



# ADDING BUSINESS VALUE TO DATABASE CONSOLIDATION

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Enterprise Applications Consulting

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## ***The Limits of Database Consolidation, the Barriers to Effective Business Consolidation, and a Call to Action***

The consolidation of IT assets, particularly databases, has garnered considerable interest in recent years, and the general concept of IT consolidation – migrating multiple, heterogeneous systems to run on a single hardware and/or software instance – is relatively well-understood in the market. The typical rationales for IT consolidation, largely centered around cost reduction, improved operational efficiency, and the development of more responsive, dynamic, and customer-centric IT systems, are also familiar in the literature, and are fairly well-understood.

In the vast majority of cases, IT consolidation – and in particular database consolidation – while providing some value, falls far short of its potential to positively impact the business side of the enterprise. According to research carried out by Enterprise Applications Consulting (EAC), most examples of database consolidation focus only on the benefits of the technical aspects of consolidation: With the consolidation of database licenses, a reduction in personnel and hardware costs are the predominant results. These examples ignore the benefits of a business consolidation – one that goes beyond typical technical consolidations by consolidating current and historical data and business processes – that could deliver significant value to the business side of the enterprise as well.

Technical consolidations do deliver measurable results, and numerous ROI studies point to the savings companies can achieve by lowering data center, licensing, and personnel costs. Estimates vary widely, but in many cases companies are able to save upwards of 40 percent of their on-going IT costs from a consolidation project.

While technical consolidation can provide important cost savings, the potential value of a consolidation effort that focuses more on delivering business value is even greater. Specifically, a business consolidation that creates a “single version of the truth” that encompasses both historical and current data can allow a new degree of business agility that a technical consolidation is not designed to achieve. With a company’s data, metadata, and business rules, past and present, fully integrated into a single environment, the company can respond more rapidly to changes in its business environment, be they the result of changes in regulatory requirements, mergers, acquisitions, divestiture opportunities, or other important business events.

This increased business agility is due not only to the consolidation of data into a “single version of the truth,” however. Business consolidation also increases the ability of a company to enforce a set of standard business practices and processes that can help unify not just the performance of day-to-day business functions but also support their accurate measurement and analysis. This capability is enabled by the fact that with all the enterprise data and metadata housed in a single instance, the inconsistencies that plague heterogeneous data environments are eliminated. This in turn means that transactions, queries, updates, and changes to data and processes can take place without the risk of introducing unwanted errors into the day-to-day functioning of the enterprise.

The benefits of business consolidation are attractive to a wide variety of companies, and these benefits accrue without regard to a firm’s stage of business development. True business consolidation positions businesses to improve reporting capabilities and regulatory compliance, reduce waste due to the elimination of duplicate records and inconsistent data, and maintain consistent business processes and rules that support both current and past business practices. In particular, business consolidation supports both rapidly growing companies and companies that are changing their business models due to mergers or divestitures, without a loss of business continuity. Unlike technical consolidation, business consolidation preserves the details of the past, and simultaneously prepares the company for an efficient, totally integrated, and operationally optimal future.

### **BENEFITS OF BUSINESS CONSOLIDATION**

- Improved Reporting
- Improved Regulatory Compliance
- Support for Common, Enterprise-wide Processes Based on Consistent Data
- Facilitation of New Initiatives and Dynamic Changes
- Support for Business Requirements for Mergers, Acquisitions, and Divestitures
- Provision of Complete Data Across the Enterprise by Consolidation to a Single Version of Truth

## THE BARRIERS TO BUSINESS CONSOLIDATION

Despite these benefits, consolidation projects that enable true business consolidation are few and far between. Two major reasons – both related to the focus on the technical side of IT consolidation – best explain the failure to undertake true business consolidation, and show that even when attempted, the stated project goals are rarely achieved. The first reason is that the discussion about consolidation in many companies, and in the industry at large, conceptualizes the projects in too narrow a manner. Companies can readily see that they have inefficient, hard to maintain, overly complex IT systems, with over-complexity being labeled as the “problem” for which technical consolidation is the designated cure. This rationale obscures the greater potential of business consolidation to resolve both the technical and business-level issues that result from this complexity.

The second reason for the excessive focus on technical consolidation is due to a lack of understanding of the value that business consolidation can bring to a company. To a certain degree, this is understandable: Unlike the relative ease with which technical consolidation can be accomplished, true business consolidation has been historically hard to undertake and complete. Adding to the complexity of the task is the political nature of business consolidation: In many cases, business consolidation necessitates some hard-to-arrive-at decisions regarding business and process change.

