

Brains Over Brawn: Six Steps to Smarter BI

Business Intelligence technology initiatives have had a successful first act. What will it take to get to the next level? Six ideas for enabling your organization to leverage information more strategically in today's technology and business environments.

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This white paper is intended for information technology leaders and professionals, data warehousing and BI architects, and line-of-business executives who wish to take business intelligence to the next level.

Key topics include:

- Why exponential growth in data is stressing existing BI architectures, and what to do about it.
- How companies of the future will depend upon analytics to sustain competitive advantage.
- Why tomorrow's BI applications must respond to the very different needs and expectations of a new generation of knowledge workers.
- Why new technology paradigms including semantics and Web 2.0 will change the face of BI.

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EXECUTIVE SUMMARY

Business Intelligence (BI) has had a successful first act. We've developed the tools, methodologies, and techniques for collecting data from multiple internal and external sources and publishing it for a broad range of uses and applications. People from a wide variety of backgrounds and skills are able to leverage this information to inform their decisions and track their results. But this is not the time for resting on our laurels, it is time for the next act, and this is where the plot really starts to heat up.

Driven by changes in the business environment and the relentless pressures of technology and competition, BI now has to solve a whole new set of problems. This requires opening our minds to some new ideas. Unlike a decade or two ago, the resources are there—relatively inexpensive hardware that can scale, network bandwidth, data management and manipulation tools, and open standards. The challenge lies in finding new ways to use them effectively.

We've identified six key factors that will enable BI to make it to the next level:

1. **Breakout BI – pervasive and operational**

Expanding the reach of BI to a much broader population both within and beyond the boundaries of the enterprise by combining operational and analytical applications.

2. **Champion an analytic culture**

Fostering an analytic culture and automating certain kinds of decisions.

3. **Get ready for the new workforce**

Creating systems that are attuned to the skills and experience of a new generation of workers that, unlike their predecessors, already incorporate technology in their personal lives.

4. **Semantic technology**

Boosting the usefulness of metadata through the use of abstraction, semantics, and ontology so that people and processes can communicate without added integration efforts.

5. **Web 2.0 + BI 2.0 = ROI**

Adopting the standards, techniques and power of the Web, especially Web 2.0, to add collaboration, economy of scale, agility, and creativity to BI products and implementations.

6. **Finally... supercharge BI!**

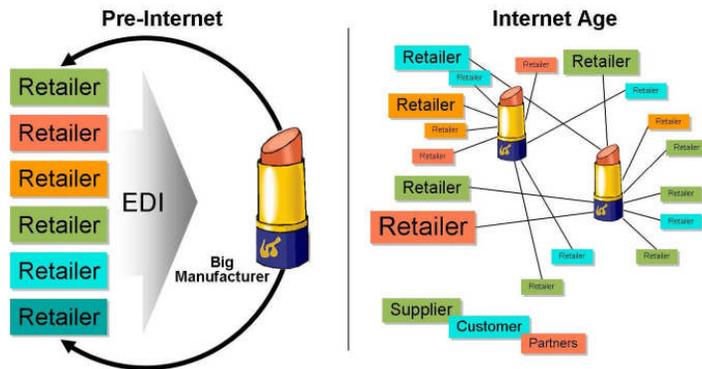
Understanding that IT costs are relative to the benefits gained. Traditional IT assessments still manage from scarcity, looking for solutions that require the least CPU, memory, and storage. In the past decade, the cost/benefit ratios have reversed. Failing to implement to the scale needed can be far more expensive in the long run than the upfront investment in adequate resources and tools.

For all of its innovation, BI suffers from the legacy phenomenon just like any other mature discipline—requirements are dictated by the current capabilities. Though market forces can act to nudge it forward, there is one overriding reality against which all of the others pale—the massive and unrelenting growth in the amount of data that organizations have to process and digest.

THE DATA EXPLOSION

One phenomenon that is both a cause and a result of the changes in the business environment is the explosion of data. The volumes of data are so massive and growing so fast that the industry is running out of words to describe it.

Externalization: Volume + Disparity



Why is the amount of data growing so rapidly? Many believe it is because of the amount of data “on the Internet,” but in fact, there is no data on the Internet. The Internet is a network and all of the data that flows through it belongs on devices that are behind someone’s firewall. You could say that all of the data on the Internet is, essentially, enterprise data. So logically, this explosion in data is primarily a result of the externalization of business as enabled by the Internet.

