



DATAMONITOR WHITE PAPER

The Importance of Data Integration on Realizing the Business Value of Enterprise Applications

A whitepaper by Datamonitor

Publication Date: November 2008

DATAMONITOR VIEW

SUMMARY

Based on ongoing enterprise application technology market research and monitoring, as well as the results of a survey of 25 senior IT executives in the US, Canada, Western Europe and Asia-Pacific, Datamonitor draws the following conclusions:

- The business environment will remain highly dynamic and organizations will respond with initiatives to reduce costs, grow market share and improve customer service.
- Core ERP and CRM modules have emerged as operational platforms that underpin those business initiatives. However, despite massive ERP/CRM investments, enterprises are failing to address the fundamental data challenges.
- CDI/MDM are driven by the realization that business processes depend on right-time data availability/quality.
- At best, traditional custom-coded data integrations are not future proofed, while in the worst scenarios they are failing. Consequently, traditional approaches are being replaced with comprehensive data integration platforms, which can address the following three key problems:
 - data quality;
 - lack of single view of the data;
 - poor understanding of data lifecycle/metadata.
- Data integration platforms are expected to solve tactical problems but the focus may shift to strategic issues.

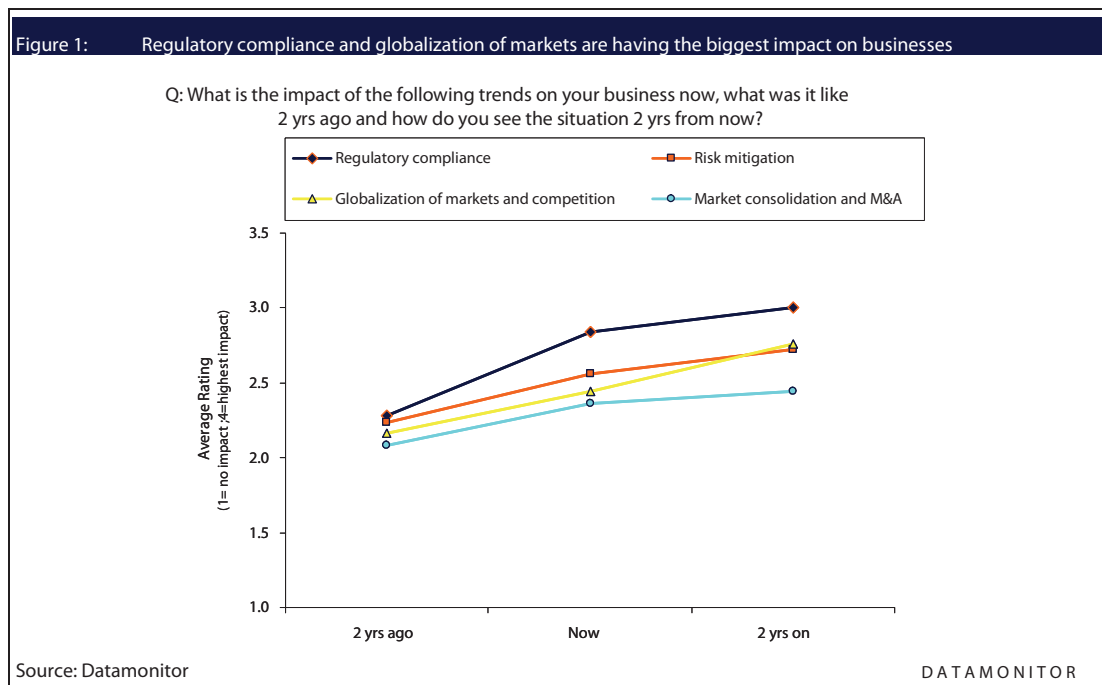


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ANALYSIS

The impact of globalization, consolidation and regulation is set to increase

Beneficial geopolitical conditions, the quickening pace of communication, and the low price of energy at the beginning of the 21st century enabled the flow of goods and services on an unprecedented scale. Recent changes in the macroeconomic outlook notwithstanding, the business environment remains extremely competitive and dynamic. At the same time, a more stringent regulatory compliance regime now exists in most sectors of the economy, following a series of high-profile business scandals in the early 2000s. Since the current global macroeconomic challenges could be attributed to the insufficient regulation in certain sections of the financial markets, the demands for tighter control and risk management are likely to increase in the future.



Business trends such as globalization and stringent regulatory regimes are well understood by stakeholders in the enterprise technology market, as evidenced by the responses to Datamonitor's survey. According to the study, all four principal business factors are judged to have higher impact now than they had two years ago. All current trends will remain relevant, but the impact of regulatory compliance and the globalization of markets and competition will be felt particularly keenly during the next two years.