<b>TECHNICAL VS. BUSINESS CONSOLIDATION</b>	
<b>Technical</b>	<b>Business</b>
New IT Initiatives Supported	New Business and IT Initiatives Supported
ROI Limited to IT	Broad-based Enterprise ROI
Limited Historical Data	Complete Historical Data
Limited Regulatory Support	Comprehensive Regulatory Support
Improved Operations	Improved Operations and Customer Service
Lower IT Costs	Lower IT Costs, Leveraged Supplier Relationships, Procurement Opportunities
Reduced IT hardware and Infrastructure Costs	Reduced Inventory Costs, Days Sales Outstanding, Improved Collections, Seamless Assemble to Order Processes

While technical consolidations are commonly attempted and frequently successful, the processes that are sufficient to achieve technical consolidation are inadequate for surmounting the substantial barriers to business consolidation. The essence of business consolidation – bringing together historically disparate systems into a single, unified database environment while maintaining data and business process integrity across historical data – has been possible in the past only through the application of massive programming and financial resources. Even in those cases where this kind of brute force was applied, the cost and complexity of the technical challenge limited the ability of the enterprise to effect a true business consolidation.

A separate barrier to undertaking business consolidation relates to the complexity of establishing an ROI case. There are no easily-calculated measures of business consolidation. Unlike technical consolidation, which provides immediate savings in equipment costs and reduced IT maintenance and IT staff, business consolidation yields business results that are complex, multifaceted, and intimately tied to the functioning of the business as a whole, and therefore ROI analysis is achieved only with great difficulty. (See *The ROI of Business Consolidation*, below.)

The tools available for IT consolidation have also contributed to this imbalance. While there are many tools and processes targeted at IT consolidation efforts, there has been a dearth of tools that are focused on automating the process of business consolidation. The only means to actually achieve business consolidation have hinged on using armies of consultants, and spending many months, if not years, of effort. Indeed, in many cases, what starts as a “business consolidation” effort ends up as a complete reimplementation, at additional cost, that is inflexible and therefore prone to be out of alignment with the changing business structures and practices of the company.

### **BARRIERS TO BUSINESS CONSOLIDATION**

- Lack of Business Case
- Lack of Automated Tools
- Over-emphasis on Technical Consolidation
- Vendor Preference for Re-implementation
- Misperceptions Regarding Possible Alternatives

The result is that even the companies that are interested in the benefits of business consolidation forgo it in favor of the simpler technical consolidation, and in the process shortchange their ability to meet business requirements for analysis, reporting, regulatory compliance, and dynamic business change. While some companies attempt to meet these needs through such efforts as master data management, the implementation of multi-terabyte data warehouses, and expensive Service-oriented Architectures (SOA), these solutions add considerable implementation and on-going maintenance costs without achieving the value available from business consolidation. (See *Business Consolidation Alternatives* box below.)

Other companies opt for the most extreme solution of all: a full re-implementation of the applications environment, as time-consuming and costly, if not more so, as the original implementation. For the most part, all of these solutions merely create a new level of technical complexity, through the addition of new infrastructure technology that is neither simple nor inexpensive, instead of actually resolving the problems of technical complexity that they are faced with.

### **BUSINESS CONSOLIDATION ALTERNATIVES**

- **MASTER DATA MANAGEMENT (MDM) PROJECT:**  
More effort, longer time to value, needs enterprise data policy governance strategy.
- **SERVICE-ORIENTED ARCHITECTURE PROJECT:**  
Similar to MDM, with the added costs of implementing a new architecture.
- **DATA WAREHOUSE:**  
Expensive, time-consuming, for analysis only.
- **NEW INSTANCE/RE-IMPLEMENTATION:**  
Expensive, complex, multi-year effort, limited historical data carry-over.

## **A CALL TO ACTION**

Enterprise Applications Consulting believes the time is ripe to reconsider business consolidation as an integral component in IT consolidation, and along the way expand the expectation for a more comprehensive consolidation process that brings more benefits, both direct and indirect, to the business side than purely technical consolidation efforts. Only by understanding the true value of business consolidation will companies be able to look beyond the limits of technical consolidation and realize the value of aligning their consolidation effort with their business requirements.