Before the Internet, networking between businesses was the province of organizations that could afford proprietary networks and EDI¹ projects, which were very expensive and only addressed limited types of exchanges by focusing on documents, not data in general. That has all changed, and the Internet has dramatically accelerated the speed of business. The cost of conducting business this way has fallen, and the reach of connected businesses is virtually limitless. Combined, these factors allow even the smallest organizations to participate, greatly increasing not only the volume of data, but the disparity of it. The result is an explosion in the number of sources and classification schemes. It’s not the inability to move or map this data that interferes with the smooth processing of it. Instead, it is the lack of understanding that renders data unusable without a great deal of effort and latency (the length of time from the receipt of data until it is usable).

Electronic Business-to-Business (B2B) transactions before the Internet were orderly processes, designed around a one-to-one relationship where both partners understood the shared handshake or, alternatively, a one-to-many relationship, where one partner was in control of the process. In today’s connected businesses, many-to-many relationships prevail. There may be no central figure dictating the form and semantics of the interactions. Standards belong to everyone, and to no one.

Even when externalized processes are more or less in sync, there may still be a need to integrate incoming data with existing legacy systems. In addition, new issues and opportunities can arise spontaneously that call for receiving data from partners’ legacy systems, and there isn’t time to standardize the data interchange. A new business opportunity, a joint-venture, a new market, a new country—all raise questions around the best way to exchange data.

Existing BI architectures are not prepared for this; they react too slowly and are unable to capture the nuances of multiple meanings. Metadata is too thin and too fragmented. It doesn’t contain enough information for a computer to make a decision about its meaning. This is a critical shortcoming for our first success factor, expanding the reach of BI.

¹ EDI, or Electronic Data Interchange, is a way for organizations to exchange information in a standardized document format, such as a Purchase Order.

1. BREAKOUT BI – PERVASIVE AND OPERATIONAL

BI started small, as an individual or departmental effort, and grew through the marketing efforts of software companies. It didn't start out as an enterprise initiative in scope, or even as a super-enterprise initiative, which is needed now. The underlying theme of BI was always one of getting people to investigate data. That's still important. Tools for reporting, analysis, data surfing, statistical and predictive modeling, visualization, and dashboarding are all in place. None of that will be replaced. But BI needs to reach into a wider audience, both within and beyond organizational boundaries.

On a different front, aggregating and syndicating data is a growth industry because there is so much information and so much value that can be gained from it, with the proper packaging. With the externalization of business, a lot of good information lies beyond the firewall. Learning how to navigate and negotiate with third-party data providers will be crucial to success, but time is of the essence.

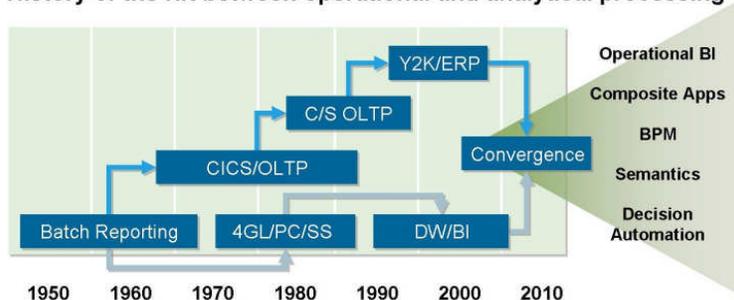
Another major difference between today's BI and the BI of the future is decision automation and the extension of BI to operational applications.

Getting to Operational BI

Linking today's data warehouse architecture and BI tools to in-process operations is possible, but it isn't easy and it is tricky to maintain. "Best practice" data warehouses are too slow, there is too much latency in the refresh cycle and they are too rigid². Business requirements have become dynamic. Databases need to provide near real-time data update and lightning-fast response times. BI tools, at least the largest incumbents, are still mostly based on a desktop metaphor and need extensive reworking of their architecture for them to operate with adequate service levels and zero latency. A typical DW/BI architecture is a best-of-breed amalgam with many steps in the integration and load process. Because BI evolved with a usage pattern that could tolerate some downtime and lots of latency, it cannot step up to the requirements of 24/7 operational systems in its present design.

Operational and analytical tools started out as separate disciplines, but they no longer need to be. This separateness is an historical artifact that has little basis for enduring. The rift happened long ago, as operational transactional systems took center stage and analytical work evolved along a separate path. Thanks to things like Moore's Law, however, the historical justification for separating these systems is vanishing. Instead of managing from scarcity, which would prescribe separating analytical systems so as not to disturb the performance of operational systems, the abundance of resources allows for more rational systems architectures to emerge, such as hybrid operational/analytical Web applications built with components.