Organizations are adapting by reducing costs, growing share and improving services

Progressively competitive global markets, stringent compliance frameworks and market consolidation are all having a real impact on businesses. Of course, such far-reaching changes in the business environment cannot bypass IT strategies.



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Datamonitor observes that in such market circumstances, organizations are trying to do more with less while improving customer services, and expanding revenues and operational efficiency.

Judging from the Datamonitor survey of senior IT decision makers conducted for the purpose of this study, cost reductions are the top priority. A range of other similar surveys that Datamonitor has conducted during 2007 and 2008 corroborates such findings. IT decision makers fully understand the need to improve margins in order to remain competitive. While reducing costs can lead to improved margins, the same result can be achieved by expanding the business. According to the survey responses expansion is identified primarily in terms of growing market share, although revenue expansion is clearly a factor too.



The twin demands of reducing costs and growing business are framed by the need to improve customer services. This is understandable, as competitive markets amplify the importance of customer services. After all, acquiring new customers tends to be more expensive than retaining existing ones. Outstanding customer experience boosts customer loyalty, reducing costly churn and making existing customers more receptive to cross-selling. In exceptional circumstances, excellent customer service can convert customers into brand evangelists. In competitive markets for highly commoditized goods and services, excellent customer experience may represent one of the few remaining axes of differentiation.

Core ERP and CRM modules have emerged as key operational platforms

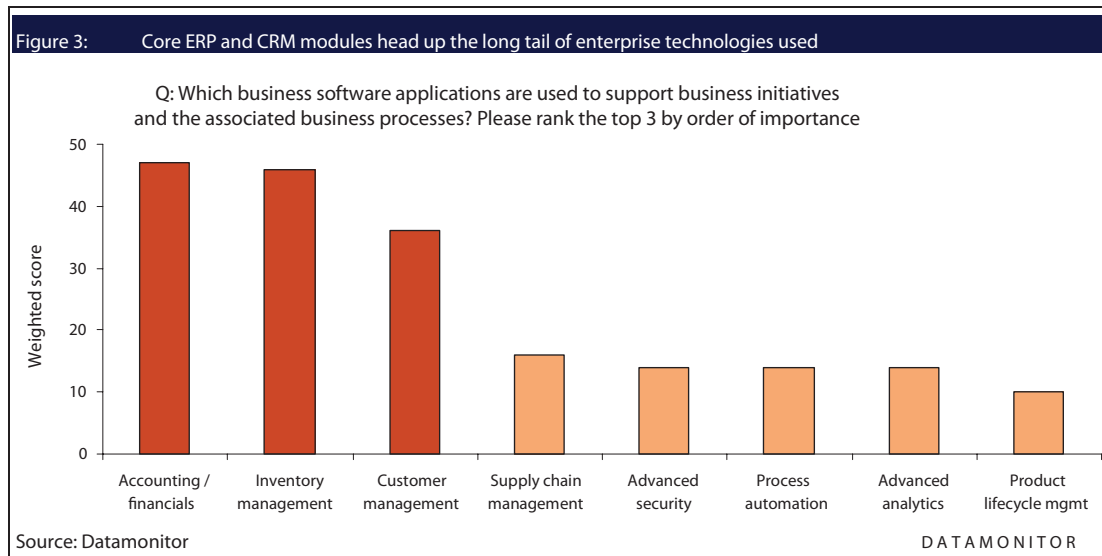
In order to respond to the imperative of reducing costs while expanding business and boosting customer experience, companies have been turning to the current generation of enterprise applications. More precisely, enterprises are increasingly relying on core ERP and CRM modules. These applications are widely deployed in order to establish a key operational platform, and carry out the existing business processes in a structured and joined-up manner.

Cross-industry customer management tools and ERP modules, such as accounting and financials, or inventory management, are ubiquitously deployed, accounting for the bulk of enterprises' application portfolio spending. These three



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modules map neatly onto the primary business objectives of increasing efficiencies and improving customer services, which makes their ubiquity unsurprising.



Along with the core ERP models, which optimize business processes, and CRM applications, which boost customer management capabilities, enterprise application platforms include additional application modules. The choice of auxiliary modules depends on an enterprise’s organizational structure and IT maturity level, as well as the nature of the business process supported. This means that enterprise applications platforms can include modules as diverse as supply chain management, product lifecycle management or advanced analytics. However, these modules are typically deployed as satellites to the core enterprise applications, working in conjunction with the core ERP and CRM applications, which are clearly the mainstay of business process execution.

