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Healthcare Data Integration Market Overview

**Impact Advisors, LLC
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Report Abstract

This Impact Advisors white paper provides a high level overview of the healthcare data integration industry and representative vendors in the market. It introduces the key components of data integration, discusses key business drivers of data integration and provides insights into the industry, vendors and solutions. The report is intended to aid healthcare organizations enhance their knowledge of data integration solution providers and approaches, it is not intended to serve as a sole source of information for a data integration vendor selection or strategy development process.

Data Integration and its Benefits

Data integration – the automated aggregation and consolidation information from a variety of disparate systems and sources – across sites of care (inpatient, ambulatory, home), across domains (clinical, business, operational), and across technologies (text, video, images) – is the Holy Grail of healthcare information technology. The call for improved data integration has come from the proliferation of advanced clinical and business systems in the inpatient and outpatient arenas, the increased use of home monitoring devices, the need to improve continuity of patient care and demands for heightened efficiency in a notoriously redundant and inefficient industry. Today, many provider organizations are grappling with how to effectively connect data silos – within their facilities and with business partners - to enhance value, safety, and efficiency. While the benefits and opportunities are vast, they are potentially greatest in the clinical domain. The integration of clinical data:

- Improves communication and information sharing among sites of care
- Offers a richer picture of the patients overall health and health history
- Can reduce redundant tests, procedures, etc.
- Reduces costs for resources (staff labor, interfaces, paper information relay)
- Provides for the timely consumption of patient data for physicians
- May tighten the strategic bonds between hospitals and community physicians

EMRs as a Key Data Integration Driver

As noted above, the growth in the use of EMRs and other clinical and business technologies is fueling the demand for data integration. This demand will continue to grow and likely grow exponentially and systems proliferate across care environments. While EMRs are established in the inpatient arena, physician practices have been slow to adopt them. According to a 2008 New England Journal of Medicine report, only 4% of ambulatory physicians reported having a fully functional EMR and just 13% had a basic system in place. The report also noted that of the 4% with fully functional EMRs, 71% were integrated with the hospital EMRs – an indication of the importance and value of integration. Of the 83% without live EMRs, 42% were either in the process of implementing or planning to implement within the next two years.¹ These data suggest the market opportunity for providers of data integration software and services is vast - over 95% of the target market is still available. And, as ambulatory EMR penetration increases, the pressures for data integration will snowball.

¹ “Electronic Health Records in Ambulatory Care - A National Survey of Physicians” NEJM, July 3, 2008

Barriers to Integration

Technical and organizational/political challenges must be overcome in data integration efforts. Some of the key technical barriers include: data quality and integrity, compliance with standards, differing uptime performance between systems (i.e., hospitals run 24 x 7 x 365 but physician practices do not and their systems may operate at differing levels of reliability) and the lack of highly skilled technical data integration resources

From an organizational/political side, the challenges are more subtle, but no less vexing. Integration of data from multiple systems and sources can be expensive, especially for the provider organizations which might want data integration with multiple community physicians. Depending on funding arrangements, physician groups may face similar cost concerns if they are seeking to share data with multiple hospitals and other organizations in the service area.

Discussions regarding data integration may surface stickier relationship issues between providers and the physician community. The data integration opportunity may give rise to improved and stronger relationships – or the discussions and planning may further fracture tenuous relationships if one party senses an imbalance of power. In addition, competing IT initiatives may be the focus of attention at provider and/or physician group sites and result in one party feeling the other is not fully at the table.

The Vendor Market

Regardless of the challenges, provider and physician organizations continue to explore, plan for, and integrate their patient clinical - and in some cases financial/billing – information, and there are many vendors vying for their business. Some of the solution providers have roots in healthcare, and others are moving into the healthcare space from other industries. In addition, some larger technology-focused healthcare IT consulting organizations such as Accenture and CSC are also promoting their data integration capabilities. The following section discusses some of today's options for data integration products and services.

Novo Innovations

Background

Novo Innovation (“Novo”) was founded in 2002 in Alpharetta GA by a group of former McKesson technologists. Since its inception, it has remained privately held while growing quickly to become a leader in this young industry and gain international recognition for its underlying design and technology. Today it has over 250 hospital clients and numerous physician practice clients. While Novo markets primarily to hospitals that in turn provide the data integration solutions to their affiliated and community practices, their sales to physician practices are increasing.

