Top 10 trends in Business Intelligence for 2009

White paper

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Introduction

2009 promises to be a year of significant change for IT vendors and users alike, due largely to the continued weakening economy. But impact will vary by industry, region, and market sector. IDC estimates that US IT spending will shrink from an average growth of 3.7% in 2008 to 0.9% in 2009, with industry growth ranging from 5.2% in healthcare to -9.9% in the securities and investment services industry.[1]

Emerging markets will continue to outpace developed markets with three times the expected growth, but even that represents a significant decline, and emerging markets will not provide as strong a counterbalance as they have in recent years. In November 2008, IDC estimated 2009 worldwide IT spending growth to be 2.6%, but in early February they adjusted that figure to 0.5% growth in 2009.[2, 3]

Although it's difficult to get a consensus growth figure, most analysts see business intelligence (BI) as a relative bright spot in the IT spending forecast, with a projected growth rate of between 2% and 10% (vs. the 9–12% projected in early 2008).

Out of necessity often comes invention and needed change. Altered priorities will force businesses to become more efficient. Retailers will reinvent themselves to deal with new socioeconomic and technological realities. Financial services companies will have to develop innovative ways to acquire and retain customers. Cost takeout may be the #1 criterion for evaluating BI and data warehouse (DW) projects in 2009, but right after that are improving customer management capability related to protecting the customer base, work associated with mergers and acquisitions (M&A) integration, and risk analysis. The telecommunications industry will see large-scale consolidation and aggressive expansion into the cloud services business. In healthcare, it is expected that the Obama administration policy will drive investment in cost control and efficiency in the US. And in all industries, organizations running IT like a business will look to BI to increase efficiency and contribute to business value.

This year's Top 10 BI Trends list includes two macro trends (#1 and #2) that are not specific to BI, and may not have immediate direct impact, but will be so overwhelming in their effect on all sectors of the enterprise software market that they are worth noting here.

Trend #1: Consumerization of IT

Through the 1990s, enterprise and military technologies set the pace for business technology innovation. Today, consumer technologies drive IT technology innovation and adoption. Enterprise buying decisions much more closely follow consumer trends than in the past, and GenXers' (the "tech natives") influence is increasing. GenXers want employers to use wikis and podcasting. They get their news via Twitter and publish their calendars on Facebook. They prefer texting to e-mail, and using PlayStations to PCs. This trend will drive changes in BI such as increased visualization and greater collaboration, and add new sources of data. Social networking will dictate how information is delivered and used, as it is changing how people operate in business and driving different consumption patterns.

[1] Source: IDC, "U.S. IT 2008-2012 Forecast by Vertical and Company Size: Implications of the Economic Crisis on Industry," December 2008. (IDC #215947)

[2] Source: IDC, "Worldwide Black Book, Version 3, 2008," November 2008. (IDC #215519)

[3] Source: IDC, "Worldwide Black Book, Version 4, 2008," February 2009.

Trend #2: Post-Western tech economy

Western countries will not continue to be the sole source of technology innovation. World-leading businesses of the future are the ones who will make the shift from western-centric business models to become true globally adaptive organizations. They'll seek the best ideas from anywhere in the world and distribute research and development (R&D) activity to include emerging markets. Emerging regions will transition from being simply suppliers of low-cost talent to 1) developers of best practices and technology, challenging multi-nationals to localize their value chain, and 2) consumers who set global standards. Western companies will be driven to using social network-based collaboration tools to integrate the creativity and work of a globally distributed workforce and partner ecosystem.

Much innovation in BI, i.e. event processing, advanced analytics, integration of unstructured data, automated data classification, decision automation, etc., can benefit and accelerate from technology research and the modern and collaborative development techniques used in countries like India. Need has outstripped availability and the organizations who can leverage this R&D efficiency will be well positioned in the new economy.

Trend #3: BI increases in importance and impact making data governance and data quality more critical than ever

In a *Computerworld* survey, 42% of respondents expected their overall expenditures for BI tools and solutions to increase from 2008 to 2009.[4] Compared to previous recessions, there appears to be more awareness that scrimping on the means to understand, analyze and better manage your business may have negative consequences down the road. And that a bad economy provides a good opportunity to innovate and take market share from those who are less prepared. As stated in *The Economist* in November 2008: "Paradoxically, a recession can be a fantastic time to launch innovations."[5]

For the past three years, master data management (MDM) and data quality have been prominent trends on our list. M&A as a result of the weak economy will likely drive further data integration needs in many industries, supporting continued demand for MDM.

