

Top Data Management Trends to Watch in 2012

A new year brings with it a new set of business challenges as well as fresh opportunity for forward-thinking companies to navigate an increasingly complex data management landscape.

As our ability to capture and process information continues to grow at a breakneck pace, enterprises now more than ever rely on intelligence gleaned from data to make better-informed decisions across all aspects of the enterprise. From marketing to operations, finance to ecommerce, data is a critical fuel for informed decision making. Ensuring a smoothly-flowing and high-quality supply of data requires concerted effort and discipline. The data management space is ripe with new approaches and technologies, offering a clear market advantage to organizations that succeed in mastering their data. This paper looks at some of the trends impacting data management and gives recommendations to help organizations overcome modern data challenges.

Data Governance

Core to any data initiative is the need to understand what each piece of data means, where it comes from, and how it must be controlled. Of particular import is data that is subject to regulation. Enter Data Governance, which is going to remain a hot topic for many organizations in 2012. While some trends such as Agile Data Warehousing (mentioned below) might suggest a trend towards more tactical, line-of-business (LOB) driven initiatives, the success of such LOB initiatives depends heavily on proper systems of governance.

On the one hand, this will help LOB's quickly source data from the right place inside the organization, and avoid reporting errors that often result from an incomplete understanding of the data context. On the other hand, by ensuring that the latest corporate, industry, and government requirements are adhered to, LOB's can avoid costly fines, customer satisfaction issues, and embarrassing PR that can result from misappropriated data.

Corporate-wide applications of data governance programs will continue to focus on compliance and regulatory laws in the coming year. Consumer protection acts such as Dodd-Frank, enacted in 2011, will continue to force enterprises to standardize data management processes and systems. Tools such as Embarcadero's ER/Studio are becoming a necessity in this era of explosive data and increasing regulation—to ensure data are properly documented and defined while making the data information is available to all stakeholders in a timely fashion, for use in designing business intelligence and other IT systems.

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Metadata Takes Center Stage

If data serves as the fuel to the decision-making engine then metadata—the data about the data—is the oil that keeps the engine turning. Today's regulatory and privacy concerns, and emphasis on business intelligence, are

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going to increasingly make metadata a concern for businesses. Data governance is, in its most basic form, about establishing metadata and communicating (as well as enforcing) it. Gone are the days when metadata was an arcane subject known only to a selected group of specialists. In a society where knowledge means competitive advantage, metadata will make its way into the hands of more and more knowledge workers.

Data and Metadata Visualization

Complex, voluminous information can be difficult to understand using traditional methods. The right type of visualization can uncover patterns lurking inside of complex data sets. New methods of visualization are giving information specialists ways to understand types of data that have traditionally not been able to be visualized. This applies not only to data, but also to metadata. It can be difficult to understand complex data flows and mapping rules between systems when they are represented formulaically and in a tabular fashion. Much more powerful and easily understandable are techniques such as Visual Data Lineage (VDL), available in ER/Studio, which can greatly accelerate BI initiatives by taking esoteric and often undocumented information about the organization's information anatomy, and making it approachable and transparent.

Another interesting example of new visualization applications is database performance analysis. Ensuring fast database performance is of the top priorities of database professionals, and a challenging one in light of rapid data growth. DBA's normally rely on a host of complex statistics from the database in order to identify and remedy hotspots resulting from poor-performing SQL, unusual application loads, and other problem causes. A growing trend in this space is visualization of measures that are direct and indirect indicators of database performance. A fairly obvious effect is an increased understanding of systemwide performance at a glance so DBAs can quickly identify the proverbial needle in a haystack that is responsible for the slowdown. The result is better and more consistent overall system performance and productivity gains for the seasoned professional.

