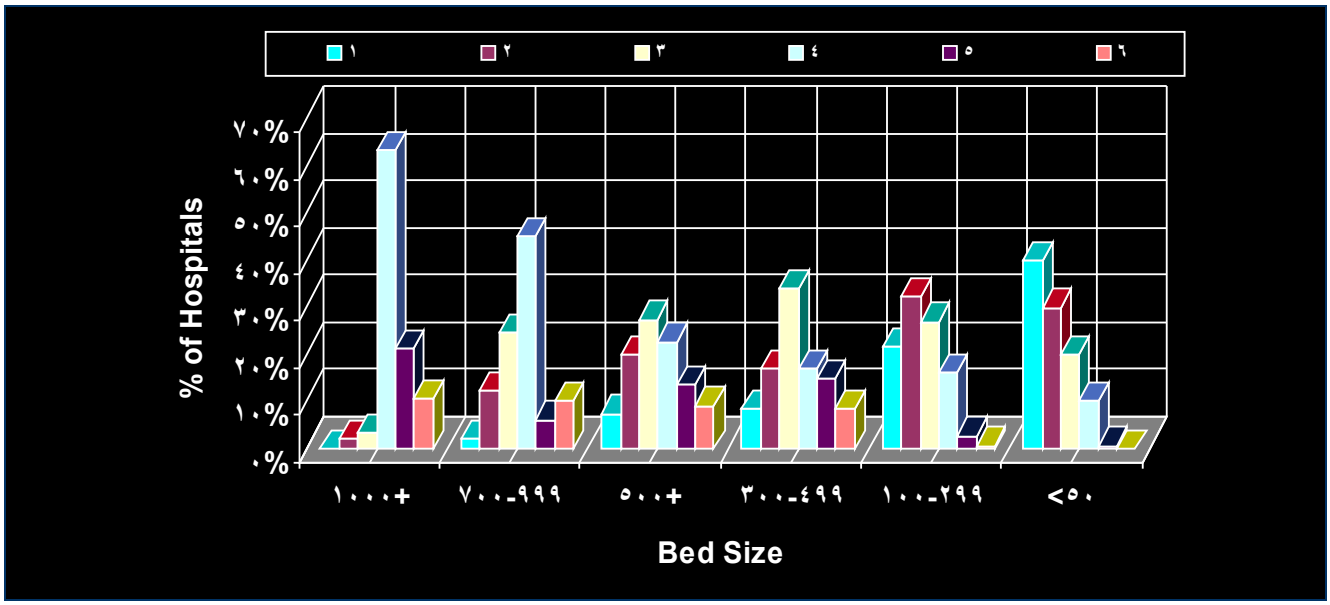
Our analysis indicates that size does not necessarily indicate the level of healthcare IT. As shown on exhibits 3 through 5, 94% of 1,000+ bed hospitals are level 3 or higher while only 45% of 500 bed hospitals are level 3 or higher. More than 27% of the 500+ bed hospitals are operating at an IT level below 3. The majority of these organization's strategic IT plans call for improved systems, which if implemented, would indicate a level 5 IT organization. However in almost every case, system implementation is behind schedule. Thirty percent of the smaller hospitals, < 50 beds, have an IT level of greater than 3. In this case, the majority are part of Integrated Delivery Systems (IDN) where the core facilities have level 5 or 6 IT structures. Once again to be successful, vendors must learn to identify an organization's healthcare IT level and learn to market their products and services to the appropriate level.

Exhibit 3 – Number of Hospitals by Bed size by Level of Healthcare IT. The majority of Hospitals have less than 100 beds (43%) while only 5% are larger than 500 beds.