Despite massive ERP/CRM investments, enterprises fail to improve data, the key asset

The importance of ERP and CRM applications is reflected in the massive scale of investment in enterprise technologies. The success of the vendors providing such technologies is evidence of this in itself, particularly the wildly successful enterprise application duopoly of Oracle and SAP.

More specifically, Datamonitor estimates that in 2007 enterprises spent over \$37 billion on enterprise application software licenses alone, not including maintenance, services or other associated costs. Given the central role of ERP and CRM applications as the core business process execution platform, it is not surprising to discover several cautionary tales in which failed ERP and CRM projects have materially damaged corporate revenues.

Although these negative examples are undoubtedly outliers, it is clear that ERP/CRM deployments are not a trivial matter. Yet despite the crucial contribution of ERP and CRM projects to organization success, and the significant amount of resources dedicated to these platforms, enterprises often fail to consider the key success factor – data.



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Business processes are structured sequences of information and action

Business processes can be thought of as a structured flow of information, tasks and events across an enterprise. Since the primary role of enterprise applications is to support the execution of key business processes, data need to be thought of as the integral part of business processes and enterprise applications. Without data there can be no business process or enterprise application. While the importance of data is intuitively understood, many organizations do not externalize the importance of data, instead focusing on processes and applications without giving much thought to the data behind them.

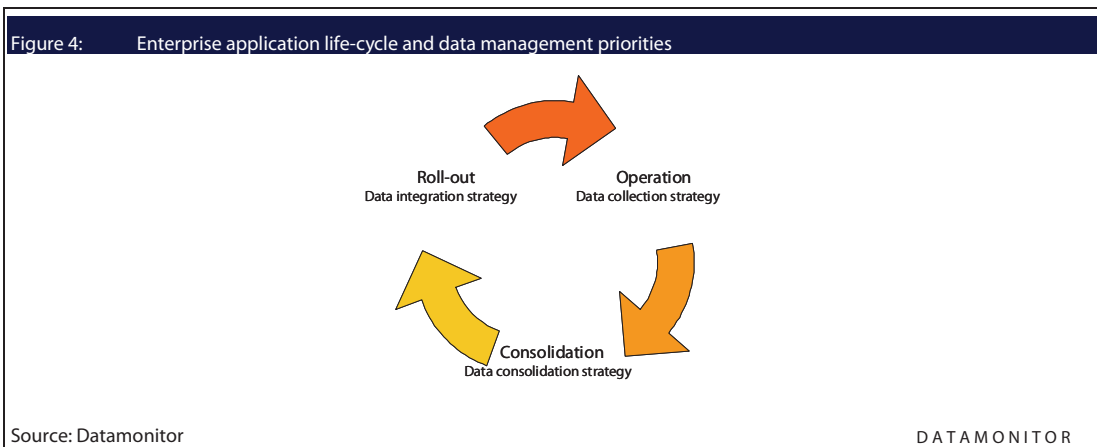
Enterprise application platform implementations focus on functionality and ignore the data

The reasons for neglecting the data element of enterprise application platform deployment are not altogether surprising. Enterprise applications vendors and their channel partners focus on application features, application deployment and business process re-engineering, with the associated change-management challenges. Given the high cost of implementing enterprise application platforms, the focus is understandably on making the applications operational, which includes change management and enterprise-wide adoption. With the focus on the functionality and user buy-in of new business processes, the data that support those processes are relegated to a secondary concern.

The insufficient attention paid to data throughout the enterprise application lifecycle is at best limiting the potential of enterprise application platforms, and at worst contributing to the rate of enterprise application platform failure. Datamonitor highlights the importance of considering the impact of data in all phases of an enterprise application life span. Data matter in the rollout, operational and consolidation phases of enterprise application lifecycles.

Rollout: application rollouts present the ideal opportunity to establish a data integration strategy

Data integration and data quality issues are frequently overlooked in the application rollout phase even though the initial stage of the enterprise application lifecycle presents the ideal opportunity to tackle these challenges. ERP or CRM installations typically replace a number of legacy systems, which necessitates data collection, normalization and integration into a new application infrastructure. Consequently, a rollout stage provides a perfect opportunity to conduct a thorough audit of the data and improve the quality of all data sources migrated to the newly installed enterprise application platform.





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Operational phase: inadequate collection strategies compound data quality issues

The operational phase of enterprise applications depends both on the legacy data supporting the enterprise application platform and on the data created by the newly established ERP/CRM systems. This means that the operational phase demands a consistent data collection and retention strategy. Without a clear policy on what data to collect and retain, ERP/CRM could continue to churn out inaccurate, inconsistent or incomplete data, which could seriously impair the effectiveness of the enterprise application platform. Of course, the real implication of an inadequate, long-term data governance strategy is that data problems could be compounded during the operational life-cycle of the application.