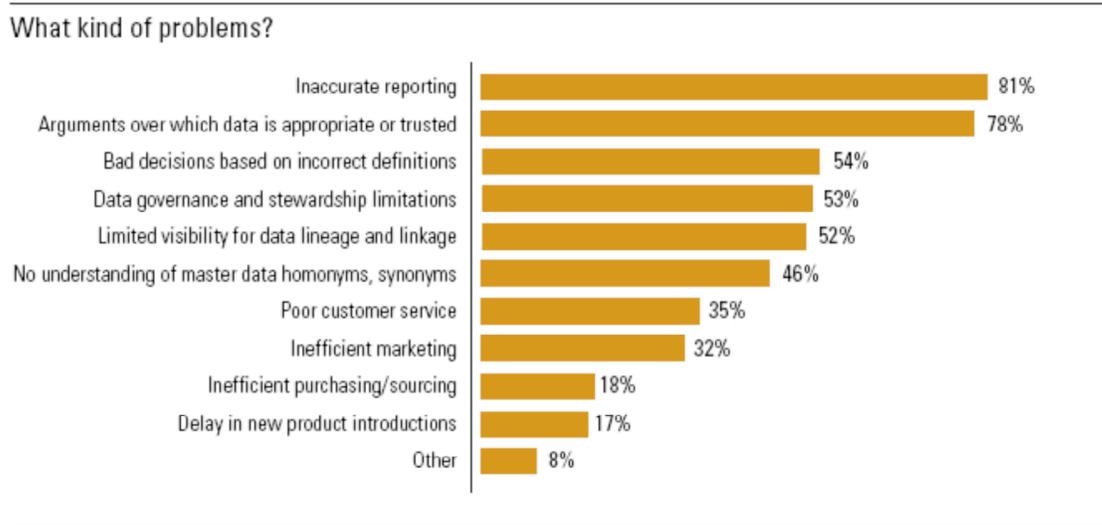
One of the reasons this new look at database and business consolidation is possible is the emergence of a software-based solution that automates the most difficult and resource-intensive aspects of business consolidation, and makes it affordable for a wide variety of companies deploying the Oracle relational database system. The solution is being brought to market by *eprentise*, a business consolidation vendor based in Orlando, FL ([www.eprentise.com](http://www.eprentise.com)). The *eprentise* software product set, along with the underlying body of theory and practice regarding business consolidation, help expose the true value of business consolidation and bring it into financial reach for the first time. EAC believes that the theory and practice of business consolidation that underpin these new software resources provide a valuable basis for the consideration of business consolidation efforts in most industries.

This report is organized into five sections. The first is a general discussion of the limits of return on investment for database consolidation, based on the current state of the art. The second section discusses the technical and business differences between the current state of the art and business consolidation. The third section discusses how business consolidation can take place in the context of a product set that supports these efforts. The fourth section is a discussion of the expected ROI of business consolidation, followed by a conclusion.

### ***Database Consolidation and ROI: The State of the Art***

The problems that drive companies towards database consolidation of any kind are well known, and span a range of business and technical problems. (See Figure 1.) It is clear that the business risks that companies encounter by relying on multiple, highly disparate, and unconsolidated data sources are endemic to all industries and company types. It is also clear that there are business events, such as mergers or acquisitions, as well as regulatory requirements and other drivers, that in many cases make consolidation an absolute necessity, independent of a specific return on investment (ROI) case.

Figure 1: Common Drivers for Database Consolidation



Source: *The Data Warehouse Institute*

Against this backdrop of opportunity and necessity, examples of database consolidation projects abound, all promising a robust business case, and an equally robust ROI. A review of most publicly available examples of consolidation, as well as EAC’s own research, reveal that the overwhelming majority of examples of database consolidation are fundamentally technical consolidations, and not higher-value business consolidations.

The value of technical consolidation has nonetheless been amply proven by a number of different research organizations. Forrester Research has estimated that companies that have undergone consolidation to a single instance have spent well below the industry average on their total IT budget. Whereas a broad swath of companies spend an average of 3.8 percent of revenues on IT, according to Forrester, companies that have undertaken single-instance consolidation spend on average 2.5 percent of revenues on IT, with one company reporting a 1.6 percent spend rate.

A look at some published results from technical consolidation projects shows how some of this ROI is achieved, and in particular how these types of projects focus on resolving problems of IT complexity, rather than presenting a means to improve business operations. Hewlett-Packard, IBM, Microsoft, and Williams-Sonoma have all recently engaged in data center consolidation projects, yielding some impressive cost savings. In Hewlett Packard’s case, the company was able to reduce its number of data centers from 85 to three, with an additional three centers acting as disaster

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recovery sites. IBM's consolidation efforts reduced a 3900-server system to 30 mainframes, in the process reducing data center energy use by 80 percent. Microsoft's efforts at data consolidation produced a \$23.2 million savings, while retailer Williams-Sonoma consolidated 100 servers down to five, and in the process was able to cancel plans to add 50 more servers at its data center.

While these projects all showed significant ROI, they were focused exclusively on the technical aspects of consolidation, which meant that the resulting environment still had a large degree of complexity, and therefore was poorly positioned to deliver the benefits that a business consolidation delivers.

Not all technical consolidations are without business value, however. Toronto-based Longo Brothers, an on-premise and on-line grocery chain, undertook a technical upgrade and consolidation effort that was in part targeted at reducing the IT department's enormous spend on data integration, estimated at 30 percent of the total IT budget. Longo was able to measure a distinct return on its investment for this project in a critical area of its business: warehouse management. The consolidation yielded a 1.5 percent improvement in its warehouse management processes relating to its on-hand stock. That improvement allowed the company to stock an additional 300 items in its stores, an improvement that translated into significant revenue upside for the company.