History of the rift between operational and analytical processing



² There is some discussion in the industry about "real-time" data warehouses, but most data warehouse architectures are designed with latency and batch processing.

This artificial gap between analytical and operational processing is closing fast. More than any piece of technology, this one phenomenon will change the way BI is sold and used. Through simplicity and openness—alignment to the work that people do and encompassing the lessons learned and tools developed from the consumer and business Web—BI will have a huge impact on how people use information at work.

2. CHAMPION AN ANALYTIC CULTURE

Tom Davenport suggests³ that companies can no longer compete on traditional discriminators like customer service, product development cycle time, or even regional semi-monopolies because copycat competitors can arise anywhere in the world, quickly, through technology. For this reason, competing with analytical ability, understanding your business processes, forcing out waste and latency and a host of other activities, are the new keys to success. Davenport suggests analytically-oriented companies are characterized by the following traits:

- Senior executives who strongly advocate analytics and fact-based decision making
- Widespread use of descriptive statistics, predictive modeling, and complex optimization techniques
- Analytics used across multiple business functions
- Enterprise-wide approach to analytical tools, data, and processes

But how do you compete on analytics? First of all, you have to redesign analytical methods. Today, these methods are largely singular, disjointed, personal efforts. They have to become collaborative, iterative, and fast. One award-winning BI recipient at a conference recently claimed that 95% of their queries execute in under five minutes. They have 24,000 queries a day. That means that 1200 queries a day take longer than five minutes. So the question you have to ask is, is there a better way? Are people tolerating 100 hours or more a day of latency because they think that's normal?

It's normal because BI and data warehousing are still firmly rooted in batch processes and staged data. The rise of Business Performance Management (BPM) is a good example. No one can argue that consistent, understood metrics presented in dashboards are a bad thing, but is this the best we can do?

Types of Analytics

Analytics is a pretty broad field, but let's separate it into two halves. On the one hand we have analytics that are prospective, performed interactively by an actual analyst, and on the other hand we have those that are performed by a machine.

The first type has historically been performed by “quants,” those with a mathematical and/or statistical background. In fact, analytics can be performed by anyone, and good analytical software exists that can extend from the novice to super-expert level. No one should build analytical models they can't understand, but that is more of a management issue than a technology issue. People are pretty analytical anyway; they just often lack the words and the framework to talk about it. Just ask them how their compensation plan works.

The other form of analytics, performed by a device, is a long-overdue promise of computing, but we've learned a lot and trained ourselves not to expect too much, but also not to expect too little.

Build Smarter Systems

Pervasive BI, also known as “unattended BI” is a term used to describe the widespread use of BI, not only by people but by systems. One very promising opportunity is Decision Automation—creating predictive models that are used by rules engines to automate certain kinds of high-volume decisions⁴.

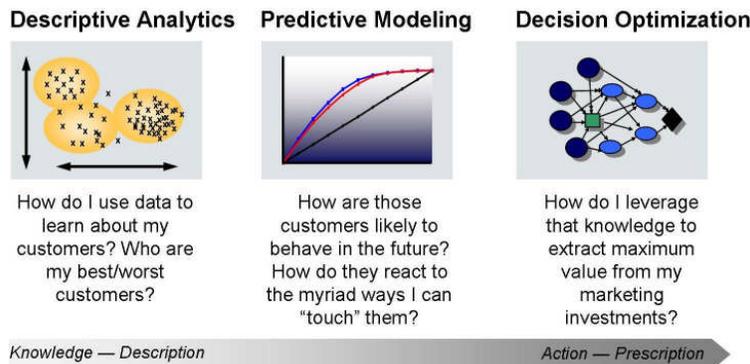
³ Davenport, Thomas H. and Harris, Jeanne G., “Competing on Analytics: The New Science of Winning,” 2007, Harvard Business School press.

⁴ For more information on decision automation, also known as decision services, see Taylor, James and Raden, Neil, “Smart (Enough) Systems,” Prentice Hall, 2007.

This would not include air traffic control or crossing guards at elementary schools, where even one wrong decision is catastrophic. Rather, granting or extending credit, dynamic pricing, handling vacation requests, or call-center scripting are a few examples of high-volume, low-risk decisions.

