



Beyond the Data Warehouse: Affecting Business Change

By John Ladley

Editor's note: DMReview.com is pleased to announce the addition of John Ladley to our lineup of online columnists. John's column, "Beyond the Data Warehouse," will appear the second Monday of each month and will offer new ideas and approaches to BI architectures, methodologies and knowledge-based applications to take your organization into the future. Check out his on-demand presentation "Extending the Return on Information - Collaborative Business Intelligence" at the www.dataWarehouse.com trade show.

Business intelligence (BI) and data warehouse (DW) technologies are now institutionalized and largely commoditized. In spite of many successes, there are still an uncomfortable numbers of shops with unfulfilled potential. Observation has uncovered significant shortcomings in the pursuit of ROI and BI success. Most environments are good at producing reports, but they have "paved the cow path" from a business perspective; that is, all the new shiny information is used for the same old processes.

BI has not been brought to bear on business **change**. BI and DW should not only create information. Once a report is produced, there is no guarantee that it will be used properly, if at all. There is no guarantee that an ad hoc query will be generated that produces huge benefit. The days of building nonaligned DW are over. Information that is not actionable is no longer worth investing in. It is crucial that businesses begin to extend BI beyond implementing a DW.

This column will look at the salient concepts for extending DW value. Later columns will look at specific techniques to move organizations into a higher level of maturity by extending the reach of business intelligence technologies. As time marches on, we will also explore new technologies, e.g., portals, enterprise information integration, meta data, unstructured data, etc.

Mind-Sets

First, let's adjust the mind-sets. Accept that the data warehouse ROI mantra brushes the tip of the iceberg. Granted, ROI is important, but what is measured to derive ROI?

Extending your use of BI means a more circular view of information usage. Production of reports for convenience becomes secondary. Linear data gathering and ETL processes that pump out "information" can only garner limited ROI. There must be a sense of wanting to mature or evolve the use of information in an organization. The business has to do something with the information. All information produced by BI and DW processes must be explicitly actionable.

Organizations that move beyond traditional BI will operate differently and look for the following benefits:

1. More presentation of analytics directly to the customer or supply chain partner. Customer scores, customer campaigns and new product bundles can all be produced from analytic structures. The result is higher retention, unique products.
2. More collaboration with information. Rather than middle managers getting great reports and making their own areas look good, information will be conveyed into other functions and rapidly shared to create collaborative decisions. This will result in more efficient, enabled workers. The return on human capital will increase.
3. The information produced from the DW can be fed into closed-loop processes, and automatic changes can be implemented. This dynamic reengineering will deeply reduce cycle times.
4. Nonstructured information becomes as important as data buried in rows and columns. Organizations allow searching of nonstructured data and will merge that information with structured conclusions.
5. Organizations use information to measure their internal workflows, effectiveness of internal management and monitor metrics that convey worker effectiveness. The result is a constant source of information to fine-tune processes and policies that increase productivity. Work flows and processes can be tweaked via quantitative study of how work has been done.

Alignment

After the mind-set surrounding DW/BI is adjusted, a conscious effort must be undertaken by understanding the interactions of people, technology and business processes with information. New flows, processes and communities should be established that ensure high value usage of business intelligence. A close examination of business processes will help establish better and on going ROI. This is accomplished via explicit alignment of BI/DW investment with business needs.

As usual, the devil is in the details. In addition, talking about changing business models, human capital and unstructured data smacks of business process reengineering or knowledge management. Historically, these terms have detractors within the corporate world. However, applying specific techniques to align business projects and information projects results in highly adaptive second and third generation DW.

Organizations that align their extended BI frameworks with their business will:

1. Look to the DW/BI area to provide solid reduction in costs, cycle times and increases in revenues.
2. Use business processes that maximize the value of information by linking business goals and objectives to use of the DW.
3. Create new business actions based on scenarios of ideal information and knowledge, then strive to implement the new processes.
4. Overcome information management issues such as semantics by creating a core, federated information and knowledge map that is based on business measures.

Maturity

Finally, the new processes and technology will contain mechanisms to support and measure workflows that are BI enabled. As efforts create new business models the enterprise is presented with an opportunity for valuable insight into self- measurement and how it reacts to information. The recipient of the BI results must be explicitly "incented" to use the information. Of course, the information must be of adequate quality and timelines to support taking action. An enterprise that is maturing will use its DW/BI framework to:

1. Monitor and manage the communities (not departments) that use information.
2. Measure information usage and create a baseline for organizational learning.
3. Measure inward-facing clicks as users interact with the DW/BI environment and understand how information *really* flows.
4. As organizations get more savvy with actionable information, they begin to blend in unstructured content with traditional row and column data. Information management and content management will merge.

Summary

Basing the evolution of a corporate DW/BI framework on new business models and actionable information usage places business intelligence into an endemic role in the technology infrastructure. DW is removed from center stage and relegated to the role of effective technology.

Moving beyond the data warehouse means developing a vision of how an organization would be more efficient and experience a greater return on their information assets based on thorough application of business intelligence capability. This means process and organizational issues must be confronted and measured. Business intelligence and the data warehouse moves from the role of end-game technology to the key component of strategies and business models that will propel leading companies and organizations beyond their competitors.

John Ladley is president of Knowledge InterSpace, a management consulting firm specializing in knowledge management, content management and business intelligence planning and delivery. He can be reached at jladley@knowledgeinterspace.com.