Like many technical consolidations, however, Longo retained many of the disparate systems that contributed to its complexity problems, including multiple point-of-sale (POS) systems and a homegrown employee scheduling system, among others. Mediating all this complexity is a service-oriented architecture that by its very nature advances business functionality, but imposes its own considerable costs, and also limits potential return on investment and optimal business value. Similarly, limited returns on investment can be seen in master data management projects, which are typically expensive, multi-year engagements that add more complexity and promise high on-going maintenance costs.

### ***The Added Value of Business Consolidation***

While there is little argument that technical consolidation yields significant benefits, business consolidation promises a much broader ROI that impacts not just the IT organization, but the operational and business side of the enterprise as well. As stated above, these benefits come from the ability to go beyond mere cost-reduction to providing significant improvements in business agility,

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responsiveness, and operations that can only come from a business consolidation. It's important to bear in mind that the benefits of technical consolidations are not lost in a business consolidation effort: Business consolidations add additional value to technical consolidations, and indeed most efforts at business consolidation will include a technical consolidation effort as well.

The difference, of course, is in the total value of the consolidation efforts. Major IT research firms, like Forrester Research, confirm EAC's own research into the value-add of moving beyond mere technical consolidation. In a study published in 2005, Forrester analyst Ray Wang addresses this issue directly:

*Studies often cite a 20% to 45% savings in moves toward consolidation. The reduction in IT personnel, hardware, and software costs (i.e., license, maintenance, and support) is obvious. However, these factors may be less significant than the exponential leap in days-sales-outstanding (DSO) reductions, inventory reductions, quicker financial close, and other metrics of corporate performance.*

Wang contends, rightly, that the requirement for business consolidation is even more acute in the case of mergers, acquisitions, and divestitures:

*Nearly two-thirds of all mergers fail to realize their value because of an inability to integrate and/or consolidate... Successful execution is the difference between creating shareholder value and destroying investment.*

The potential value of business consolidation is supported by a study of 25 Oracle consolidation projects by research firm Mainstay Partners. In this report, Mainstay separated what it termed "infrastructure consolidation" from "information" and "application" consolidation, the latter two forming the basis for business consolidation.

Mainstay's research shows a similar value-add from information and application consolidation, with the benefits ranging from significant savings due to increased productivity and reduced procurement costs to improved DSO and closing times. (See Figure 2)

Figure 2: Business Consolidation Benefits

<b>EXAMPLES OF FINANCIAL HIGHLIGHTS:</b>	<b>EXAMPLES OF STRATEGIC AND OPERATING HIGHLIGHTS:</b>
<ul style="list-style-type: none"><li>▪ \$100,000 savings from faster, more accurate billing made possible by information consolidation.</li><li>▪ \$1 million in HR productivity gains by entering data once.</li><li>▪ 8% headcount reduction.</li><li>▪ \$11 million savings from improved manufacturing using integrated supply chain application integrated with sales and forecasting.</li><li>▪ 8% reduction in DSO (days sales outstanding).</li><li>▪ 1.1% savings in procurement costs through a centralized application, resulting in millions of dollars in savings.</li><li>▪ 80% reduction in procurement costs via a centralized process.</li><li>▪ 15% cost reduction by moving to a single financial system.</li></ul>	<ul style="list-style-type: none"><li>▪ 50% average process improvement through information consolidation.</li><li>▪ 50% faster close time through information consolidation.</li><li>▪ 20% to 50% improved reconciliation process through consolidated information.</li><li>▪ 80% more productive reporting.</li><li>▪ 86% reduced time-and-expense processing time, and speedier reimbursements.</li><li>▪ 50% average improved data accuracy and quality.</li><li>▪ Tenfold journal entry process improvement via consolidated applications.</li><li>▪ 20% improvement in manufacturing process from leveraging integrated supply chain applications linking sales to production.</li><li>▪ 50% to 75% reduction in invoicing time via integrated application and data.</li><li>▪ 50% reduction in order entry time by leveraging integrated application suite (one global customer table).</li><li>▪ 83% reduction in order processing time.</li><li>▪ 87% fewer customer inquiries via improved data quality and availability.</li><li>▪ 86% processing improvement via integrated applications.</li></ul>

Source: *Mainstay Partners LLC, adapted from IT Consolidation: The Art and Science of Doing More with Less*

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Mainstay's data, though anecdotal, exemplify the wide variety of benefits from business consolidation that impact day-to-day functionality above and beyond those that a technical consolidation can provide. These kinds of results can also be seen in the analysis of shared services data center projects, which often include benefits that fall directly under the same rubric as business consolidation. One such project that EAC is familiar with – a shared services consolidation at a major apparel manufacturer – not only yielded significant benefits in lower IT costs, but also provided a significant improvement in inventory management that was expected to yield annual savings of \$80 to \$130 million. Another shared services project – this time at a major automotive parts manufacturer – yielded savings in financial operations of over \$30 million per year in addition to considerable savings in IT costs.

