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From Disparate Data Points to Better Business Decisions

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Mass-production pioneer Henry Ford occasionally conducted tours of his assembly plant. During one such tour, Ford pointed to a finished car and proudly stated, "There are exactly four thousand, seven hundred and nineteen parts in this model car." Later in the tour, a visitor asked a plant engineer if Ford's statement was factual. The engineer first shrugged and then replied, "I'm sure I don't know, but I can't think of a more useless piece of information."

The story illustrates the great gulf between raw data and meaningful information. Despite the enormous volumes and diverse kinds of data that health care payers process daily, most health plans are challenged with cost effectively and efficiently converting the data into useful information that supports business decision making.

Payers typically operate multiple, disparate systems that may not integrate well or reliably. Distilling data from these systems into one, consistent format can be difficult. Health plans also use systems that, while designed to execute transactions such as claims processing and enrollment, inadequately support deeper analysis beyond basic operational reports.

In culling meaningful information from data in multiple systems, many payers allow business units to define their own approach to reporting, developing "cowboy" reports from homegrown databases and spreadsheets. Along with inconsistencies and high costs, such a siloed approach costs more. Given the greater cost and hassle, many organizations typically produce only the

minimum number of reports to support their operations. Further, they often have no time to analyze data to address issues before problems arise, let alone provide the advanced analytics needed to drive integrated healthcare management (IHM) and, hence, improved health care.

IHM is the systematic application of processes and shared information to optimize the coordination of benefits and care for the health care consumer. Payers that understand how to derive meaningful information that supports collaborative interactions with providers, consumers, and other health care constituents bring themselves one step closer to IHM and the U.S. health care system one step closer to radical improvement.

Business Intelligence: Converting Data to Information

Increasingly, payers are attempting to drive information sharing and improve decision making by buying or building business intelligence (BI) frameworks that extract data from multiple systems, convert the data to a standardized format, and store it in a data mart or data warehouse, where users can generate automated reports as needed, without extensive manual labor or delay.

Many health plans, however, have found that BI is fraught with challenges and pitfalls. Off-the-shelf BI solutions seldom meet the particular payer's unique needs, while homegrown and highly customized BI solutions often are expensive, yield disappointing return on investment, and prove difficult to deploy on schedule.

Best Practices for Improved Decision-Making Planning Makes Perfect

To build a successful BI framework, begin by defining a BI strategy that aligns with your organization's mission and goals. This requires the payer to evaluate the organization's mission and goals and the maturity of its BI capabilities. Additional considerations include:

- Aligning the business unit goals with overarching organizational goals;
- Identifying executive level commitment and support;
- Including business units in the development of the BI strategy; and
- Defining the competitive advantages of leveraging a BI strategy.

The plan should answer strategic questions such as, what will the long-term information footprint be? (The footprint will comprise current and future *users* of information as well as current and future *uses of* information.)

Getting a quick win will be critical in your ability to maintain executive and business support for the project. Identify mission-critical business decisions to address first, concentrating on those that will yield the greatest return on investment. Once you have achieved a quick win, prioritize the remaining initiatives based on the following criteria:

- Delivering the greatest immediate benefit;
- Reducing the cost of the implementation; and
- Helping lay the foundation for achieving long-term goals.

In focusing on integrating data from multiple systems, it is important to identify all of the data sources that drive business-critical decisions. If your payer organization operates multiple, disparate systems that support such functions as human resources, finance, case management, and pharmacy, good decisions will require that you tie all of the separate systems to the core administration system, which is the bread and butter of payer operations. Integration will be key, and an important objective will be for your

organization to automate its process of aggregating the disparate data elements.

The Business Must Drive the Need

To be successful, involve business owners at every stage of the development cycle. This starts with involving the business owners in gathering requirements and continues throughout implementation:

- Form a BI steering committee to help the organization evaluate and prioritize BI-related budget requests.
- Conduct joint requirements planning (JRP) and joint application design (JAD) sessions to ensure your requirements are complete.
- Create a data quality board, with representatives from each business unit and information technology (IT) to resolve disagreements about issues such as definitions of particular data elements.
- Ask your business owners to sign off on the requirements.
- Use a subset of your requirements team to test the BI solution.
- Ask some members of the requirements team to champion the solution as you implement it.

Once you have identified the BI requirements, develop a data structure to integrate sources into a single data store. To support reporting and querying requirements, data must be modeled in a particular manner. Dimensional modeling is considered best practice for data warehouse design; these models include the advantages of:

- Allowing you to run multiple queries simultaneously;
- Providing user-friendly access with simple naming conventions; and
- Offering simplified access for more people.

It is important to remember that dimensional modeling is an art, not an exact science. Use seasoned modelers to ensure the best results. Modelers with health care experience can significantly decrease the amount of modeling time.