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Beyond the Data Warehouse: Affecting Business Change, Part 2

By John Ladley

In the first article of this column (<http://www.dmreview.com/master.cfm?NavID=68&EdID=5182>) appearing on DMReview.com on May 12, 2002, I made the case that to move beyond the delivery model of data warehousing (DW) and business intelligence (BI) to a *business sustaining model*, we need to focus more on *actionable* use of information. The DW needs to affect the business, not make business life easier. First, the DW/BI team needs to create business functional requirements. The typical list of functional requirements for an analytical environment usually contains:

- Move data monthly,
- Clean up customer name and address, and
- Provide access to integrated data.

Unfortunately, none of these are business requirements. In a mature field like DW, solid reduction in costs, cycle times and increases in revenue have to be guaranteed. BI efforts must be explicitly aligned to business opportunities. Data movement requirements, cleansing, query and ETL tool acquisition must take a back seat. Business functional requirements should resemble these ideas:

- Create new up-sell marketing programs,
- Identify and pursue cross-sell opportunities, and
- Share prescription data to identify drug interactions.

Specifying requirements and engineering solutions requires delving into business processes and change management. It means there is a whisper of business process reengineering (BPR) or knowledge management(KM) in moving beyond the data warehouse. This column will adapt some concepts from BPR and KM and apply them to extending DW value.

Techniques for Advancing the DW

There are three basic categories of techniques. Some should seem familiar; others may be different.

Alignment Techniques

These identify business requirements and align the business with the existing and potential BI projects. Examples of these techniques are:

1. Determining business drivers for the DW – A DW that moves beyond itself looks for

sustaining justification. This means understanding the explicit business drivers, goals and objectives the DW could support. Again, "better access to data" is not a valid business reason. An understanding of measurable business targets should be used to create an atmosphere of direct connectivity to the business.

2. Develop conceptual models to create baseline analytical and functional requirements. Two types of models are crucial for developing an apolitical set of parameters for an actionable data warehouse.
 - Measurement model – while not a model in a diagram sense, nevertheless a measurement model contains a conceptual list measurements and metrics that can be applied (or are applied, such as balanced scorecards) to prove to the business that goals and objectives are being fulfilled. In addition, this model directly supplies the technical architects with the baseline functional requirements. They can be algorithms, counts or simple signals an event has occurred. An example of a measure is distribution cost as percent of sale, loss ratio, yield, etc.
 - A high level or conceptual data model – This type of data model defines core subject areas, entities (super-type level) primary keys and attributes required to fulfill the measurement model. Many times this can be extracted from an existing model. Combining this information with the quantitative knowledge derived from the measures creates a solid baseline of requirements that can be reviewed by business users.
3. Develop "know if" scenarios – Create process flows of how the business will, or could, use the DW information. The key here is that the team cannot accept the business telling them " we know what to do, just get us the data." An example would be a process describing how customer Scores will be calculated and presented at various touchpoints. The result of this process will be the business recognizing and committing to new ways of using information Benefits of this technique are twofold. Obviously, it forces business users to think differently than just "getting data" and more toward business change. Secondly, the technique lays down a base line of process knowledge and human capital required to full exploit the DW.

Apolitical means that you will be able to derive the future DW environment you truly need vs. a fight over theoretical constructs such as atomic data warehouse, star schema and federated data marts - all great approaches within perfect scenarios. However, none of these constructs singularly support advanced BI or long-term actionable use of information (i.e, no religious wars).

Value Chain Analysis Techniques

These techniques develop models that depict where and when the business will use information to increase value or achieve goals.

1. Determine high-value processes that utilize information for corporate benefit – these are identified from the "know if" scenarios.
2. Create models of the high-level business flow of information, by SUBJECT AREA, as it will flow through the organization.
3. Analyze INTEROPERABILITY between all processes in this high-level flow. You are looking for latency issues, volume bottlenecks or areas where data controls will be critical.

Quantitative Design Techniques

These techniques determine agnostic frameworks for BI. That is, they identify what types of access layers and data movement is required for your particular data analysis and usage requirements. The agnostic label again emphasizes that a sustainable, actionable DW does not pursue a single vision of schema or operation (star schema, atomic, etc.) but creates a framework that can adapt to business needs over time.

1. Merge the analysis of measures and interoperability to determine a framework. (Framework here means the nature and sequence that the combination of granular data stores, summarized stores, operational stores etc. are implemented.) Cross- analyze measure and ISC latencies volumes etc. to shortlist required technology and meta data.
2. Use clustering techniques to determine applications that are aligned with business drivers. An example is to do an affinity analysis between measure attributes and objectives, or attributes and measures.
3. Correlate the framework requirements to the applications to identify a series of iterations to implement new BI applications. Use the measures to identify ROI opportunities and build the business case.

Once you get on a roll, the extended DW will support development of new business process models. These will reflect potential opportunities to use new information. After the frameworks have been defined and projects are designated, then a change management plan for business processes can be developed and implemented. After all, these techniques have most likely pointed out that there is an opportunity to do business better once the information is produced by the DW. The potential organizational changes require a comprehensive plan that systematically assesses and addresses the cultural impacts of sharing information.

Unfortunately, many DW shops do not believe that analysis and discipline can result in discovering a business case for reengineering. They will miss their opportunity to advance to a more beneficial second or third generation DW/BI. CIOs will have to argue successfully for more mature approaches to information handling.

John Ladley is president of Knowledge InterSpace, a management consulting firm specializing in knowledge management, content management and business intelligence planning and delivery. He can be reached at jladley@knowledgeinterspace.com.

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