Kiosks in The Healthcare Marketplace
Hospital/IDN Marketplace
Overview

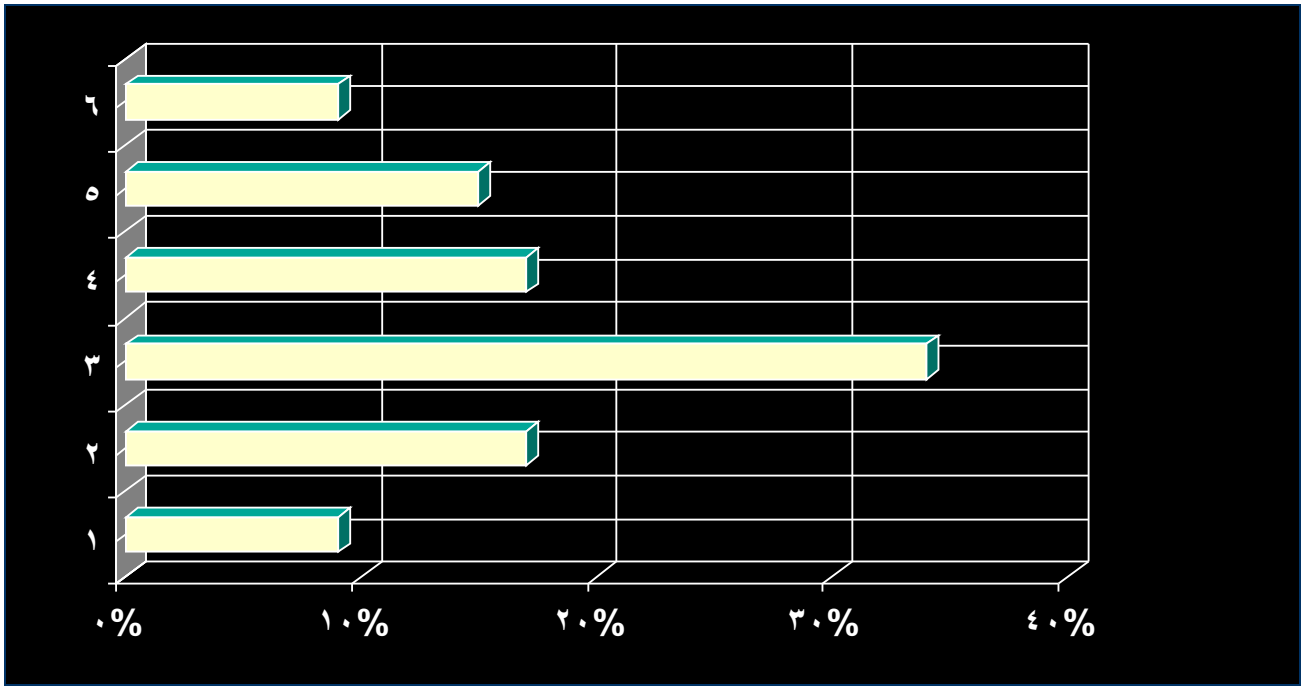
Exhibit 4 – Percentage of hospitals by bed size by Level of Healthcare IT. 94% of 1,000+ bed hospitals are level
3 or higher while only 45% of 500 bed hospitals are level 3 or higher.



Effect on Kiosks Sales:

As stated before, sales will be based on a combination of bed size and IT maturity levels. Based on the last two graphs, the best market to go after is the 100 to 299 bed marketplace with an IT Maturity level of 4. They understand the need to expand their services, they understand the need for more patient interaction and there are enough hospitals in this size range to create a nice profit margin. Then large hospitals with over 500 beds always sound like the best place to be, but there is only a hand full of large hospitals in each State, thus making the cost of sales much higher.

Exhibit 5 – Average 500 bed Hospital's percentage of healthcare IT. On average < 35% of the 500 bed hospitals are at level 3 while less than 37% are level 4 or higher



Effect on Kiosks Sales:

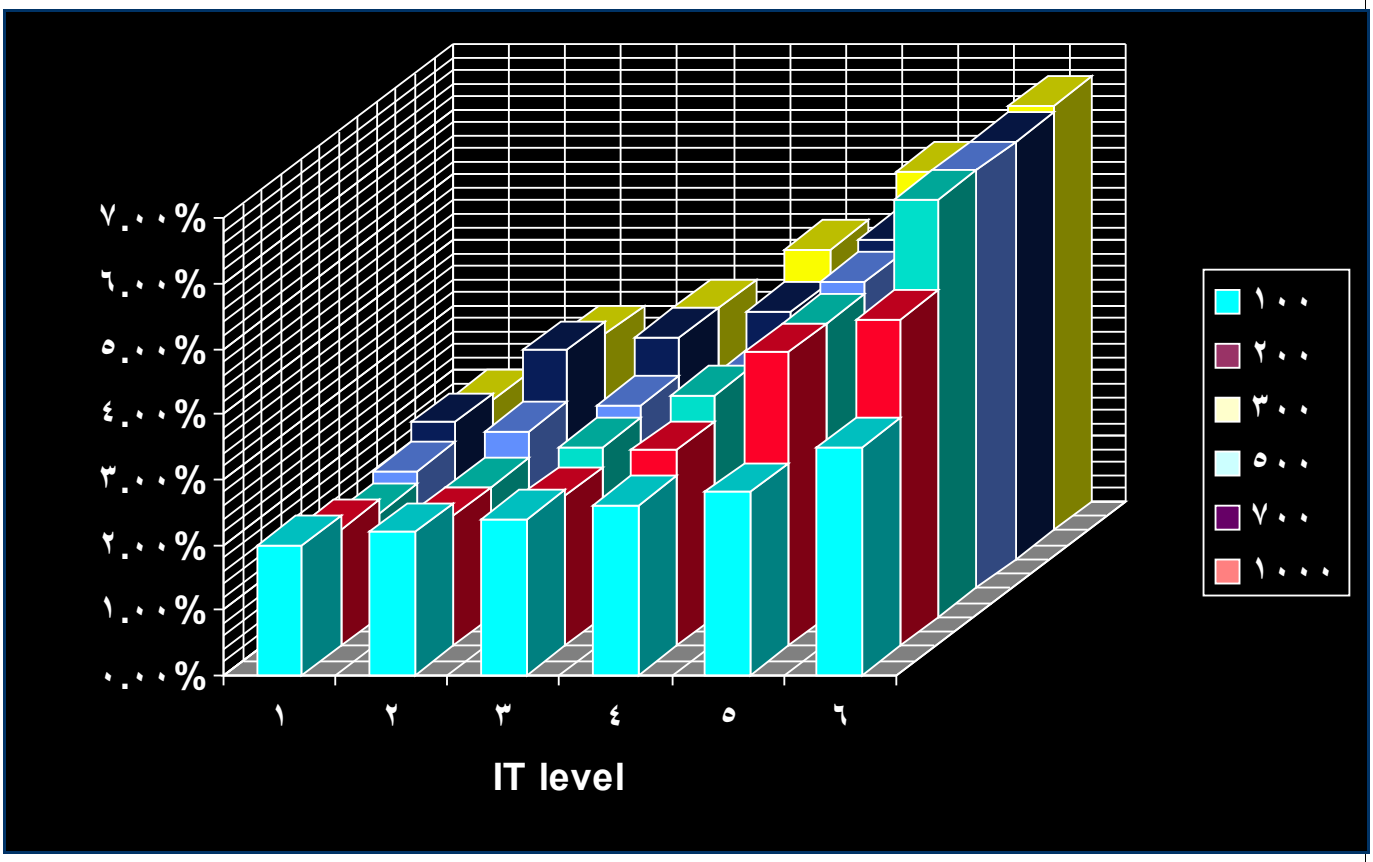
Large Hospitals are perfectly positioned to require Kiosks applications. However, they are usually tied to the top three or four HIT/HIS vendors who have already decided on their Kiosk solutions.

Hospital IT Spending:

Although size does not matter, the percentage of IT expenses in relation to total organization expenses does vary by healthcare IT level. On average, level 1 organizations spend < 2% while level 6 organizations spend more than 6.5% (Exhibit 6). One of the misconceptions is that capital spending on healthcare IT (on average 48% of total annual capital expenditures) drives successful healthcare IT operations. Clearly, our research has shown that commitment to on-going operating costs is the driving force, not capital, to insure effective and efficient use of healthcare IT systems. We believe that lack of commitment to on-going operating expenses is the number one determinate why 70% of the systems either fail or do not met end-user satisfaction. In one

example, a 10 hospital IDN operating below a level 3 budgeted $40 million for new IT systems. Their strategic IT plan indicated a willingness to move the organization to a level 5 and beyond. However, their annual IT operating budget was less than 2% of the entire organizations budget. The result - ten of their twelve IT projects were more than a year behind schedule, causing end-user frustration and within a year, departure of their newly hired and frustrated CIO.

Exhibit 6 – IT operating costs as a percentage of total operating costs displayed by bed size grouping and by Level of Healthcare IT



Our survey also indicates that the establishment of an IDN does not necessarily reduce IT operating expenditures or does it insure higher levels of IT implementation. In more than 70% of the cases, the IDN is in name only when it comes to IT. The majority of the IDN's have not converted to one HIS vendor on a common platform. For example, one ten hospital IDN is operating nine different core HIS applications at ten different physical sites. A west coast IDN is operating 7 different core HIS applications at 18 sites. We also found that 75% of the level 6

organizations have installed one core set of applications at one site, whether or not they are a single hospital or an IDN.

Our research also indicated that one of the most important issues faced by healthcare organizations through 2003 is CIO alignment with business issues and cultures. Through 2003, rising demand for both IT and business experience will require healthcare organizations to improve their selection, recruitment, and retention of their IT leadership. Healthcare CIOs seeking to attain and retain top IT positions must learn to assume a leadership role. CIO's must learn to develop and articulate a vision of the "informed" enterprise and must strive to be perceived as an enterprise healthcare executive, not an IT executive. The CIO must learn to position IT as a common strategic and operational resource, not as just another service department. Finally, the healthcare CIO must act as a champion and educator of the CEO, Board and Medical Staff. By 2009, surviving organizations will concentrate on Level 5 and Level 6 applications and strategies, thus requiring level 5/6 CIO characteristics.