This two-for-one effect is what makes business consolidation so compelling. Whereas technical consolidation largely benefits the IT department's budget and priorities, business consolidation brings the benefits of consolidation to the business as a whole. These benefits can be seen in the examples from the Mainstay study, as well as in the ability to support business events, such as mergers and acquisitions, for which technical consolidations alone are not sufficient to meet the post-event business requirements.

The issue of managing the reporting, regulatory, and business requirements of mergers, acquisitions, and other business events presents a particularly rich case for the value of business consolidation. (For a further discussion, see *The ROI of Business Consolidation*, below.) These business events are common features of the economic landscape, and pose significant problems for both the selling and the buying party. Whether the issue is adding and integrating data from a merged company, centralizing a data center, or operating a shared service center, a consolidation is required, and a technical consolidation won't result in as well-designed and implemented business and IT environments as would be possible with a business consolidation.

## ***Understanding the Steps to Business Consolidation***

As noted above, despite the compelling rationale for business consolidation, actual occurrences are few and far between. The main reason most companies choose to forego a more comprehensive business consolidation in favor of a simpler technical consolidation boils down to the relative complexity of business consolidation, and hence its often prohibitive cost. Indeed, absent the kinds of automated solutions that eprentise can offer, the complexity of business consolidation makes it hard to cost justify despite the high value that business consolidation can provide.

### **THE COMPLEXITY OF BUSINESS CONSOLIDATION**

The complexity of business consolidation comes from the requirement to maintain, in a usable format, *all* the data in the different databases that are to be consolidated. If the goal is a truly consolidated single instance, then this mandate requires reconciling four different types of data from each database (“seed” data, configuration data, master data, and transaction data), such that the target or consolidated database contains an accurate and accessible “single version of the truth” that includes historical data from all database sources.

A quick run-through of the process of business consolidation for an Oracle E-Business Suite database reveals the complexity of this undertaking. The process of business consolidation starts with a gap analysis that identifies the changes to be made to the target database so that it can accommodate all of the data from the source database(s) by adding tables, increasing or decreasing column widths, or redefining constraints.

There are three main situations that can occur during this metadata analysis phase. First, one source system could have metadata elements that simply don’t exist in the target system, which means that the target system needs to be modified to account for this metadata. Second, the metadata elements could be in both systems but in a different format, which means the two formats will need to be reconciled. Third, a given metadata element could exist in the target system exclusively, which means that data will need to be modified from the source system. In any event, metadata requirements have to be well-understood and synchronized in order for business consolidation to take place.

After reconciling the metadata between the source and target system, the next set of tasks is to rationalize the data among the source and target systems. The assimilation of data begins with the

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seed data that comes pre-loaded in every enterprise system. This seed data may include data elements such as a standard calendar, a standard currency, or a tax type, all of which can be significantly different in the source and target database systems.

Next, configuration data need to be reconciled between the source(s) and target. Configuration data includes user-defined parameters such as units of measure, payment terms (net 30 days vs. net 90 days, for example), and the chart of accounts, among others. Reconciling configuration data includes identifying duplicate data for every list of values in the system in order to avoid inconsistencies across the enterprise. If, for example, a user selects from a list of values for unit of measure and sees *pound*, *lb*, and *#*, there is confusion about what data to select when entering an invoice or an order, and the data will not be consistent across the enterprise. The inability to successfully reconcile these inconsistencies is a key reason most consolidation efforts fail to provide true business value. Similarly, standard terminology and abbreviations have to be established and reconciled, so that post-consolidation business processes can span all the data in the new database environment.

All of this effort sets up the issue of master data reconciliation, and this is where the level of complexity makes “brute force” consolidation too expensive for most companies to cost-justify. While there is a fair amount of technology that can be applied to some of this task, such as de-duplication, there are three fundamental issues in relational databases that make master data reconciliation so difficult. First, the relationships that link data elements to each other exist across the database, making it hard to guarantee a priori that changes made in one data element by standardizing on a single unit of measure or by removing duplicate customer data will ensure that the related data are changed everywhere in the database.

Second, in the Oracle database E-Business Suite, each data element has a unique sequence number that is used as the primary key or identifier for relating that data element to other data elements. While it may be easy to look at two source databases and know that two data elements need to be consolidated into a single data element in the target database, there is no simple way to reconcile sequence numbers or change primary keys between two databases, while preserving the relationships that rely on these sequence numbers. Thus, consolidating disparate systems means that every identifier could potentially need to be changed, and that change has to occur everywhere the data element is used. In the Oracle E-Business Suite, that could mean that the sequence number needs to be changed in literally hundreds of related tables, and through millions of rows of data, to maintain the relational integrity of the database.