Consolidation: enterprises rarely consider the data implications of post-M&A application consolidation

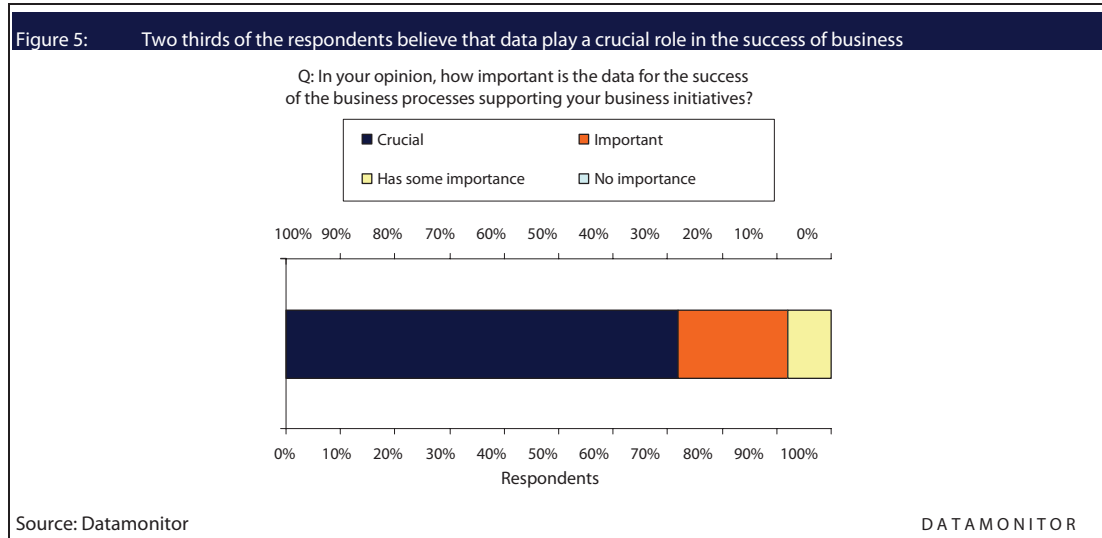
An important element of today's dynamic business environment is lively merger and acquisition (M&A) activity. Given the importance of gaining market share and exploiting economies of scale, M&As are certainly at the forefront of current business strategies. The current turbulence in the financial sector and the pending global economic slowdown may dampen the pace of M&As. However, Datamonitor believes that acquisition is an integral part of enterprise operations and, therefore, M&A is set to continue, albeit at a different pace.

Since M&A will continue to be an important part of business strategies, enterprises need to consider the role of data in M&A-driven consolidation of enterprise application platforms. While organizations are refining their enterprise application consolidation and rationalization programs, the issues of data platform consolidation are rarely given much consideration. Rather than approaching enterprise application consolidation merely in terms of functionality, enterprises need to formulate data quality, data migration and common data governance policies during the integration phase, in order to capitalize fully on the range of data at the acquirer's disposal, and to ensure the success of the merged application platform. Enterprise application consolidation also poses operational data challenges. For instance, real-time data synchronization and replication may be required during the transition phase, and a new system may integrate a broader range of data sources while generating larger volumes of data which need to be processed at a constant or lower latency than the old system.



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Data quality and right-time data availability are widely regarded as key success factors