Our research indicates that in more than 80% of the cases, IT Leadership titles vary based on the healthcare IT Level:

- Level 1 - MIS Director
- Level 2 - MIS Director or Hospital CTO
- Level 3 - Hospital CIO
- Level 4 - Hospital Executive Team CIO
- Level 5 - IDN CIO
- Level 6 - Executive Team IDN CIO

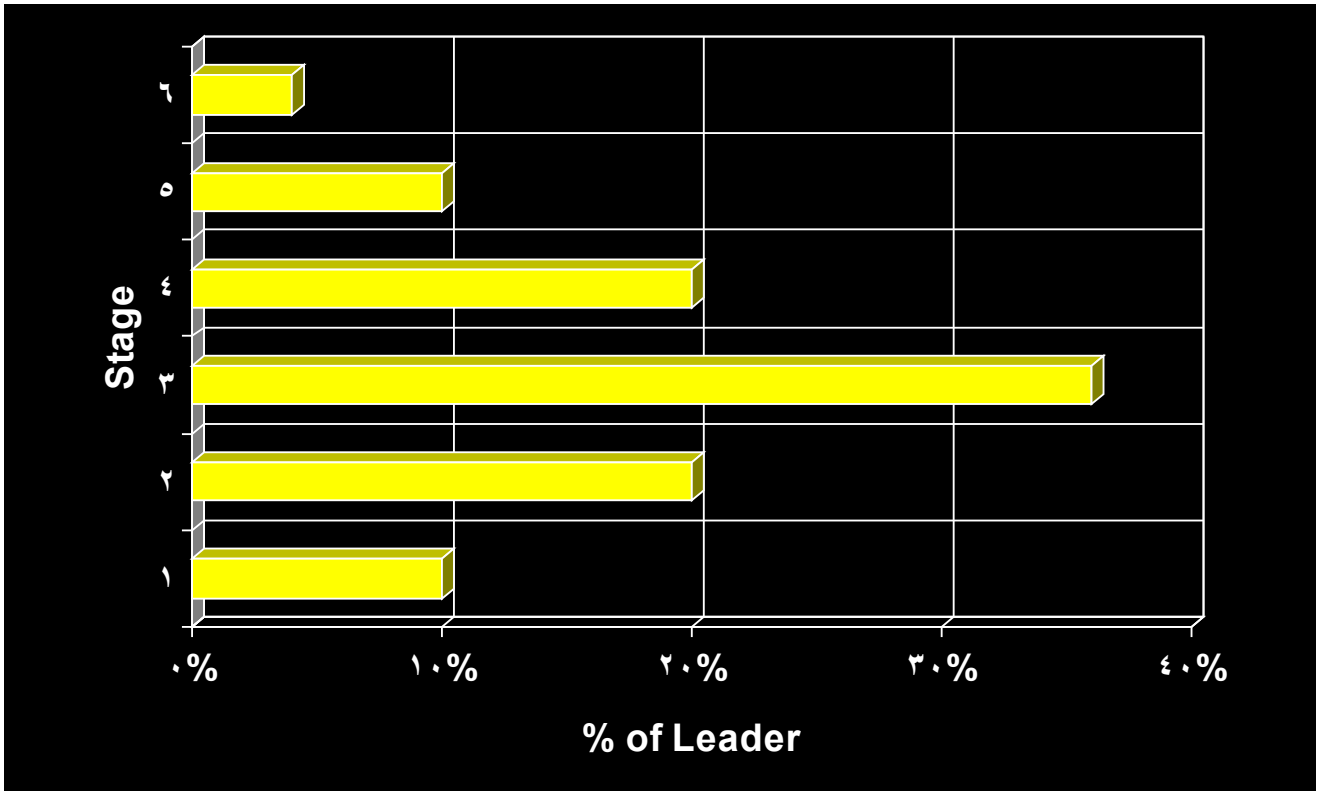
Effect on Kiosks Sales:

Decision making in Hospitals with an IT Maturity level of 5 or 6 are usually driven by the CIO but must be approved by a committee for any expenditures over $25,000 as a capital purchase item. Hospitals with an IT Maturity level of 3 and 4 make decisions based on committees and the best "Champion" for kiosk products are usually the Nursing Director or the Director of Patient Accounting. Hospitals with an IT Maturity level of 1 or 2 usually make decisions based on what the CFO wants for the organization and usually around financial and operational improvements.