## Adding Business Value to Database Consolidation

Analyzing where every piece of data is used, and dealing with the complexity of this re-sequencing problem, are ultimately the main issues that stymie most business consolidation efforts, and result in any number of half-measures that skirt the issue of consolidating two or more databases. Changing the sequence numbers in every related data item in both the source and target database unifies the historical activities and business rules of a given customer or company across databases, allowing the new “consolidated” database to meet regulatory compliance requirements, align to business changes, and provide for consistent business processes based on consistent data.

This problem of re-sequencing, in the past, has led companies to one of five main “solutions,” none of which allows them to preserve the historical relationships and data that span the original source systems. These five solutions are: perform a much more limited technical consolidation; undertake a complex master data management effort; undertake an expensive data warehouse implementation; implement an SOA-based architecture; and perform a full re-implementation of a new target system. Of these choices, the master data management and SOA architecture solutions have perhaps the best chance of meeting business requirements for consistent data, but this comes at an implementation and maintenance cost that is unlikely to offer the same level of business functionality or business continuity as a true business consolidation.

The third issue that makes business consolidation so difficult is the problem of business process consolidation. Business processes – such as credit limits, volume discounts, and HR policies – must be reconciled between source and target systems. This business-level consolidation must accompany the reconciliation of data relationships and the re-sequencing of the data in order for a true business consolidation to take place; otherwise what has been accomplished is a technical consolidation that provides significantly less functional value to the enterprise.

The historical complexity of business consolidation and the lack of alternatives to “brute force” define a major opportunity for companies like eprentise and its business consolidation solution. By automating most of the above processes, particularly the key re-sequencing component, eprentise can increase the feasibility of correctly and fully consolidating the systems from “impossible” to likely, and can lower the cost of a true business consolidation from unaffordable to a figure more able to guarantee a high return on investment for business consolidation.

## ***The ROI of Business Consolidation***

With the prospect of business consolidation at an affordable cost now a possibility, understanding the ROI of business consolidation is more than just a theoretical exercise. Nonetheless, the fact that business consolidation has to date been more theoretical than real makes understanding its ROI a challenge.

One way to look at the ROI of business consolidation is to understand the relative cost differentials that an automated business consolidation effort can present over a “brute force” methodology. The ROI available from existing tools that automate discrete aspects of the consolidation effort can help define the magnitude of the ROI available with the more complete enterprise solution. A second way to understand the ROI of business consolidation is to look at the areas where business value can be enhanced by the new capabilities enabled through a business consolidation. Much of the latter effort relies on the relatively “soft” numbers that come from analyzing business results – for example, attributing macro-level results like higher corporate profitability or customer retention to a single factor such as the redesign of the IT infrastructure is not as precise a methodology as one might like. This being said, the widespread possibilities for ROI that business consolidation offers still make a compelling case.

### **BRUTE FORCE VS. AUTOMATION**

Looking at other automation efforts in the overall IT consolidation effort can yield some interesting comparisons that offer an insight into the potential ROI for enterprise in a business consolidation project. One of the better and most concrete examples of this comparability is set out in an ROI report from data tools vendor Informatica, which in late 2006, published a comprehensive ROI analysis of its Data Explorer tool. The report describes the essence of Data Explorer’s capabilities, which it calls Data Profiling and Mapping:

*The value of Informatica Data Explorer lies in its ability to quickly analyze multiple source systems and assist the user in scoping the size and complexity of a migration or data integration project. The software enables data analysts to quickly discover hidden data quality issues, gaps, inconsistencies and incompatibilities within data sources. The result is an accurate profile which is stored in a central open repository and can be used to accelerate the design and implementation of new applications, databases and data quality programs.*

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The most interesting part of using Data Explorer’s ROI as a proxy for eprentise is the similarities in the positions they hold in the market. Both assist in consolidation efforts – although Data Explorer is very much a tool to assist technical, not business consolidation – and both tools automate tasks that have traditionally been accomplished by brute force alone.

With this background, a look at the ROI cases for Data Explorer is instructive. Informatica provides three different project types in which its product can be used: a data warehouse project, an ERP implementation, and a data consolidation project. In each case, Informatica provides a total budget, a percent of the budget that “brute force” Data Profiling and Mapping (DP&M) can expect to consume, and then a revised figure that shows the percent of the budget that is required if Data Explorer is used. (See Figure 3)

Figure 3: Budget Impact of Data Explorer

	<b>Data Warehouse</b>	<b>ERP Implementation</b>	<b>Data Consolidation</b>
<b>Initial Budget</b>	\$1.2 million	\$3 million	\$12 million
<b>DP&amp;M as Percent of Total Budget, “Brute Force”</b>	52%	35%	30%
<b>DP&amp;M as Percent of Total Budget, Data Explorer</b>	13%	8%	9%
<b>Net Budget Reduction</b>	\$540,000	\$876,000	\$2.8 million
<b>Percent Budget Reduction</b>	75%	82%	70%

*Source: Informatica. Adapted from ROI for Data Migration*

The reduction in the relative cost of Data Profiling & Mapping using an automated tool can be significant, according to these data. Across these three types of projects, the use of an automated tool can reduce DP&M costs by 75 percent, on average. More importantly, the use of an automated tool reduced the overall budgetary impact of DP&M dramatically across all three project types.