Like it or not, things tend to go faster or get bigger (at least data volumes are). Decision Automation is one tool to shift the workload a little. Information technology is capable of doing much more of the repetitive, low-value work people do every day, and that limits their ability to do the higher-value tasks for which they are capable. In fact, most knowledge workers would welcome the opportunity to pass off these tasks and concentrate their efforts on the things they are trained for. After all, isn't it about time that the computer did the hard work and left us to do what we do best, instead of the other way around?

More sophisticated analytics improve results, but getting there is a journey.



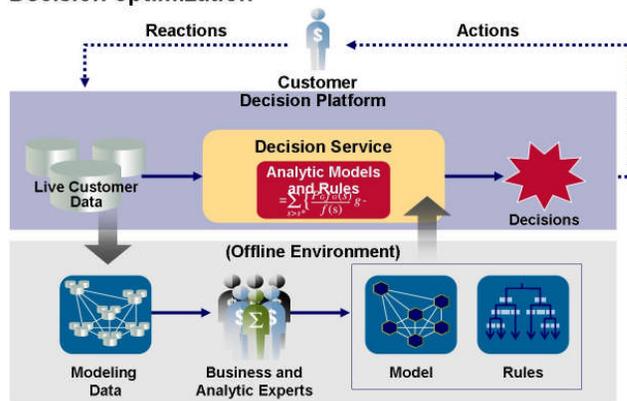
The application of analytics will move an organization's BI efforts from simply informing decisions to taking action and tracking the effectiveness of those actions, thereby closing the loop.

To effectively deploy sophisticated analytics in an organization, there is a need for access to data, and lots of it. Descriptive and predictive modeling, also known as data mining, do not operate on small sets of aggregated data, such as that found in most cleaned-up data marts. The most detailed, elemental data are rich in attributes, which tend to be dampened when summarized. The unseen relationships between the instances of those attributes are the subject matter of knowledge discovery and the building of predictive models. A column-oriented database like Sybase IQ that can quickly slice and dice through mountains of data is a prerequisite when building your organization's analytic platform.

Because people from different domains, at different levels of skill, need to participate in an analytical culture, software tools that can accommodate this diversity are needed. More importantly, these tools need to support collaborative and iterative use patterns, such as the ability to animate analyses and/or create guides. Software tools need to explain the models to those who need to approve them but lack the ability to completely understand them. And perhaps most importantly of all, there needs to be an ongoing effort to gradually transform the organizational culture to compete on analytics. There are other factors and potential hurdles along the way around people, process and technology in order to achieve optimum results.

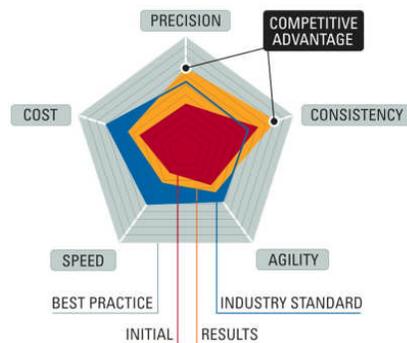
Only when all of the pieces are in place and working together seamlessly can optimal results occur. A closed-loop process of observation and recording, analysis, action, and reevaluation is needed because the best models have a limited lifespan. Analytics is not a project, it's a process.

Decision optimization



There are many possibilities for competitive advantage through decision optimization:

- Precision – making more profitable and targeted business decisions
- Consistency – interacting with customers the same way, regardless of the means of interaction
- Agility – being able to quickly adapt to changing business conditions
- Cost – providing the ability to increase the scale and scope of decision management with only an incremental increase in cost
- Speed – returning decisions in as near real time as adds value for both the organization and its customers



But there has to be a defensible technique for evaluating the value of your efforts. Traditional measures don't always allow you to prioritize the value of investments in decision technology. In particular you must be able to balance cost savings and top-line benefits. For example, what if automating a fraud detection system caught more fraud and required more staff to be hired? There is an old saying: What you measure is what you get. If your methodology for measuring your programs is incomplete, you can perpetuate some very bad decisions.

So far, we've covered "thinking big" by being analytical, but there are issues in how we implement the new BI that are not technical, and are being overlooked by the industry.

3. GET READY FOR THE NEW WORKFORCE

When raising the issue of privacy, there is a very large divergence of opinion between age groups in our workforce. The current generation of knowledge workers, baby boomers and some a little younger, are quite concerned about the loss of privacy created by technology and some government practices. On the other hand, the entering generation of knowledge workers is largely uninterested in privacy issues. This sort of yawning gap between generations over technology manifests itself in very important ways with BI implementations as well.