Kiosks in The Healthcare Marketplace
Hospital/IDN Marketplace
Overview

As shown on Exhibit 7, 30% of the hospital IT departments are still run by MIS Directors (Level 1 and 2). Hospital based CIO's make up 56% of IT leadership titles, while only 14% are true IDN CIO's. Our research also shows that only 26% of healthcare IT leaders are equal members of the hospital's executive team, up from 10% in 1995. We also found that large IDN's may have a corporate CIO, but the majority of the HIS applications are operating independently within each hospital, and the IT department is managed by a MIS Director. Through 2003, CIOs will gain acceptance from, and membership in, the executive-team as they take on more "business" responsibilities.

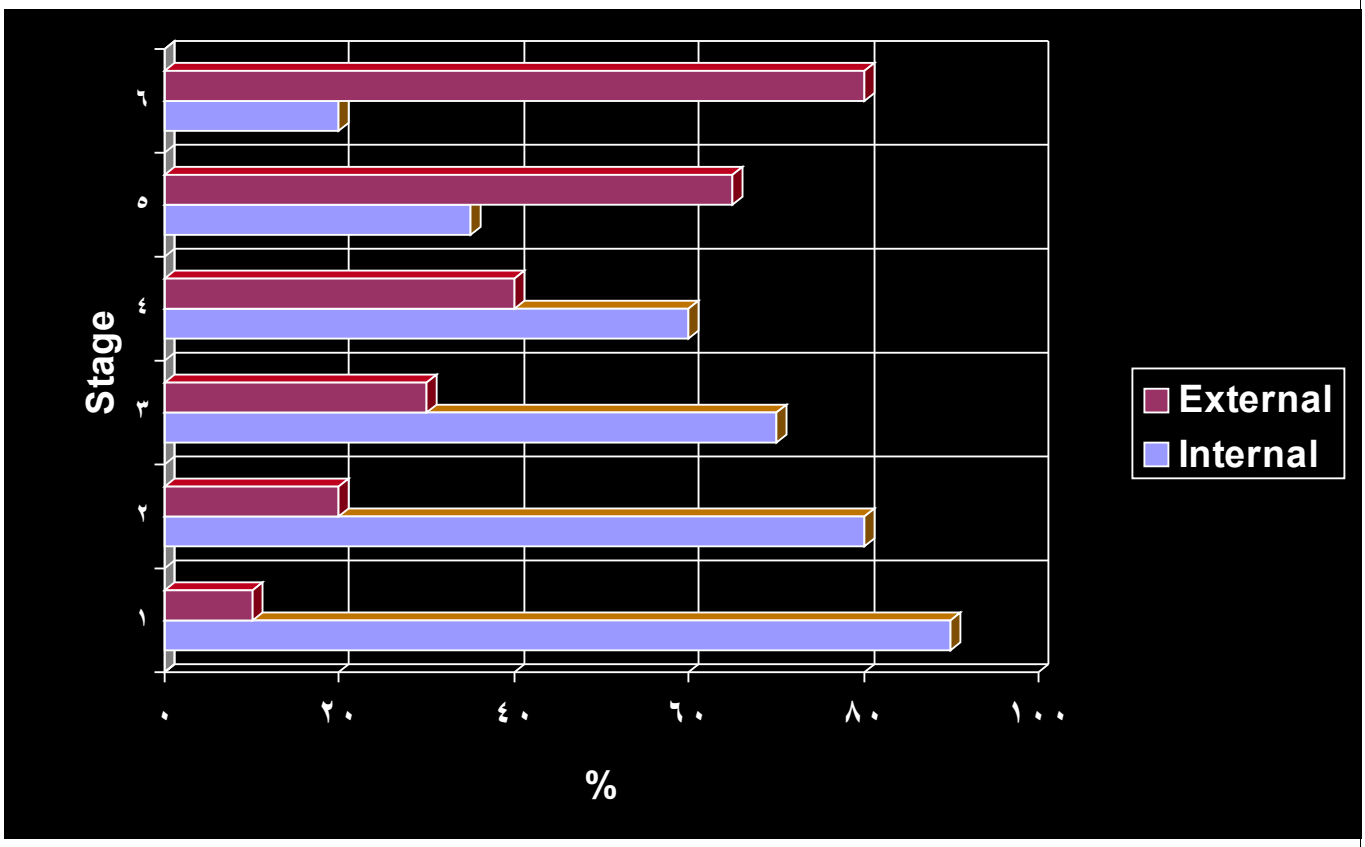
Exhibit 7– Percent of Healthcare Leadership by level.