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An additional benefit of using automated tools is a reduction in error rate. In the case of Data Explorer, Informatica's ROI analysis claims that "brute force" has a built-in error rate, being able to efficiently analyze only 75 percent of the total Data Profiling & Mapping needs of a given project. This 25 percent error rate is eliminated through the use of an automated tool.

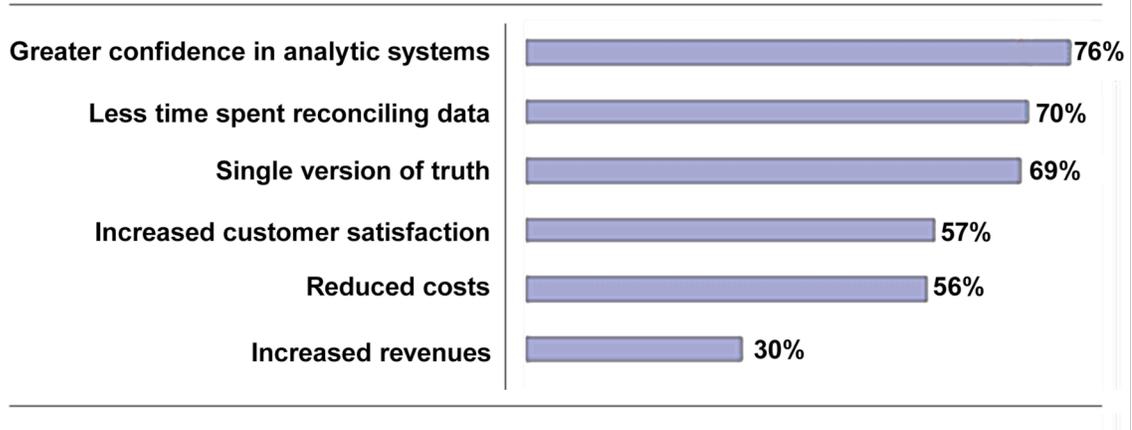
The relative cost savings from using an automated tool like Data Explorer provide an extremely compelling comparison for the use of enterprise software, insofar as it includes far more extensive capabilities and covers a much higher-value problem – solving the re-sequencing problem – than the Data Explorer DP&M tools. In addition, enterprise adds a further degree of error reduction in comparison to brute force: Coding errors are eliminated because the software automatically generates the code required to make needed changes to the underlying systems.

### **FINDING THE BUSINESS VALUE**

The specific business value of business consolidation can be understood by using two different but related analytical frameworks: one that focuses on data quality and quantity, and the second, as termed by EAC, the *Do or Die* framework. The former focuses ROI analysis on the business issues that can be addressed by having the right kind and amount of data to support business requirements, while the latter focuses on the problems that companies have in meeting legal and regulatory requirements, regardless of whether a specific ROI case can be established or is even needed.

Data quality and quantity issues, although generally related, are best analyzed separately. Data quality is an area that has been well studied by the likes of the Data Warehousing Institute, which in a recent study showed that business drivers related to improved analysis and customer satisfaction – as well as other business issues relating to having a single version of the truth – were among the top five benefits from having high quality data. (See Figure 4)

Figure 4: Reported Benefits Derived from High Quality Data



Source: *The Data Warehousing Institute, March 2006.*

The ROI from high quality data extends broadly across every industry vertical. In service industries such as financial services, insurance, and telecommunications, the ability to work from a single customer instance and provide a synchronized set of buying and service options to customers has an enormous potential value, one that is hard to calculate from an ROI standpoint only, because it represents opportunities that simply didn't exist previously.

High quality, consolidated data also provide ROI benefits due to the exposure of hidden costs or expenses that are simply unknowable without a truly consolidated system. A good example comes from an insurance vendor interviewed by EAC that was able uncover a pattern of fraudulent policy sales by its agents, following a business consolidation project. This company, which requested anonymity due to the sensitive nature of the problem, consolidated previously separate renewals, cancellations, and new policy databases, and in doing so, revealed a pattern of fraudulent activity that was costing the company \$14 million per year.

The issue of data quantity is a more complex issue to analyze, largely because most consolidations throw out the majority of historical data, retaining one or two years' worth at best, and there is therefore a paucity of information on which to build an ROI case related to data quantity.

Nonetheless, there are good examples of the negative impact of not maintaining the correct quantity of data, particularly historical data that may no longer be relevant in a transactional sense, but have a high value in terms of reporting and analytics.