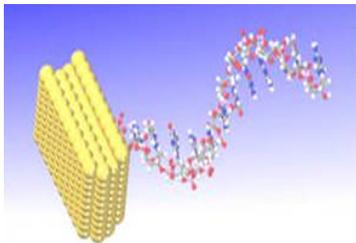
Most “best practices” and methodologies for deploying BI are based on the experience practitioners gained over the past 20 years. That generation of workers was largely uncomfortable with computers and was not overwhelmingly pleased with the performance of IT. The only bright spot for them was the advent of the PC and spreadsheets.

BI vendors picked up on that trend (gradually) and attempted to make their products as “easy to use” as a spreadsheet, but in the process, dumbed down their capabilities to all, but the most skilled users were able to access more complex features through application interfaces and/or application development. This left most people with no choice but to go back to spreadsheets, which resulted in the current pyramid model of BI use, with only a few users able to work the software.

There are two lessons here. First, if you can’t provide functionality that is relevant for people, they will find another way. The second is more subtle—there is a new generation of knowledge workers with a very different attitude about software tools.

The New Generation Gap

The picture below shows a single strand of DNA connected to a gold-plated nanochip. The implications of such a thing are staggering, but what is even more staggering is that such things already exist in R&D labs and will be commonplace in a few short years.



The amazing success of phenomena like Google, with three billion users a day, and other widely-used sites such as Wikipedia, YouTube, FaceBook, Yahoo and eBay can be attributed to a few simple concepts:

- Give people what they need
- Make it simple
- Don’t charge them an arm and a leg, at least not upfront

Even elementary school kids learn to do research in the new fashion these days—they Google it. Use of information technology is so pervasive in daily life that the providers of these technologies look at their offerings like consumer products, not software.

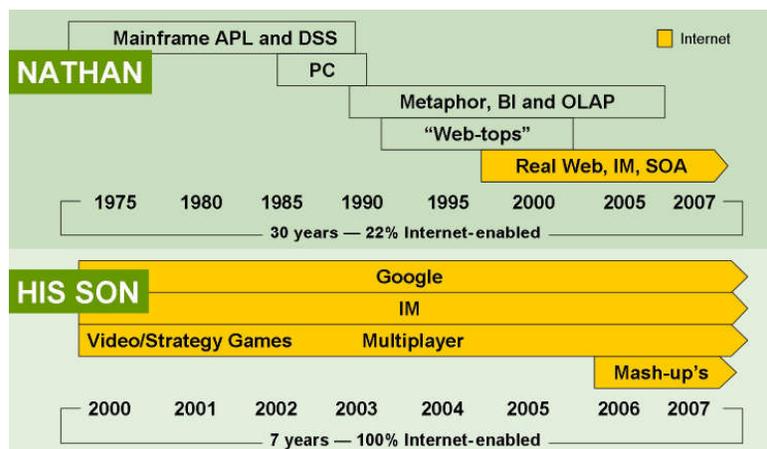
Baby boomers did not grow up with a casual relationship to information technology. To them, air conditioning and automatic transmissions were revolutionary. For most baby boomers, with some exceptions, computers and software were a mystery and even an unwelcome intrusion into their comfortable world of paper reports and staff meetings.

The next generation of workers, NextGen for short, already uses technology in ways that challenge all of the current notions about work, information, and power. To the same extent that the preceding generation could not understand their parent's fixation with the Depression, the NextGen is stunned by baby boomers' lack of mastery or, in many cases, even interest in the application of technology to work. The current generation selectively incorporated technology into their work; the next generation incorporates technology into every aspect of their lives.

And it's not only the employees that are changing.

In some industries or even in all industries for particular functional areas, 75% of the people actively working may not be employees at all.

In the chart below is a hypothetical case of a baby boomer knowledge worker named Nathan and his NextGen son.



To illustrate the impact technology has on people with different experiences, compare the careers of Nathan and that of a young professional with just a few years of work experience who is working in analytics. Compare the relative amount of time spent in current Internet-based technology as a percentage of their entire experience in computing.