Kiosks in The Healthcare Marketplace
Hospital/IDN Marketplace
Overview

The level of healthcare IT and the corresponding title of IT department head usually indicate the division between internal and external responsibilities. As shown in Exhibit 8 Level 1 heads of IT are internal Directors where 90% of their activities deal with internal hospital issues. Typical MIS Directors that have reached Level 2 spend 20% of their time on external issues while Level 3 (Hospital CIO's) spends approximately 30% externally. Level 4, CIO's spend 40% of their time on integrated issues outside of the hospital while level 6 IDN CIO's spend 80% of their time on outside issues. By 2009, we believe that the average hospital CIO will spend 80% of his/her available time on external issues. To survive, HIS vendors most learn to identify the differences and market their products accordingly.

Exhibit 8– Percent of CIO's time spent on internal or external issues.

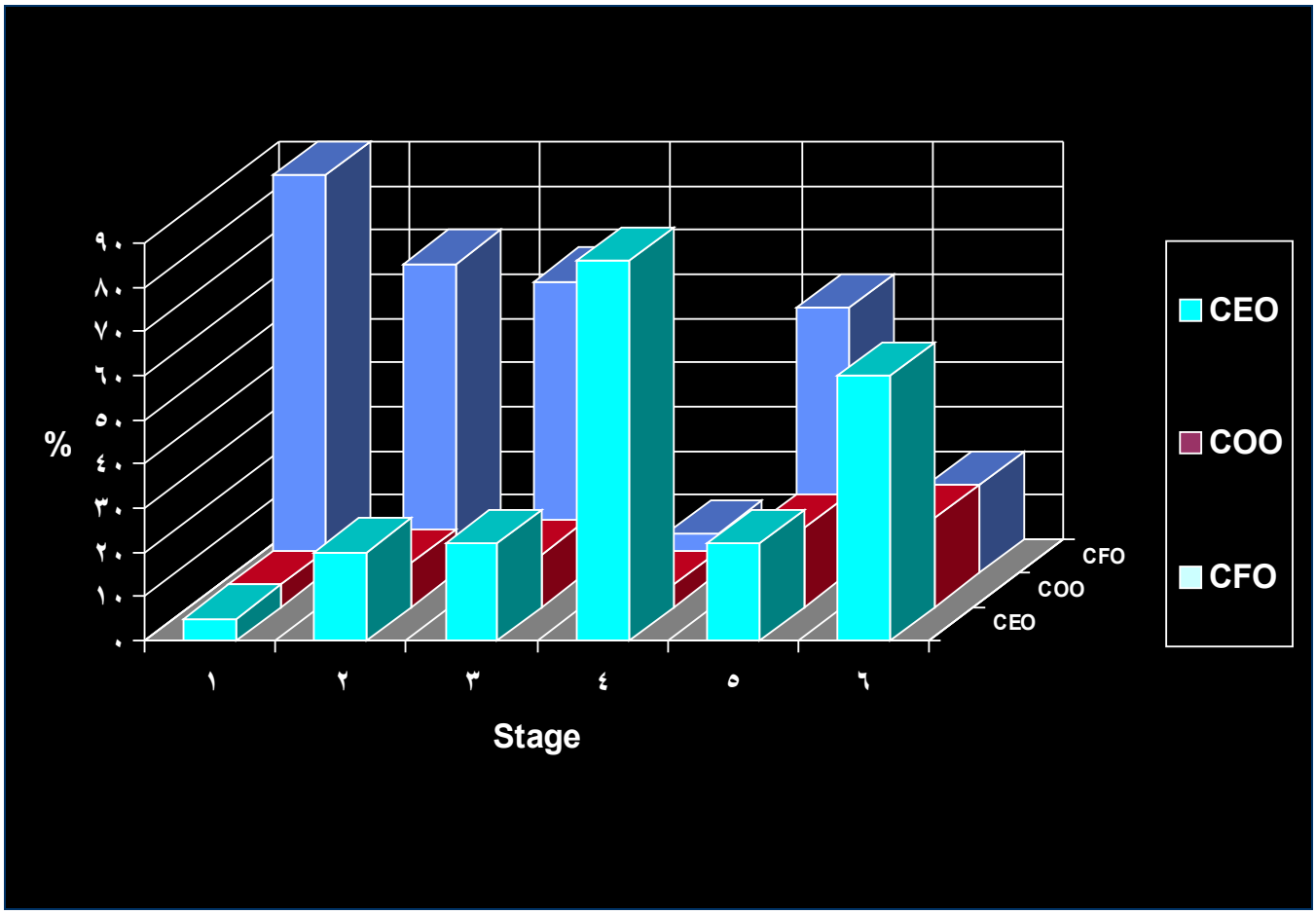


Effect on Kiosks Sales:

Organizations that are interested in external issues are more interested in Kiosk products and services than organization that are more "internal" oriented.