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The issue of data quantity can best be seen in the context of regulatory compliance. The FDA-regulated industry requirements under 24 CFR 11 are a good case in point: Among other things, this regulatory regime required that pharmaceutical, consumer products, and other FDA-regulated companies maintain six years of data relating to research and clinical trials. The practical aspects of implementing these regulations can be daunting to companies that are merging, acquiring, divesting, or otherwise altering the database infrastructures that underlie and support their research and development efforts. Often, these databases are multiple terabytes in size, and considering the high degree of M&A activity in these markets, the requirement for data and business consolidation is virtually continuous. Furthermore, the nature of the FDA's inspection and enforcement efforts are such that requests for information – often historical information going back the mandatory six years – must be filled in a matter of hours, if not days.

The risks of failing to meet 24 CFR 11 requirements for a pharmaceutical company are a classic case of *do or die*. With the cost of bringing a new drug to market approaching \$1 billion in many cases, and the relatively short timeframe in which patent protection provides maximum profitability – while patents are typically awarded for 20 year periods, much of that time can be taken up in discovery, research and development – lost time due to regulatory non-compliance can cost pharmaceutical companies enormous sums. The Clinical Data Interchange Standards Consortium (CDISC), a pharmaceutical industry standards group, estimates that delays in FDA approval can cost pharmaceutical manufacturers up to \$1 million per day.

This kind of *do or die* scenario is, in fact, replicated across all regulated industries, whether the regulation involves existing SEC regulations like Sarbanes-Oxley, global manufacturing standards like ROHS-WEEE, or forthcoming regulations like those likely to be imposed on carbon-based emissions. Accordingly, every company must plan for its response to a *do or die* scenario, and, as explained below, business consolidation that includes retention of historical data offers vast savings in comparison to other alternatives, thereby creating a separate quasi-ROI component for that form of consolidation.

Consider again the choice between full business consolidation that retains all history, brute force business consolidation that moves over a limited amount of history, and mere technical consolidation. Without full business consolidation and data retention, the needed response to a “do or die” requirement would be made by maintaining and reviving to active status otherwise unused data systems, culling the information from those systems, adding the data to post-consolidation data

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that is stored in the revamped (but incomplete) system, and preparing the report. This process is costly, time-consuming, and potentially fraught with error.

By contrast, a company that undertook a business consolidation that retained history would have a much different process, with a much lower attendant on-going cost. The data needed for the report would be available by a fairly routine query of the integrated system that houses complete, consistent, and correct data – with an effort and time to response no different than any other ad hoc query, and with a level of accuracy that cannot be matched by any other consolidation method.

In that way, a business consolidation effort that retains and integrates all historical data can offer an ROI in several ways. The first component of ROI comes from the fact that the old systems do not need to be warehoused or archived and then revived to meet the needs of queries against historical data. The second ROI component comes from the rapidity with which a response can be generated without the need for an extraordinary expenditure of resources. The third ROI component comes from the far greater guarantee of accuracy – and therefore compliance – due to the completeness of the data consolidation effort and the resulting simplicity of the query and reporting process.

Again, the contrast between technical consolidations, limited business consolidations, and full business consolidations is clear. Companies that fall under the many regulatory regimes that govern business processes are subject to enormous risk if they fail to execute a business consolidation that includes historical data. Absent a business consolidation effort, companies must maintain extremely complex and inefficient database environments – at an enormous cost – in order to be ready to meet vital regulatory and other business requirements. The kinds of technical consolidation, data migration, or data integration projects that predominate in other industries – which at best move forward one or two years worth of historical data – are simply inadequate to meet these requirements.

Thus, the ROI of maintaining the data essential for meeting the reporting requirements of regulations is largely incalculable in the face of the consequences of non-compliance, which can mean the loss of production capability, profitability, market availability, and in the most extreme cases, legal sanctions that can largely cripple an otherwise vibrant company.

## ***Conclusion: Enabling New Business Agility through Business Consolidation***

Despite the complexity of establishing comprehensive ROI figures for business consolidation, there is little doubt that the ability to automate the “brute force” aspects of business consolidation now makes it possible to consider the benefits of moving beyond mere technical consolidation. Mainstay Partners’ anecdotal data, as well as the ROI examples discussed above, point to a multi-faceted business value that is worth exploring, now that automation brings within reach the total cost of business consolidation that retains business history.

This means that companies undergoing dynamic changes in their business models or structures can now move beyond the limits of technical consolidation into a much more valuable, and useful, business consolidation process. Business Consolidation will not only maintain business continuity, it also will position companies for new business opportunities.

It is perhaps this latter component that makes business consolidation so compelling, and the enterprise solution so timely. The dynamic, global market in which all companies operate requires levels of business agility that were simply unheard of ten or even five years ago. Business consolidation, with its ability to bring forward historical data as well as prepare enterprise systems for new opportunities, is clearly the form of database consolidation needed in today’s business climate. To limit a company’s options to the results of technical consolidation is to limit its ability to meet the challenges of business today and in the future. With full business consolidation now a possibility, it’s time to rethink the concept of database consolidation once and for all.