Automate the data load capability by developing code that loads data into the target data store. Use best-practice ETL (extract, transform, and load) tools, which include scheduling and version-control facilities, to simplify this data movement process. Many payers develop homegrown ETL routines that expand over time to include multiple coding languages — typically with minimal documentation. In such cases, the data warehouse might include shell scripts, stored procedures, Perl, and Java. In such an environment, impact analyses and ongoing maintenance are complicated and, for employees who maintain the data warehouse, the variety of code presents a steep learning curve.

Consistent use of industry-standard ETL tools such as Informatica enables payers to establish a clear framework for scheduling and version control and to avoid creating a patchwork of code. Selection of ETL tools should be based, in part, on considerations such as ease of maintenance as well as usefulness to the development team.

Decision makers must trust the information they use. The degree of confidence that the user can reasonably place in the data is related directly to the efficacy of the validation routines used by the payer. Developing automated and robust validation routines will help ensure that the data going into the BI framework are consistently accurate.

A simple routine might count, for example, the number of records moving from one place to another, to ensure nothing is lost. More complex routines will validate that data have been transformed as well as moved. The validation routine needs to take into account what you are doing with the data.

To validate your data movement, consider these activities:

- Span the spectrum of simple record count matches to complex business rules analysis.
- Include automatic notification or error resolution.

- Tie the automated validation framework directly to the reporting infrastructure, preventing users from accessing reports with suspect data.

Time to Go Live

With the BI foundation built, you can offer the business users reporting tools, often referred to as the information delivery framework. Typically, payers use commercially available tools to deliver information across the organization. With the wide variety of reporting tools available on the commercial market today, how do you know which tool or set of tools is right for you? As your organization evaluates the possibilities, keep in mind that no single tool will meet all of the needs of all information users within your organization.

Best practice reporting tools address scheduled reports, analytics, and *ad hoc* access with simple-to-use mechanisms. It is important to drive the information delivery framework from the business needs. The tools should:

- Be easy to use;
- Use a business language semantic layer that translates business requests into data requests; this is where your “heavy lifting” will occur; and
- Provide information about the data, or metadata.

Many payers today rely excessively on IT to accomplish BI functions. This approach limits access to information and increases the costs and hassles associated with developing reports. Pushing information access to the end user solves these problems; however, it creates a clear need to document processes and provide written instructions. Many reporting suites facilitate the management of information about metadata directly. You can expose this information to two distinct audiences:

- IT documentation: for the IT person who supports your BI application; and
- User documentation: for the business user who needs to access the data.

Teach a Man to Fish

The last step is to carefully train the organization to use the new reporting tools and manage the roll out to maximize acceptance and usage. Establishing early-adopter groups — enthusiastic employees who will serve as train-the-trainers — will help your payer organization ensure acceptance and increased usage of new technologies and tools. The best early adopters are not always the JRP and JAD participants. Choose early adopters based on:

- Experience using information within your organization;
- Enthusiasm for the project; and
- Willingness to work with a framework that is not yet complete and assist in improving it along the way.

Rolling out new reporting tools in small pieces is a good idea. Some people are afraid of new technology, so you need to make sure they are comfortable with it. Rely on power users throughout your payer organization who are willing to help their colleagues learn the tools you have provided. These are users who can quickly pick up new technology and “evangelize” it throughout their departments. Leverage train-the-trainer techniques to help them learn to use and teach the technology.

Data warehouses grow as confidence in the system increases. The way you load new data into the system can change the meaning of it. To plan for the future, develop data quality boards — stewards of the business — that can continue to review data uses and guide how to

load it into the data warehouse. These stewards will be key to successful maintenance of the data warehouse.

For the first time, payers last year ranked BI the number two IT priority, according to Gartner.¹ Payers see information as the key to helping consumers make better health decisions. With access to new data sources and more advanced analytics (and internal and external pressures to improve performance), the health insurance industry is getting closer to turning information into action and profits.

To meet these growing needs, payers need strategic BI methodologies and analytical tools to access information and present it in various forms to constituents. “Cowboy reports” will no longer meet this need.

Thomas Carlyle, the 19th-century Scottish essayist, satirist, and historian, wrote, “Our grand business is not to see what lies dimly in the distance, but to do what lies clearly at hand.” What lies clearly at hand is an opportunity for payers to adopt this 10-step process that can help support better business decisions, drive the evolution toward IHM, and greatly improve the U.S. health care system. ■

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Endnote:

1. Galimi, Joanne, “Latest Survey Results Reveal Healthcare Insurer Business and IT Priorities for 2007,” Gartner Industry Research, Oct. 8, 2007.

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