CIOs that have risen through the healthcare IT ranks often find they do not possess the leadership and communication skills required to interact with their organizations' executive team. Recent survey have shown that 45% of provider CIOs report to the CEO, 25% report to the COO, and 15% report to the CFO. Our research indicates that the actual reporting relationship depends on the level of healthcare IT. As shown in Exhibit "9, more than 60% of the level 1,2,3 and 5 IT leaders still report to the CFO.

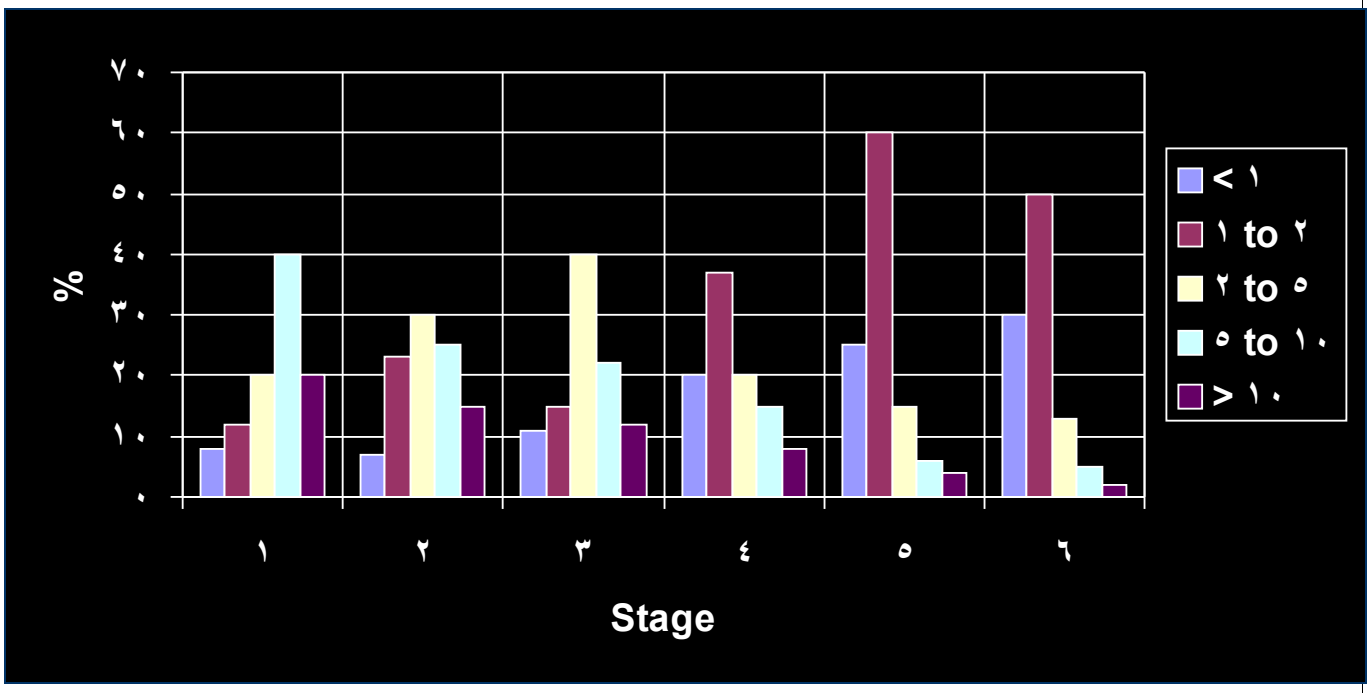
Exhibit 9– IS department reporting relationship by Level of Healthcare IT



Although we do not expect healthcare CIO turnover rates to continue increasing, we do believe this high turnover rate will remain constant through 2009 unless healthcare organizations learn how to align organizational leadership requirements with available CIO characteristics. The problem varies depending on the Healthcare CIO level. As shown in Exhibit 10, 60% of the Level-1 Director of MIS has been employed more than two years while more than 80% of the level-5/6

CIO's have been employed less than 2 years. Our survey showed 40% of the Level-3 Hospital CIO's have been with the same organization between 2 and 5 years.