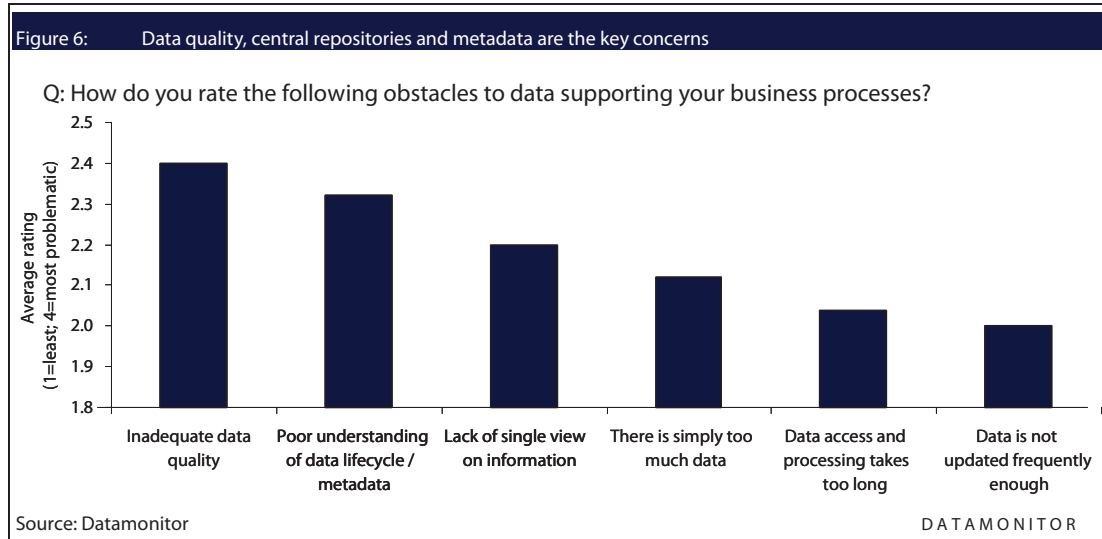
The previous section discussed several of the common failings in dealing with the data element of the mission-critical ERP/CRM initiatives. Judging from the survey responses, IT decision makers readily acknowledge the importance of data to the success of enterprise applications, supporting key business initiatives and processes. Perhaps the strongest endorsement is found in the fact that almost 70% of IT decision makers surveyed believe that right-time data availability, quality and update frequency is a key factor for business success.

Key obstacles are data quality, lack of a single view and poor grasp of the data lifecycle

To be precise, the IT decision makers surveyed identify inadequate data quality as the most prominent obstacle in the path of data supporting business processes. The second most prominent obstacle also pertains to data quality, namely the poor understanding of the data lifecycle and associated metadata.



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IT decision makers surveyed also perceive the lack of master data management (MDM) as problematic. Obviously, the lack of a central enterprise-wide data repository that grants a view across the entire business process chain to all concerned parties is an issue. Datamonitor believes that the absence of a central data repository and MDM is a particularly acute problem in customer-facing scenarios. Customers, whether businesses or consumers, expect seamless delivery of outstanding levels of service, and problems caused by internal data silos can prove particularly frustrating.

IT decision makers are primarily concerned about data quality issues

It is indicative that survey respondents rate data update frequency and data processing workloads as secondary obstacles. In Datamonitor's opinion, the distinction is more apparent than real since the issues of quality and update frequency are inextricably linked. Business dynamics are demanding timely delivery of accurate and complete data, which necessitates both improved data quality and data latency. Consequently, the two aspects of data management and integration should not be separated. Ideally, data quality routines should be located as closely as possible to the point of data creation, in order to eliminate or minimize the propagation of data quality issues through the system.

Data issues could severely limit the understanding of enterprises' customers and products

All indicators point to the fact that enterprises recognize the importance of timely and trusted data to the success of enterprise application platforms. Datamonitor believes that IT decision makers recognize the problem but underestimate its magnitude.

Indeed, Figure 6 indicates that respondents identify inadequate data quality as the most problematic obstacle in the path of data supporting business processes. However, it is worth noting that the average rating given to data quality as an obstacle is 2.4 out of 4, where 4 represents the most problematic obstacle. Of course, the average ratings are simply a relative gauge of IT decision makers' attitudes, but they do signal that the scale of the problem is not fully appreciated.



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Enterprises overestimate their resilience in the face of data quality deterioration and volume growth

Enterprises accept that data are an issue, but three quarters of respondents also believe that substantial delays in data upload frequency would merely degrade the quality of the business process, rather than rendering the processes unusable. The perceived resistance of business processes in the face of data problems highlights a deeper lack of understanding of the significance of data. Inaccurate, inconsistent or simply incomplete data can severely impair enterprises' ability to understand their internal processes, customers or products. Without data quality procedures in place, organizations can not grasp even the most fundamental business facts.

Customer interaction scenarios are particularly vulnerable to data quality issues

Data quality issues are at their most apparent in the domain of customer interactions. Customer information is particularly challenging simply because enterprises have less control over customers' expectations and behavior. Customers may use a range of aliases, or may provide mal-formatted or erroneous data. Furthermore, as customers interact with organizations through a variety of channels, data silos could give a very limited picture of customer activity. Such issues can be addressed, but only if they are recognized early and tackled consistently. If left unresolved, such data quality issues could prevent the elucidation of key business questions such as: "who are my most profitable customers?" and "what products or services are they purchasing?" Data quality can also inhibit the deployment of advanced customer intelligence applications that suggest the 'next-best' scenarios, and provide personalized cross-sell and up-sell offers.