Nathan began in 1975 as an actuary, using mainframes and command-line interfaces to painstakingly construct models in APL and other decision-support systems. These models were impossible to document and they were even more impossible for anyone else to understand. This era was followed by a brief foray into building analytics on early PCs, a not very rewarding or productive period. Nathan was rescued by the emergence of the BI industry and ultimately, data warehousing. By the mid 1990s his firm was using browsers to deliver analytics. But, in truth, these were nothing more than "Web tops": browser-based interfaces that operated much like their client-based hosts. It wasn't until nearly the year 2000 that the power of the Internet became clear and they started building analytics as true Web applications. So, in total, Nathan spent seven of thirty-two years (22%) of his career in analytics in current Web-based, collaborative technology.

The NextGen'er, on the other hand, has spent his entire career in this environment. In fact, his intense use of computers began long before he entered the workforce. He has no conception of mainframes, structured programming, menu systems and all of the other anachronistic artifacts of those halcyon days. His entire experience with technology is one of highly interactive, useful, and collaborative tools.

He has no patience for release cycles, training classes, non-Web applications or the dev/test/prod cycle. Today, he is probably at work, maybe from home, on a conference call using Web conferencing about a data aggregation project in the biotech industry, while he is downloading music to his iPod, updating his Facepage and playing a 3-D video strategy game with three people in Asia he's never seen. If someone told him to wait 3-to-4 months for a report to be in production that he developed in three minutes, he would be dumbfounded. Then he would find a way using various Web 2.0 gadgets to hack up the report himself and publish it.

Any planning for future BI and analytic architecture and tools must take into consideration the audience for these efforts—largely, the NextGen. Their experiences as well as their expectations demand something more functional, more relevant, and more satisfying than our current generation of BI tools.

4. SEMANTIC TECHNOLOGY

The Semantic Web is a collection of tools, techniques, and standards with the goal of transforming the Web into a useful repository of information with a rich layer of description (semantics) that software applications can understand, and even draw conclusions from. Some feel that in the foreseeable future, all of human knowledge will reside on the Web and will be accessible without additional effort. Whether this is plausible or not is subject to debate, but what is of more immediate interest is how semantic technology will affect the way we operate in the near term. Anyone using a wiki, like Wikipedia, or getting feeds from RSS or even using social networking tools like LinkedIn or Facebook, is already using semantic technology, and you can expect much more of this in applications.

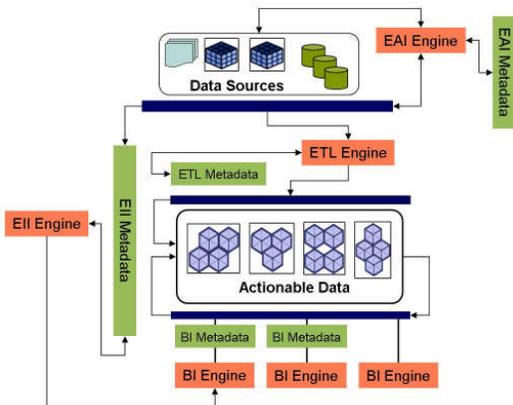
“ Architectures of the future will be suffused with semantics at many different levels as this represents the most promising way to deal with the information explosion we're all dealing with. ”

Dave McComb and Mills Davis
Semantic Technology Conference 2006

The most immediate and obvious application of semantic technology is the massive problem of making sense out of exploding data volumes, and integrating (or at least understanding) overlapping data from multiple sources. The externalization of business, brought on by the economics of the Internet and the adoption of open standards, will transform the integration problem from a few internal silos of data to hundreds or even thousands of little islands. Exposing the API and methods of a service is useful for creating loosely coupled applications, but without exposing the semantics of the data, the integration problem becomes unsolvable. Our existing metadata, taxonomic and data integration tools have not been able to catch up.

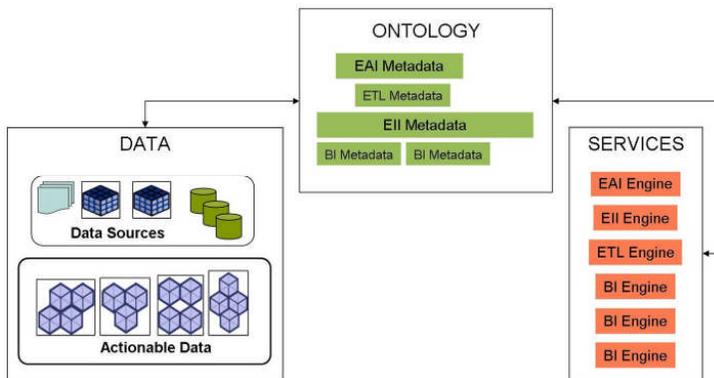
What does that have to do with BI? Everything. You may not have to understand and use everything on the Web, but there can be no question that the number and disparity of data sources you have to deal with is growing.