Exhibit 10 – CIO Length of employment of Level of Healthcare IT



The problem is three-fold:

1. A typical healthcare IT plans requires a minimum of five years to implement. During this period, the average healthcare organization changes IT management two or more times. The disruption in IT leadership causes implementation delays and operational changes in leadership style and vision.
2. During 2003/04, successful healthcare CIO will be in high demand. With high demand comes high flexibility and financial incentives to seek new positions. This revolving door mentality can also lead to failure. Our research shows the majority of CIO failures were caused because of a lack of credibility with other VP's, insufficient enterprise/strategic views, and a lack of network bonding. All of these can be overcome given time, but the revolving door CIO can't build credibility by instability.
3. Healthcare IT vendors sell products, services, and relationships. The revolving CIO brings his/her own relationships, causing potential conflicts for vendors. A CIO who has a great working relationship with niche healthcare vendors may not appreciate the "one vendor fits

all" approach from the new organization's large HIS vendor. Conversely, small healthcare niche vendors (under $100 million in annual revenues) must learn to recognize the traditional level 3 CIO who prefers purchasing all majority of new products and services from traditional large HIS vendors.

Effect on Kiosks Sales:

We find that hospitals with IT Maturity levels of 4 and 6 have created an operational organization where the director of IT reports to the CEO or COO rather than the CFO. In these cases, the IT Director is more interested in the entire hospital rather than mostly keeping the CFO satisfied. Once again, when considering marketing, your best value is in those organizations where the IT director/CIO reports to the COO or CEO.

Conclusion:

The kiosk marketplace is just starting to evolve. We estimate that the potential market will exceed $800M per year by 2013, but new products and a strong marketing campaign is require to tab into this new market. The financial and airline industries understand the value of Kiosks, but the healthcare industry does not have a keen understanding of the operational and financial benefits. To thrive in the Kiosk marketplace in healthcare, an organization must create a comprehensive product that covers multi operational conditions must create multi partnerships with leading HIT/HIS vendors and must create a series of 3rd party validated studies on the use and benefits of Kiosks in the Healthcare environment. Anything less would be a waste of corporate funds.

Category	Level 1	Level 2	Level 3
Title:	MIS Director	Hospital CTO	True Hospital CIO
Key technical areas	Hardware and Software	Departmental Applications	WAN, Applications, Tele-communications
Scope	90% Departmental, 10% Hospital	Single business unit scope	Hospital, Home Care, Practice Management
Service interest	IS and end users	Interest of hospital	70% Internal and 30% External
Operations Focus:	Financial	Financial, some clinical	Financial, Clinical, Continuum of Care
Incentive basis:	IS department success	Business unit and hospital success	Hospital success
New Players:	None	Banking, energy,	Nurses, Finance, Banking, Fortune 1000
Main challenge:	Managing user relations and systems	Hospital wide technical consultation	Managing user relations and systems
Risk:	Minimal	Moderate Risk	High to Moderate Risk
Reports to:	CFO	70% CFO, 10% COO, 20% CEO	66% to CFO, 12% to COO, 22% to CEO
Consultants	Minimal	Technology issues	IT Strategic Plans, Implementation

Kiosks in The Healthcare Marketplace
The Hospital/IDN Marketplace
Overview

Category	Level 4	Level 5	Level 6
Title:	Executive Team Hospital CIO	True IDN CIO	Executive Team IDN CIO
Key technical areas	WAN, Applications, Tele-communications	WAN, Integration, Process Improvement	Business Strategies IDN, Government, Legal, Payer,
Scope	Hospital, Home Care, Practice Management	Multi Hospitals, HC, LTC, PM, MSO, Payer	Outcomes
Service interest	60% Internal and 40% External	35% Internal and 65 % External	20% Internal and 80 % External
Operations Focus:	Financial, Clinical, Continuum of Care	Multi facility Financial, Continuum of Care	Multi facility Financial, Continuum of Care
Incentive basis:	Hospital Success	IDN Success	IDN Success, Physician Success
New Players:	Nurses, Finance, Banking, Fortune 1000	Doctors, Finance, Banking, Fortune 500	Doctors, Finance, Banking, Fortune 500
Main challenge:	Tying IT with Business Strategies	Multi facilities with multi platforms	Recruitment and Retention, Moving Business
Risk:	High to Moderate Risk	High Risk	Very High Risk
Reports to:	9% to CFO, 5% to COO, 86% to CEO	60% to CFO, 18% to COO, 22% to CEO	20% to CFO, 20% to COO, 60% to CEO
Consultants	Strategies, Staffing, Vendors	Strategies, Outsourcing	Outsourcing