The realization that success depends on data will drive CDI and MDM initiatives

The realization that data are crucial for the support of the enterprise application platform and, therefore, business processes is driving enterprise demand for customer data integration (CDI) and MDM initiatives. Decisions driving businesses need to be made on reliable, accurate and up-to-date data. Enterprises are realizing that the only way to ensure the integrity and availability of mission-critical data is to deploy data integration, data quality and master data management solutions. The payoffs are immediate and range from improved customer support to boosted customer loyalty, and the generation of new cross-sell and up-sell opportunities.

Traditional data management is not future-proofed, at best, or failing, at worst

Of course, the problem of data integration is not new. For decades, organizations have been grappling with the issue of data integration and data quality. This is typically done with in-house custom-coded point-to-point data integrations, which often use traditional enterprise application integration (EAI) frameworks. However, Datamonitor believes that conventional approaches cannot solve the problems due to the following limitations:

- Maintenance – traditional EAI and custom-built data integration methods rely on point-to-point topology. The absence of an integration bus or a common integration platform means that the system requires a higher number of connections in order to join the same number of end-points. Given that each of the connections needs to be established and maintained, the amount of effort necessary to connect and maintain the sources of data is prohibitively high.
- Data quality and latency – conventional modes of integration struggle to deliver the level of data quality and data transformations at varying data latency that modern business dynamics require. In large part, this is to be expected since the conventional approaches prioritize integration over data quality management. In fact, the



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traditional approach is hobbled by the inherent lack of scalability of point-integrations, which does not leave much scope for running data quality improvement routines, or for reducing data latency through streaming or accelerated batch processing.

- Future proofing – even if traditional EAI and custom-built methods prove adequate for the current level of demand, Datamonitor doubts that many current integrations are future-proofed. Given the accelerating pace of business dynamics, Datamonitor is convinced that further steep increases in the number of data sources and the volumes of data are imminent. Therefore, data quality and data latency will become more important than previously. Unless these custom connections are exceptional, or the organization operates in an extremely stable business environment, it is unlikely that a traditional approach will withstand the explosion of data volumes, and the increasing importance of data quality and data update latency. In summary, even if a custom data platform is adequate now, changes in business dynamics may soon undermine its effectiveness.

Enterprises are exploring comprehensive data integration platform alternatives

As a result of actual or impending failure of conventional approaches to data integration, enterprises are turning to the deployment of comprehensive data integration platforms, typically provided by specialist vendors. These vendors provide a consistent way to integrate the data that does not rely on point-to-point connectivity, often using service-enabled approaches. While purchasing a specialist data integration platform may not be every decision maker's preference, Datamonitor believes there are clear benefits to deploying a unified and flexible data integration platform.

Connect, improve and deliver data at a lower latency to a multitude of applications

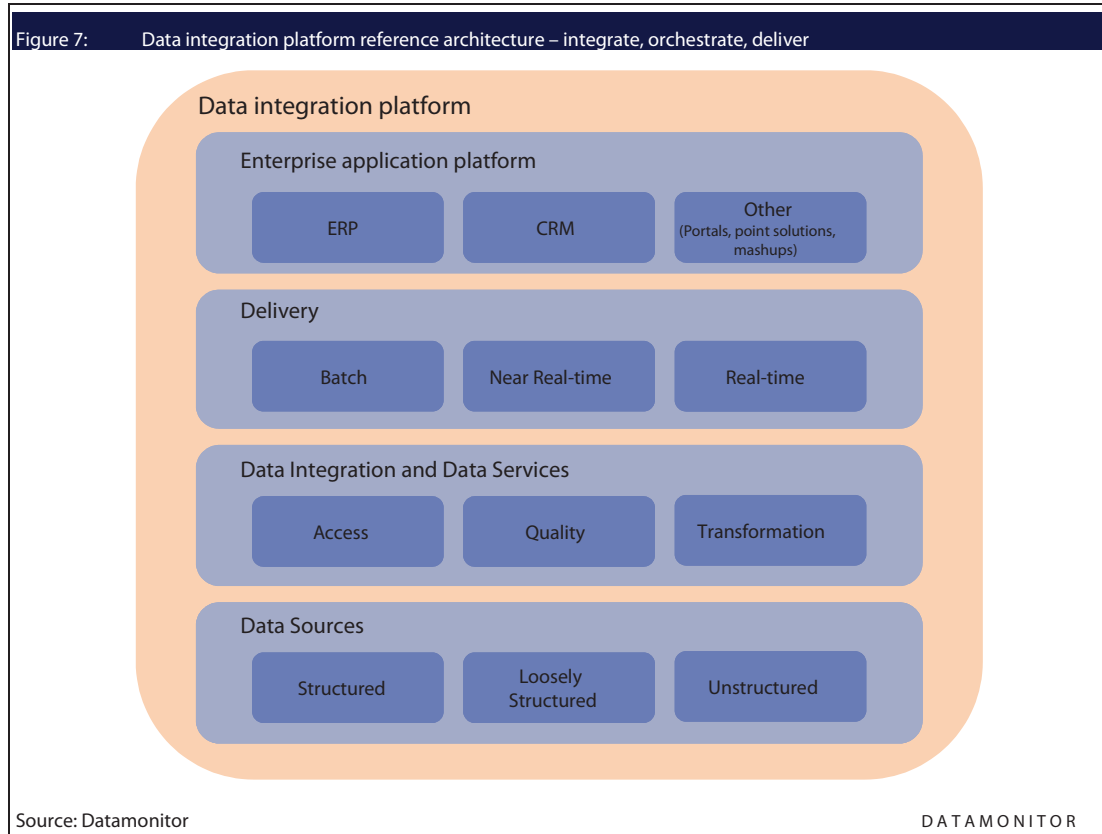
The primary remit of the data integration platform is to connect data sources, improve data quality and deliver the improved data at a lower latency to an increased number of applications. Data integration suites achieve this by providing a centralized integration platform, which renders individual point-to-point integrations obsolete and accelerates the connection process. In practice, this usually means having a universal access layer that can connect through a set of pre-configured data connectors, which can tap into a variety of data sources ranging from application data, database records, legacy mainframe repositories, or a variety of other structured and unstructured data sources.