Peter Drucker once said that information is “data endowed with relevance and purpose.” The philosophical discussion of data versus information is interesting, but Drucker’s use of the words “relevance and purpose” is more pertinent to this discussion. Data integration should always be conducted from the perspective of relevance and purpose. Too often, these efforts begin from grandiose visions of “a single version of the truth” for an entire enterprise and fail due not only to overreaching of both the technology and the resources, but more importantly, they do not take into account what is relevant to the users of the utility and the purpose of it. These initiatives are often focused on practice and methodology instead of requirements and results. No one has ever demonstrated that all of the information in an organization can be integrated into a single repository for general purposes. It simply isn’t possible, even if things were static, which they are not.



In the simplified diagram above, metadata (BI, EAI, ETL, EII) is depicted in the green rectangles, and applications (BI, EII, EAI, ETL engines) are depicted in the orange rectangles. These applications include Extract, Transform and Load (ETL), Enterprise Application Integration (EAI), and Enterprise Information Integration (EII). Each application that uses data from one or more other sources creates its own metadata. Unfortunately, these metadata schemas are only useful for the task at hand. As each step in the process creates more metadata, the same data elements are defined over and over, but never in a coherent fashion. Metadata is disjointed and fractured. It only makes sense within its own application. It is as brittle as the data.

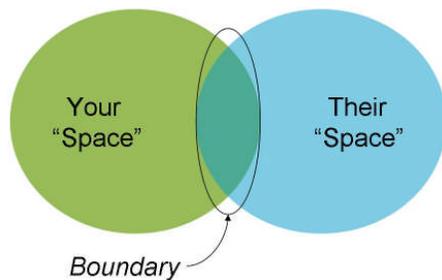
Same elements, re-architected



Now if we took all of the orange rectangles (EAI, EII, ETL and BI engines), the green rectangles (EAI, ETL, EII and BI metadata), and the actionable data (represented by the blue cubes) and lumped them together in supersets, we could have services, ontologies, and data. This is where we're heading. Ontology is not the sort of word that people warm up to right away, but it has a fairly simple application in semantics. It captures the meaning of things by defining them and showing their relationships to other things, allowing devices to perform a sort of reasoning and drawing of conclusions based on the content of things, not the structure.

Ontology is a kind of abstraction. Whether ontologies will be the vehicle for semantics is an open question, but separating the various sets of data from the services that use them, and running the connections through some sort of shared metadata, is not only an elegant solution, it's probably the only one that is sustainable. Ontologies are easier to join than relational metadata because they are based on graph theory, which is a very powerful way to describe meaning and relationships and it allows computers to reason without being smart.

Anywhere that meaning, information, data, use, compliance, governance — anything we do — crosses boundaries



Maintaining coherency in a bounded space is easy. Data warehousing is based on this principle—select your subject areas and model them, then map data in the analytically-derived data model. Before enterprise systems like ERP or CRM arrived on the scene, a large organization might have to map portions of dozens of application programs, each with its own (hopefully) coherent data structure and embedded semantics. The problem was putting more than one of these together. That was the fundamental problem of data warehousing.

Another problem with data warehousing was that the flow was in only one direction. Once data is transformed and loaded into a data warehouse structure, it is very difficult, or even impossible, to send it back in the opposite direction or reconcile it with data in the source systems directly. Semantic technology offers a very significant and very fundamental difference—it excels at pulling things together that are different, without changing them. So it is possible to integrate data that you don't actually move. Semantics deals with the meaning of things and the relationships between them, not just the definitions. A semantic map—like ontology because of its declarative nature—can actually produce more information than it is given, because it can reason. Not reason in an intelligent way, but in a structural way, which is extremely efficient at things like deductive logic.

5. WEB 2.0 + BI 2.0 = ROI

The next generation of BI will incorporate the innovations of Web 2.0. That won't be easy, because existing BI is structurally incompatible with Web 2.0. But BI incorporating ontology with RDF, OWL and SPARQL, collaboration through wikis, not to mention mash-ups, will put into motion analytical ecosystems that are almost unimaginable now.

There used to be only two places where software innovations occurred—software vendors and IT departments. Because of the Web, and especially because of the features of Web 2.0 (which runs on semantic technology), innovations are happening in millions of places.