Product Overview

Novo uses internet-based agents / grid computing to manage the exchange of data between healthcare providers and medical groups. These technologies have been in use in other industries and the military for years and have proven effective in managing the information exchange between disparate applications and databases across environments. Novo characterizes its product as the “next generation of middleware”.² It embeds agents - small but

² “An Exclusive Interview with Robert Connely, President and CEO of Novo Innovations” HIStalk Blog: http://histalk.blog-city.com/an_exclusive_interview_with_robert_connely_president_and_ceo.htm 8/16/2006.

powerful Java programs - in hospital data centers, physician practices and other locations. Once installed, these agents interact with their local environment to extract and insert information and exchange the information with other agents to automate workflow tasks. The grid component is an object oriented system that can replicate an object to multiple agents and keep it in sync across all locations. The following diagram represents the Novo grid model³



Like most data grids, Novo is based on the concept of running grid software on computers distributed across the Internet for storing data. A central "sorter" manages the distribution of data to storage nodes. However, unlike most data grids, Novo doesn't act like a massive database or supercomputer. Instead, it stores and manages data in data objects called *topics*, which reside in grid-enabled nodes. When one agent needs to exchange data with another, it creates a topic and distributes it to all agents that participate in the conversation. Once distributed, any changes to one copy of the topic are automatically distributed to all other copies. Each agent can add data to the topic and all other agents in the conversation will see the new data in minutes. The Novo agents enable interoperability between grid nodes by analyzing and, if necessary, transforming data stored into HL-7 formats.⁴

In addition to its established integration service product line, Novo and its beta partner, Palomar Pomerado Health (San Diego, CA) are testing "drop box" functionality to provide patient medical information electronically to physician offices lacking EMRs. Novo is also beginning to explore grid-based Personal Health Records (PHRs) and applications of their products and technology in research and in other industries.

Strengths and Weaknesses

- Novo's KLAS ratings have been exceptional; in the 2006 survey of Novo clients "100% of clients would buy their product again."⁵
- Novo leadership's background at McKesson provided ample experience in integrating complex and disparate technologies.
- While a number of Novo's clients use McKesson products (i.e., Spectrum, Southwest Washington), Novo has experience working with many EMR vendors/solutions and homegrown systems.

³ Distributed Software Agents from Novo Innovations Quickly and Affordably Link Physician Systems, Hospitals" HIStechReport <http://histechreport.com/2007/10/31/distributed-software-agents-from-novo-innovations-quickly-and-inexpensively-link-physician-systems-hospitals/>, 10/31/2007

⁴ Greg Goth, "Grid Computing Gets Small," *IEEE Distributed Systems Online*, vol. 7, no. 11, 2006, art. no. 0611-oy003.

⁵ Ibid.

- Rapid growth coupled with a diffusion of focus (physician office EMR, PHR, research applications, etc.) could jeopardize their ability to serve growing core product client base.

Representative Clients

- Catholic Health East (PA)
- Christus Health (TX)
- Intermountain Healthcare (UT)
- Spectrum Health System (MI)
- Tennessee Statewide Shared Health HIE
- UPMC Health System (PA)

MobileMD

Background

MobileMD is a division of Intraprise Solutions Inc (ISI), a privately held company founded in 1997. MobileMD is based in Newton PA. In addition to its two main products, the MobileMD Health Information Exchange (HIE) and MobileMD Enterprise (described below) it also offers a basic EMR to physician practices.

Product Overview

MobileMD HIE is an internet-based ASP which provides a secure, scalable and flexible infrastructure for hospital data feeds to, from, and between disparate physician practice EMR systems. It uses a hub-and-spoke approach where one feed from the health system feeds unlimited disparate EMR systems. MobileMD HIE has the ability to communicate in multiple formats, including HL-7, XML, and others and it supports Continuity of Care Records transmission standards.

MobileMD Enterprise Access is a portal extension of their HIE product. For physician practices without EMRs, it provides physicians with access to their patients' information residing in hospital EMRs, including test and radiology reports, consults, discharge summaries, OR reports, and ED reports. It also offers limited inbox/task management functionality. In February 2008, MobileMD announced an alliance with DiCOM grid. This partnership will allow image transfer via MobileMD and provide physicians simultaneous access to clinical results and real-time delivery and storage of imaging studies.

Strengths and Weaknesses

- As an ASP product, the investment in time and resources for the providing entity and for the physician practices is minimal.
- The partnership with DiCOM and the ability to provide both text and imaged-based data will enhance the value proposition for MobileMD
- With over 10 years in the market, Mobile MD does not appear to have a large client base. Because it is privately held, little information is available about its financials.

Representative Clients

- Centura Health (CO)
- The Washington Hospital (PA)
- Maine Line Health (PA)

HealthVision

Background

HealthVision (formerly Quadvox) is a privately held company based in Dallas TX, with offices in the UK and in Canada. HealthVision uses Cloverleaf integration technologies as the backbone for its system integration, work flow, and secure data access offerings. HealthVision has established itself in the industry – it now serves over 40 percent of all large Integrated Delivery Networks, and 33 percent of U.S. hospitals.