Data integration platforms treat data quality transformations as an integral part of the process, rather than as an ancillary add-in. This can be achieved through rendering data quality auditing and data improvement procedures an integral part of the orchestration layer, which can choreograph data integration activities according to the configurable business logic. This means that the data quality and transformation happen as part of the process, keeping data consistent at all times. Moreover, the presence of an orchestration layer ensures that data quality transformations, such as data assessment, data parsing and cleansing, data matching or enhancement and enrichment, can all operate under the correct business logic, and according to abstracted and configurable business rules and policies.

Eventually, the transformed data will be delivered to the broad array of consumers in the enterprise application layer. Earlier data transformations will ensure that the data are delivered in a consistent and timely manner that complies with the rules and demands of the business process. Although variations of delivery methods exist, these should range from real-time data streaming to batch-based, near real-time or other scheduled updates.



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Enterprises venture into data integration platform projects expecting a solid return

Although data integration platform solutions are rarely cheap, survey respondents readily recognize the potential value to be gained from such solutions. While respondents’ estimates could not be taken as definite RoI calculations, they are a gauge of the optimism surrounding data quality and update frequency improvements.

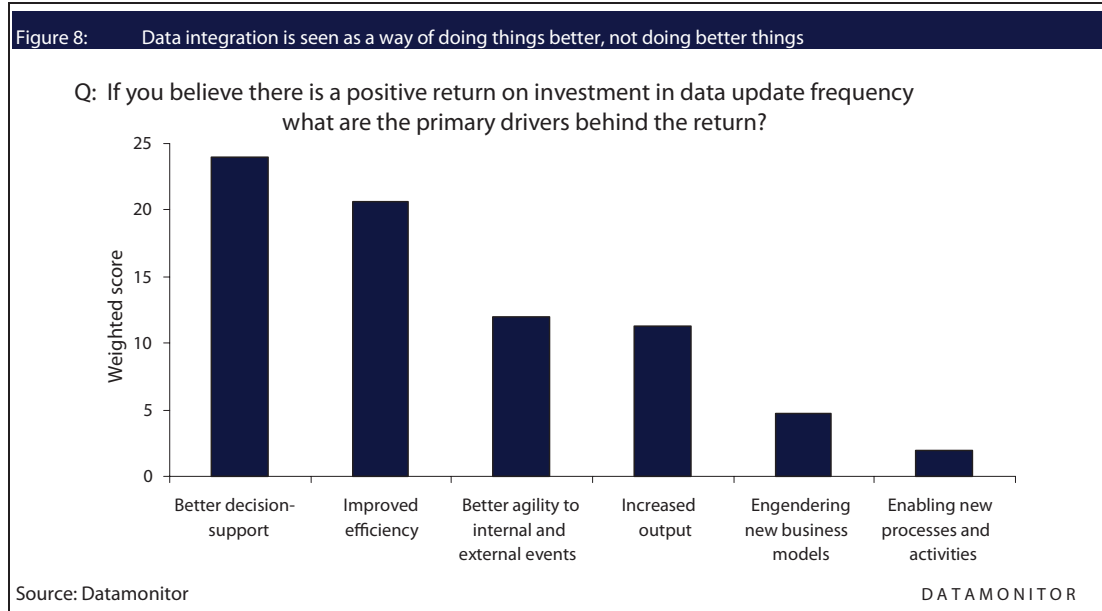
Judging from the survey, enterprises readily identify the positive benefits of data quality and data update frequency. In fact, enterprises expect that for every \$100 invested in data quality, the return would be \$156. While the expected return from data update frequency improvements is a slightly more modest \$147, this still demonstrates the expectations associated with such approaches. Apparently, the RoI case for data integration platforms is clearly positive.