Web 2.0 will bring the things that BI currently lacks: scalability without drastic cost, social networking, collaboration, rich applications built easily, and the end of mega-version upgrades. These are the features that are needed to make BI operational and pervasive, functionally suitable for the NextGen, capable of wide and deep applications of analytics, and streamline the data integration problem.

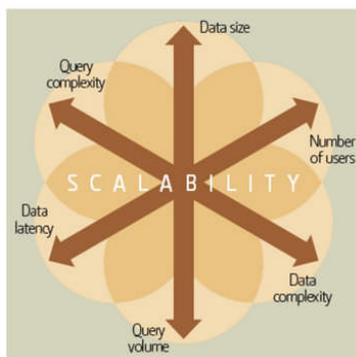
6. FINALLY... SUPERCHARGE BI!

The amount of data in a database is only one measure of scale, but it is usually the one most often cited as a measure of the power of a particular platform or design. Richard Winter, President of the Winter Group, defines scalability across six axes, each of which is equally important.

It doesn't really matter how large a database is, it matters how effectively the platform can service the applications it is tasked with. If only a small portion of the database is routinely being queried, size is not much of a benchmark. The real measures are:

- How many users and queries are relying on it?
- What are the volumes, complexity and variety of queries?
- How complex is the schema?
- Is there a trade-off in update performance and query performance?
- What is the latency for viewing fresh data?

Multi-dimensional scalability



Growing data warehouse requirements stress all the dimensions of scalability.

Source: Winter Corp.

All of these things are important. Without multi-dimensional scalability, the promise of “smarter BI” will not be realized. In particular, the ability to handle data in real time, to decide (programmatically) to move data or use it in place, and especially to capture data in stream to provide complex event processing, activity monitoring and decision automation—all of these are essential components of the new BI and are rapidly becoming crucial elements of competitiveness. The enemy of all of these capabilities is latency: the time it takes to make use of information once it is recorded or sensed.

In the chart on the next page, the value of information is depicted as a classic decay curve. The greatest decrease in value happens in the earliest periods and flattens out over time. While it is true that latency can cost you money, this isn't the only curve. Consider a hand of poker—not revealing

the data makes the hand more valuable for a while, and then the value collapses. Realistically, some data needs time to mature; for others, its value is invariant over time. But in most cases, especially those that involve the flow of information, the value of information degrades quickly and the ability to use it as quickly as possible is a definite advantage.



Based on a concept developed by Richard Hackathorn.

Real-time performance matters in BI. Alerts and notices are of little value if they occur after the fact. A notification that a warehouse shortfall will cause out-of-stock conditions by Tuesday morning doesn't really help if received on Tuesday morning. Being able to codify your policies for underwriting is of little value when your applications start arriving through the Web and it takes an underwriter two days to assemble the needed information. When people are relying on BI to help them with on-the-spot decisions, the freshest data and the fastest response times are needed. When operational systems are given analytical capabilities to decide which orders to send, which stock to purchase, even which bills to pay, they can't process at transaction speed when the BI services are running at the speed of yesterday.

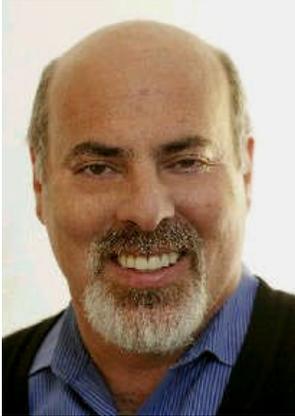
IN CONCLUSION... FOR NOW

BI today is characterized by aggregation and latency of data. Though responsible for many positive innovations, BI has not yet reached the larger audience of people who can benefit from it. To facilitate the innovations that business will demand, such as operational BI, the externalized business models of the Web and decision automation, aggregation and latency have to be reduced. New user interfaces are needed, and even no-interface schemas are required to support unattended operations. Because of the greater volumes of data available, and the computing and network resources required to leverage this data, greater reliance on analytics is the key to improved competitiveness.

The people in your organization queued up to work in this new environment are coming to the work with extensive technical skills and a culture of relying on technology for their personal as well as professional lives. The BI frameworks that worked for the previous generation need revision.

The Web is the lab now, the cauldron of creativity. Large-scale projects and long-term deliverables for BI are over. Almost every "best practice" for enterprise computing should be subject to harsh review. Everything has changed and BI is going to be better for it. There are many more lessons to be learned as technologies evolve and our approaches to leveraging information and knowledge become more sophisticated.

ABOUT THE AUTHOR



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