In last year's trends list, we noted that the number of well-formed governance committees and processes remained few, but predicted that companies would begin to move from theory to practice in 2008. And in a 2009 HP survey, preliminary results show that 36% of respondents indicated that they have a formal enterprise-wide data governance process in place, with another 46% planning to implement one in the next 12 months.

[4] *Computerworld*, "BI: Proven Tools for Competitive Advantage in Uncertain Times," MarketVibe (December 2008): page 9.

[5] *The Economist*, "Desperately Seeking a Cash Cure," 20 November, 2008.

The global financial crisis will lead to industry and government requirements for greater transparency about corporate finances and operations. Regulations coupled with economic reality will dictate use of improved information and analysis to make better decisions and increase efficiency and adaptability to rapidly changing business environments. Organizations that develop the infrastructure and culture to support competing on analytics and fact-based decision-making are more likely to survive the economic crisis and be poised for growth when the economy turns around.

Trend #4: BI buyers are more scrutinizing

Increasingly, BI investment must be tightly linked to specific business objectives. Organizations are getting stricter about requiring that the business objectives be clearly defined and the business value quantified before allocating funding for BI and DW projects. We are seeing requirements for shorter payback periods and "self-funding" BI.

Organizations do not want custom code, but some do want tailored implementations to optimize their solutions and only pay for what they need. We see continued strong demand for design consultants to provide basic building block components such as data models, pre-configured reports, domain metrics, etc. that can be flexibly mixed and matched in a tailored configuration.

Despite predictions that Software as a Service (SaaS), which has become mainstream in OLTP, and cloud computing, which is rapidly gaining interest, will make inroads in BI, we do not believe that either will gain momentum in BI in 2009. Exploiting your data to help out-maneuver the competition requires unique, confidential, ad hoc analysis and close involvement from the business units. This, plus the fact that data management and data integration are so fragmented and poorly implemented in so many large organizations, makes BI a relatively unattractive candidate for SaaS or cloud computing at this time. In HP's 2009 survey, over 95% of respondents indicated that they have no plans to use SaaS or cloud computing for BI in the next 12 months. However, as organizations solve their data management issues and as business units take increasing control over the BI budget from IT, their demand will drive software companies to develop profitable means for delivering BI software and services via alternative models to traditional licensing.

Open source software has moved well beyond the tipping point of acceptance in enterprise solutions. Large software vendors can and must incorporate open source software innovation into mainstream branded products, decreasing time to market, reducing development costs, and enabling vast resources to provide enhancement over time.

Meanwhile, one approach which has become popular for BI as a way to meet users' demands while mitigating risk, and one that the economic downturn may accelerate, is the use of managed, hosted and outsourced services, including outsourcing analytics, along with data integration, reporting and data modeling.

Trend #5: Market demands lower BI complexity

Until now, the complexity of building and managing a BI solution has been a deterrent for many. There is now a rapid march toward lower complexity and lower cost BI. There are different approaches, but the quest may result in a disruptive innovation that focuses on a new performance dimension of simplicity. Here are a few examples that we see:

- Consolidation
- Use of appliances
- Outsourcing, consideration of SaaS, cloud computing
- Service-based BI/data analysis on demand, which would include operation within a service-oriented architecture (SOA) environment, and easier interoperability with other vendors' products and data from other applications. Users would expect software packages to be encapsulated as services, and use federation where necessary to get a consolidated view in a distributed data warehouse environment.
- Self-service, commoditized BI for the masses, ala Microsoft Project Gemini; enabling power users to use Microsoft Excel® to do powerful analytics and share results via collaboration tools
- Re-invention of data marts which are now dependent, adhere to corporate standards for data representation and role-based access, run on efficient cost-effective platforms. We see an increase in the use of ad hoc aggregations and disposable data marts.