Integration platforms are deployed to improve existing processes, not to create new ones

Datamonitor notes that IT decision makers identify the primary benefits of data quality and availability investment to stem from better decision making, along with improved efficiency. These two benefits are followed by better flexibility in the face of internal and external changes, and increased output. Datamonitor finds it interesting that very few IT decision makers see the benefits of data integration platforms in terms of promoting new business models, or new processes and activities.



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Obviously, enterprises seem to be struggling with the everyday tactical problems of data integration and are failing to perceive the long-term, strategic impact of data integration platform initiatives. It could be argued that the high RoI estimation associated with the data integration platform solutions means that enterprises have genuine problems that they seek to resolve. Consequently, enterprises are looking to address the basic data quality problems that are hindering existing business processes, rather than to develop new business processes and business models.

Organizations will exploit data integration to establish new business processes and models

The tactical data issues are currently at the forefront of IT decision makers' agenda but Datamonitor believes that enterprises will identify the potential of data integration practices beyond improvements to the existing processes. Instead of concentrating on incremental improvements with data integration platforms, enterprises will start to explore the transformative potential of richer, more accurate and current data to enable entirely novel business processes, or business models. New business models may arise from the ability to connect increasing volumes of diverse data, and control crucial business variables consistently, accurately and timely.

Richer, more complete and accurate data allow for better customer segmentation, which may offer new opportunities for the personalization of products and services, and subsequent creation of new products and attractive service levels or customer programs. Acceleration of the data update cycle creates opportunities by simply reducing data latency and catering for action in real-time. Reduced latency also enables fine-grained insight into customer behaviour and market conditions that can allow organizations to understand their business environment in real-time, for example their exposure to risk. This knowledge would allow them to adjust their operations accordingly. These strategic opportunities are not easy to formulate, much less to implement. For this reason, data integration platform vendors should take more aggressive steps to educate their customers on the disruptive potential of their solutions.



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RECOMMENDATIONS

Given the current business dynamics and the associated problems of data integration, Datamonitor recommends the following to enterprises deploying or running enterprise application platforms.

Adopt a comprehensive data strategy throughout the enterprise application lifecycle

It is clear that data are a crucial element of enterprise application rollout success. However, the concern for data integration and management should not be restricted to a single phase in the enterprise application lifecycle. Enterprises need to formulate comprehensive data management and integration strategies that can deal with the issue of data in the enterprise application roll-out phase, operation phase, consolidation phase, and even in decommissioning phase.

Audit your current data integration and management capabilities

Datamonitor recommends that enterprises audit their current data integration and management capabilities as the first step toward building a sustainable data integration strategy. The role of auditing is to establish the existing maturity level regarding the flexibility, data-quality and data latency required. This will provide evidence supporting steps that need to be prioritized and worked out, and clues as to how to make an enterprise application platform successful.

Future-proof your data integration platform

Prospective business dynamics should be taken into consideration in order to estimate how future-proofed the data integration platform is. Current capabilities need to offset against trends that may impact the data integration platform in the medium-term. Elements to consider range from the current maintenance of custom integration approaches, to gauging the scale of increase in data volumes and estimating the future pace of the business.

Consider what data integration platforms can do for your business tactics and business strategy

Historically, the data integration issue was driven primarily by the need to deal with basic tactical issues. Enterprises have realized that data are a crucial element of the success of applications that support business processes. However, the benefits perceived are primarily tactical, aimed at making immediate improvements to processes. Clearly, this speaks to the need to improve the existing business processes first. Enterprises should also take a longer view and consider how data integration platforms can create far-reaching strategic impact through business model innovations enabled by low-latency delivery of richer data, such as fine-grained market segmentation, personalization of products and services, and better understanding of business environment variables.



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APPENDIX

Ask the analyst

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Datamonitor consulting

We hope that the data and analysis in this brief will help you make informed and imaginative business decisions. If you have further requirements, Datamonitor's consulting team may be able to help you. For more information about Datamonitor's consulting capabilities, please contact us directly at consulting@datamonitor.com

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