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What is more interesting, however, is the effect that visualization has on the novice. Many developers don't understand databases well enough to write effective SQL. The accumulation of thousands of un-tuned pieces of SQL has two effects when it finally all hits the database (usually after it's all been written): one is to consume far more resources than necessary; the other is that poor SQL statements that are executed very frequently can cause systemic problems in the application. Visualization makes SQL tuning much more accessible to developers. Providing a visual SQL tuning tool to a developer has proven to dramatically improve the quality of their code, which eases the burden on DBA's and on the system.

In other words, visualization has the power to transform business in domains involving complex information. Innovative database tools, such as DB Optimizer, have been leading the way in this space and will continue to gain favor.

Socialization

With IPOs of socialization giants LinkedIn and Facebook in the news, many companies are looking at ways to gain the benefits of socialization inside of the corporation. 2012 will be a year where enterprises continue seeking and implementing solutions that leverage the power of social platforms in order to improve collaboration inside the enterprise. Though solutions for enterprise information sharing such as wikis and Sharepoint for document sharing have become the standard collaborative tools, new social media solutions with more real-time flavor—like Yammer and Chatter are becoming prevalent. As software vendors seek to cater to this need, expect an increased number of in-application socialization features, with immediate

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information sharing that cuts down on lengthy, tedious email threads and smorgasbord Intranet postings.

One area where socialization can be expected to enter is with apps. Consumer app marketplaces in the mobile space have set a new standard for app search & collaboration, via ratings and reviews. Expect enterprises to create their own app marketplaces, to gain efficiencies across their portfolio of software. An example of such a solution is AppWave, which provides self-service app management and can serve as a repository of information about what software is used, how it is used, by whom, and in what scenarios it is applicable. Socialization stands to break through organizational silos, improve efficiencies and encourage innovation.

In the same way that visualization can increase the proficiency of non-experts (for example with visual query tuning for developers), socialization has a similar effect: making individuals more effective by connecting them to their peers and to specialists. In data management, an increased use of socialization tools will allow non-technical users increased visibility into data processes that are relevant to their roles. Expect collaboration to collide with data governance, metadata, and visualization, with transformative potential for the business in the coming year. These combined trends have the potential not only to make your experts more effective, but to significantly impact productivity and innovation for all knowledge workers.

Consumerization of IT

As more tablets and smart phones crowded into the enterprise this past year, so did end-user expectations, in a trend that's become known as the consumerization of IT. With the increased pressure on companies to provide rapid app-like access to

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software, expect to see more and more tools that mimic the easy, seamless experience of a smart phone. Expect also to see hubs around which users can socialize, one of which will be an enterprise app marketplace, which mimics consumer app marketplaces by providing search, socialization, and self service. “Consumers have grown accustomed to online marketplaces that are easy to search, navigate, and access because the stores are embedded into their client environments while purchasing is integrated into pre-existing accounts.” (Ovum white paper, 2011)

Platforms such as Embarcadero's AppWave, which deliver on-demand access to tools in the form of an app marketplace, address a multi-generational audience. The power of the consumerization trend is that it spans the gamut from younger

professionals who have never owned a land line phone and rely exclusively on a smart phone experience with “zero-touch” deployment; to retirees who are suddenly finding the latest gadgets to be understandable, useful, and appealing. This universal appeal means makes it inevitable that these techniques will find their way into the enterprise, and we predict this will happen sooner rather than later. Expect data management tools to be carried along for the ride.

The Cloud

Like it or not, the cloud is real and it's here to stay. For data management professionals, this will provide new opportunities in the coming year as more organizations look to the cloud to solve a variety of problems. One relevant area is the ability to spin up massive amounts of hardware for a short time, to carry out massive amounts of complex processing. A constraint that will continue to be real in the coming year is that complex data processing operations involving massive amounts of data will be limited by size of the pipe that gets the data into the cloud. Governance becomes particularly important, as shipping data offsite to cloud providers has numerous implications, particularly when those providers are outside the country. In fact, 63 percent of companies are concerned about security in the cloud, according to Information Week worry (2012 BI and Information Management Trends). A lack of standards and

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inoperability compound the public cloud issue, and are likely to mean that the use of the cloud will occur broadly (across many domains) but in tactical isolation, such as Salesforce for CRM, EC2 for data crunching, and Yammer for socialization.