Trend #6: Analytics moves to the front office — More sophistication in the hands of business users

Companies are looking to apply advanced analytics to ERP, CRM and supply chain management systems in order to achieve strategic competitive differentiation. The traditional approach to analytics has been to hire modelers with PhDs who spend three months developing a model, up to a few dozen or a few hundred per year. The modeling runs offline to do customer segmentation, for example. Capturing this sophistication in tools that can be used by business managers enables the development and use of not hundreds, but thousands of models, with a much shorter time to market. This approach makes it possible for someone who doesn't know what a neural network is, to use one, as mainstream capability.

There is an Internet influence on interfaces as well. Instead of pulling data from multiple sources and building an analysis cube, the user will go to a portal and request data elements. Provisioning will be automated rather than manual, assuming that a data integration infrastructure has been put in place.

Trend #7: Data integration focus gaining new momentum

Many BI systems in place today were built for strategic decisions, the sweet spot of traditional BI. Analysis is done by a small number of people, over a period of time, allowing for analysts to manually cleanse and reconcile data from multiple disparate sources, and to ensure that business rules are applied appropriately and consistently. Many organizations would like to increase their intelligence by giving more employees access to these analytic tools, and applying them to operational decisions. But it's more than a matter of increasing capacity for data volumes and query throughput, and giving the users simpler tools. The limitation of first generation BI systems is not simply their inability to handle large volumes of data and users, but their lack of data integration rigor, including data cleansing, MDM, and metadata management.

Operational analysis does not afford the time for manual oversight to ensure proper quality, reconciliation and classification of the source data, which may have to be served to applications or processes where the decisions are then made. Organizations intent on leveraging their data and expanding their analytic capability are recognizing the value of an underlying infrastructure which provides well-integrated, high quality data to applications, processes and people.

According to Gartner, "Contemporary pressures are leading to an increased investment in data integration in all industries and geographic regions."[6] In addition, "recent focus on cost control has made data integration tools a surprising priority as organizations realize the 'people' commitment for implementing and supporting custom-coded or semi-manual data integration approaches is no longer reasonable."[7] The weak economy will drive M&A in many industries, resulting in a further need to integrate disparate data to get a single view of the business, supporting continued demand for MDM. And financial regulations are likely to increase. Transparency needed for regulatory compliance requires a consistent and complete view of the data which represents the performance and operation of the business.

In addition to early implementations, we are now also seeing the results of more recent data warehouse modernization and data mart consolidation projects that were undertaken to cut costs, improve performance and provide more headroom. Where the approach was to move existing data structures to a new platform to meet those immediate goals without addressing the fundamental data integration issues, organizations are left with the same unwieldy data structure as before, preventing them from expanding the use of the data warehouse to meet additional business needs.

Organizations are realizing the need for an overall enterprise information management (EIM) strategy in order to leverage data as a corporate asset, to apply advanced analytics that will help them achieve a discipline of fact-based decision making, and eliminate the wastefulness of different teams using different tools with little consistency and lots of overlap and redundancy. They are also seeing that data integration is a critical component of an overall EIM strategy. Inconsistent meanings create barriers to reliable analytics. As the boundaries between application domains like CRM, ERP and product lifecycle management continue to erode, there is a growing need to create an enterprise-wide information strategy to ensure semantic consistency for all users, applications and services.

[6,7] Gartner, "Magic Quadrant for Data Integration Tools," by Ted Friedman, Mark A. Beyer, Andreas Bitterer, 22 September 2008.

Trend #8: The line is blurring between data warehouse, operational data store (ODS) and operational systems

Initially, users expected ERP systems to provide needed reporting. When these systems couldn't meet requirements due to backlog and overload, users turned to the data warehouse. Traditional BI satisfies most strategic reporting and analysis, but not real-time operational reporting with its associated needs for high-volume real-time data updates, high availability needs and high throughput rate of operational queries. Operational reporting has high overhead and often ties up the data warehouse, preventing other analytics from running.

We are seeing operational reporting as a top business initiative, and increasing interest in the use of a data provisioning platform as companies need to extend the data warehouse to more operational use. The platform needs to go beyond the capabilities of an ODS, providing operational reporting, data cleansing, metadata management and data warehouse staging.