Product Overview

HealthVision's Cloverleaf Integration Service provides connectivity for healthcare enterprises – within hospitals and between health systems, health plans, pharmacies, laboratories and physician practices. HealthVision's Services support ANSI X12 - HIPAA compliant messages, HL7, NCPDP and custom formats. HealthVision's integration products offers database connectivity components to enable data level integration with Oracle, SQL Server, DB2 and other database management systems.

Cloverleaf Secure Courier is the HealthVision component used to provide a secure bi-directional connection from hospital to physician practice EMRs. It is a lightweight client which runs on the hardware and software in the provider office, but can be managed remotely from the central Cloverleaf instance (at the provider hospital). HealthVision also offers a suite of ASP products targeted towards physician offices, including a robust portal, a basic EMR and a full-featured EMR (allows ordering, e-prescribing, and other advanced clinical services.)

Strengths and Weaknesses

- HealthVision was named a "Top 100 Healthcare IT Company" in 2007 by Healthcare Informatics.
- HealthVision has demonstrated consistent growth and service quality levels.
- With its summer 2008 acquisition of MediSolution, HealthVision now has a stronger presence in the ambulatory environment. This may foster research and development, but it may also detract from their ability to focus on core data integration competencies and existing clients.

Representative Clients

- RxHub
- Hoag Hospital (CA)
- Rockford Hospital (IL)
- Children's Specialized Hospital (NJ)

Other Healthcare Data Integration Vendors

Bluegate

Founded in 1995, Bluegate has offered several healthcare IT solutions and services, most notably IT outsourcing, a medical grade network and "BlueLink" which enables connectivity between medical practices and hospitals. Bluegate historically had a strong business relationship with Memorial Hermann Medical Center in Houston TX. However, in late 2006 and

2007, that relationship – and Bluegate itself – began to deteriorate. In March, 2008, Bluegate’s auditor expressed doubt that the company could continue as a going concern. In June 2008, Bluegate management issued a statement acknowledging a net loss in FY 2007 and FY 2008 and the need to secure sufficient loans to ensure operations and “long term viability.” In late July 2008, Bluegate stockholders filed with the SEC to (re)sell nearly 40,000 of common stock to fund operations.⁶ Industry information on the current status of Bluegate is sparse, and the Bluegate website’s latest news and updates were posted in early 2007, given little indication to the current status.

Medicity

Medicity, founded in 1998, is a clinical interoperability company serving over 1,800 hospitals, physician groups, regional health information exchanges (RHIOs), and health plans. Medicity’s software manages complex clinical data integration between legacy systems within a healthcare enterprise and among diverse clinical data sources from within and outside an organization. MediTrust, their clinical interoperability platform, is used by RHIOs (including CalRHIO and the Delaware HIN) and hospital systems. Medicity’s ProAccess Electronic Health Record is also available for physician practices. In addition to core EMR functions, the ProAccess EHR provides a service-oriented, data-exchange infrastructure to pass information among physician practices and partner organizations.

Microsoft Amalga

Amalga is Microsoft’s existing data integration product Azyxxi, renamed and re-released in Spring 2008 with the other components of Microsoft’s suite of healthcare solutions - a multi-module EMR/HIS and a PACS/RIS. Microsoft describes Amalga as a “unified intelligence system” that aggregates data from various clinical, financial and administrative systems so it can be used for clinical, research, and business purposes.⁷ All of Amalga’s components are integrated using middleware that creates standard approaches and tools to interface with the many dissimilar software and hardware systems in hospitals. While Amalga has an established client base, today it is predominately used within organizations to pull together disparate systems and data, not across organizations for data sharing purposes. Dale Sanders, CIO of Northwestern Medical Faculty Foundation summarized Amalga’s current sweet spot on his blog by saying “If I were the CIO for a hospital without an integrated EHR, I would seriously consider Amalga as a first step in simply providing better and easier access to the data which already exists in the numerous departmental diagnostic systems in virtually every hospital... I can see Amalga playing a very valuable role in smaller hospitals which lack an EHR and a robust IT team.”⁸

⁶ http://msnmoney.brand.edgar-online.com/EFX_dll/EDGARpro.dll?FetchFilingHTML1?ID=6065552&SessionID=GXR0W3Ds4DsPIO9

⁷ <http://www.microsoft.com/amalga/default.aspx>

⁸ <http://callitanything.blogspot.com/2008/04/azyxxialmaga-site-visit-and-review.html>, April 7, 2008