The cloud also provides new opportunities involving Software as a Service (SaaS). While SaaS is normally thought to involve browser-based software, new techniques are evolving that avoid expensive re-training and give enterprises the benefits of SaaS (such as centralization, usage tracking, and on-demand usage) for any type of app, including traditional PC-based productivity software, such as data modeling tools like ER/Studio. For companies that want to get the best of SaaS without retooling and retraining, an in-house “private cloud” for delivering traditional software applications as SaaS “Apps” may be the answer. This allows the software to sit safely behind a company’s firewall where control and customization is controlled by an organization. In the case of in-house applications, this provides the additional benefit of not having to rewrite a perfectly good desktop app in order for it to be deployed as a service. Embarcadero’s AppWave uses a combined private/public approach.

Agile Data Warehousing

Data marts and enterprise data warehouses must be designed to support an agile BI environment that enables data-based decision making across the enterprise. Decision makers, whether in IT, operations, or marketing, can no longer afford to wait for a report to be generated and instead must be empowered via rapid delivery and, ultimately, self-service. Trends in data governance, metadata, and visualization will all work together in 2012 to

enable a more agile approach towards business intelligence and analytics. Tools that empower rapid design, assembly, testing, and diagnostics are essential for an agile business intelligence environment. Heterogeneous, multiplatform tools like Embarcadero’s All-Access will provide high-powered fuel for building and maintaining the agile data warehouse.

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Database virtualization, the decoupling of the database layer from physical hardware, allows better sharing of resources and more scalable computing. This trend will continue in the coming year. Many companies, in their hardware

virtualization efforts, leave database virtualization as the last item on the list, for two reasons. One is that databases are among the most critical pieces of IT infrastructure. The other is that a poorly-managed virtualized environment can significantly lower database and application performance.

When focusing on moving databases to a virtualized data center, it will become increasingly important to ensure databases are running at optimal levels. When combining multiple physical machines to one, your margin of error for resource consumption is almost nil. Enterprises won’t have the luxury of spare hardware cycles as they did when one physical machine was running one database. A rogue database now has the potential to negatively affect several systems.

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Tools that quickly pinpoint performance bottlenecks such as DB Optimizer, which provide real time analysis, are crucial assets in this brave new virtualized world.

Big Data

Coinciding with the explosion in data and the need to analyze it is a set of “big data” databases whose use has been rapidly entering the mainstream. Many of these databases resemble ETL or data transformation tools more than they do traditional relational databases. Their powers of data crunching involve compromises in data integrity, so while they are very effective for some types of workload, they are generally not a substitute for SQL. Proponents of “No SQL” (as in “SQL is going away”) have now modified their view toward one of coexistence by rebranding the original NoSQL acronym as NOSQL, meaning “Not Only SQL”.

While big data might be treated differently than relational systems, rules around compliance still exist, no matter how data is stored. HIPPA, Dodd-Frank and other government regulations apply to all representations of data. Thus, a social security number in a key-value store is subject to the exact same regulatory requirements as if it were in a relational database; and the term “Customer” is subject to the same types of ambiguity regardless of the type of system where it resides.

In the coming year, as big data starts to make its way into your organization, companies must ensure that it doesn't get left off of the data governance map. Initially this will be done visually by adding big data stores into conceptual and enterprise models. As big data becomes more pervasive and clarity begins to emerge around where it fits, look to move beyond conceptual representations to tighter integration into one's data dictionaries.

This trend will continue for years, and won't happen overnight. By starting to keep an eye on it now, you will ensure that big data doesn't end up in a silo, or get overlooked when it comes to governance.

Whether these great sea changes in data management are caused by evolutions in technology, explosions in data, or consumerization is debatable. The uncontroversial fact is that this exciting area is rapidly changing and those that adopt and respond with agility in the new year will come out ahead.

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