Such a data hub enables agility and new applications, while preserving and enhancing the existing data warehouse structure, and does it in a much more efficient and cost-effective manner than using disparate independent data marts. A hub that connects to existing enterprise service buses (ESBs) and allows architectural flexibility, including federation for remote data, reflects the changing nature of the business while allowing centralized control over data quality and data access privileges.

The result is the ability to do operational BI which involves embedding and automating analytics in a process so that a person — or another process — can act on generated information in real time, making decisions and taking action in the context of a business process.

Trend #9: Convergence of structured and unstructured data

This has been a topic of interest for years, but it is coming up in more conversations with current and prospective customers than ever before. In the HP 2009 survey, 60% of respondents indicated that they have an identified need to analyze unstructured data as part of their BI systems, with over half of those either doing the unstructured data analysis today, or developing the capability.

As retailers strive to be more customer-centric, and healthcare organizations strive to efficiently improve and manage patient care, and financial institutions strive to better detect risk and fraud threats, they will hit limitations by not including unstructured data in the ever-increasing analysis.

Using only structured data as a proxy for "what is happening" and making an inference from that, without correlating with available unstructured data, can lead to very wrong decisions. For example, coded diagnoses targeted for the payer often do not indicate what's really wrong with a patient. Analysis of cancer case reimbursements might indicate that more money should be put into brain cancer research because of its prevalence. But, if any cancer metastasizes to the brain, it's often coded as brain cancer because of the greater likelihood of reimbursement. Patient file notes would indicate the true diagnosis.

Another common business driver is to mine call center service logs and e-mail together to better understand customers, for early problem detection and to discern actual cause of problems.

Technology advances in the past several years, many from HP, now enable BI systems to move way beyond storing text as binary large objects (BLOBs) in relational databases or requiring manual interpretation and integration of text from content management systems with structured data in the data warehouse. Offerings span a range of capabilities including text mining and query, intelligent search, classification and conversion from content to structured data.

Trend #10: Complex Event Processing (CEP) comes of age

The first generation of successful enterprise data warehouses uncovered new insights and led to innovative ways to improve business. These systems are optimized for one-time queries on mostly static data captured in the data warehouse long after the event that generated it has occurred. The paradigm is long-lived data, short-lived queries.

CEP, a logical follow-on from business activity monitoring (BAM), enables analysis of data streams and linking of seemingly unrelated events in a meaningful way. Instead of storing data and having the execution of a query as the catalyst for results, a continuous query system effectively "stores" the queries and new results are initiated by the arrival of new data, generating real-time insight and/or triggering appropriate action. (The new paradigm is long-lived queries, short-lived data).

CEP has heretofore been conspicuously missing from the mainstream BI arena, necessitating stovepipe CEP implementations that are only loosely integrated with organizations' existing visualization, reporting, dashboarding, information modeling, metadata, and other BI infrastructure components. We are seeing indications of that changing as leading BI vendors partner with and acquire CEP engine providers, and as BI users incorporate CEP in growing numbers.

Conclusion

Conducting business in an economy that has no precedent makes fact-based decision making more than a nice-to-have. Furthermore, increased efficiency and productivity will be needed to help lift companies, industries and countries out of the recession. The pressure to improve business process and resource allocation, and the need to make better decisions have moved BI from mainstream to mission critical, which explains why growth is expected to be double that of the software market overall.

To make the most of BI, first you need to get the data right. And indeed, according to surveys by industry analysts and HP, the greatest BI challenges and the leading BI initiatives focus on data quality, MDM, attaining a single version of the truth, and providing a data foundation for doing analysis and making better and faster decisions across the enterprise. This is a market where, even in a low-growth economy, there is continued demand for advisory services for architecture design, product evaluation and system integration.

While financial scrutiny will be a requirement for all IT projects in a weak and uncertain economy, BI buyers who emphasize business results and embrace the competitive potential of exploiting technology will focus less on limiting spending and more on optimizing the investment they are making. Out of recessions often comes new technology and innovation. This time we may see leading organizations moving from offline only analysis using siloed data and applications to an environment where BI is integrated to the extent that it can improve processes, enable better decisions and increase organization-wide productivity. These are the companies that will outperform the competition and be poised for growth when the economy recovers.

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