

# The ROI of Data Quality

Six Business Cases for a Data Quality Solution

**Do you have the numbers on data quality?**

This document discusses the touch points in an organization that benefit from better attention to data quality and the risks to profitability associated with lack of attention.

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## A Bird's Eye View of the Data Quality Challenge

Your business will lose revenue and reduce operating efficiencies if it doesn't pay attention to data quality. This is the consensus among more than 600 CIOs and IT directors polled about data management by PricewaterhouseCoopers in 2001. According to the same survey, IT executives have become more experienced at implementing CRM and data warehousing systems. They have realized—often through failure—that high data quality is one of the most important criteria for project success.

Beyond simply removing duplicates in a database, enterprise-wide data quality tools provide a way to unify disparate pieces of information about any entity in your business sphere. From customer records to product information to physical warehouses and beyond, each far-flung business component contributes to your bottom line. Enterprise data quality allows you to realize and act on the most accurate and complete information about all business components, despite disparate systems, varying data formats and international data sources.

Driven by market forces and the quest for additional revenue, the trend to sell into international markets often results in enterprise data overload, as international sales, accounting, call centers, and support teams contribute to the data warehouse. A data quality process can be the key to managing data overload, empowering companies to identify, standardize, correct and group data from all global sources and to identify relationships between records. The result is a more accurate, complete and relevant customer view consistently available across all customer touch points.

Enterprise-wide data quality (EWDQ) is more than names and postal verification. It is a complete system of defining and enforcing business rules for data quality world-wide. It is the process of optimizing the company's ability to use customer and business information across the departments. And it is the opportunity to give data new value through:

- Increasing revenues by means of knowledge that could not otherwise be obtained
- Establishing better customer service by increasing the efficiencies of CRM applications
- Improving brand penetration by accurately identifying ripe opportunities for up- and cross-sales
- Lowering the cost of doing business by eliminating fraud and increasing productivity
- Leveraging existing technical assets across departments and through greater effectiveness

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### MORE INFORMATION

For an in-depth look at the steps companies must take to for EWDQ, please read the white paper, “Achieving Enterprise-Wide Data Quality.”

The Trillium Software white paper “Ten Critical Success Factors of Enterprise-Wide Data Quality” further explores organizational criteria for effective data quality initiatives.

Both papers are available at <http://www.trilliumsoftware.com/>.

Given that many researchers still believe that the amount of data entering an organization will expand a hundredfold over the next five years, Fortune 1000 companies must increasingly depend on their EWDQ process to maintain high velocity, active customer operational environments with cost-effective data quality management.

EWDQ within this context consists of functional, technical and political components. To achieve EWDQ, there must be support from managers who are willing to invest in and become evangelists for it. In addition the solution must be up to the challenge and appropriate within the exiting IT/IS environment.

- Functionally, companies must make tough technical choices to enable data quality processes to expand easily across platforms and worldwide locations.
- Technically, companies must look for solutions that can meet their needs in both the short and long terms. Compatibility with internal architectures and other IT investments, synchronicity with existing IS skill sets, scalability and flexibility are just a few of the criteria for choosing an EWDQ solution.
- Politically, there is often resistance to new business rules that are necessary to achieve EWQD; so, there must be buy-in to the priority of clean data across the entire company. Smart CXOs initially incorporate data quality into small projects that they know are likely to succeed, earning momentum they can apply to their EWDQ efforts.

This white paper examines a cross-section of the business benefits forged by successful EWDQ. Specifically, it examines possible inefficiencies that may be creeping into your accounting, support, fraud detection, compliance, marketing and call center departments. It also discusses data quality’s impact on customer satisfaction, the creative process and “value-added” work, processing revenue and the actual financial performance of your company.

**Case 1. More Accurate Accounts/Receivables**

Attention to data quality in your billing system profoundly effects the collection and reporting of revenue. The more incorrect data and other billing errors in your database, the longer it takes to collect revenue. It is easy for an accounting department to get bogged down in billing disputes that erode customer satisfaction. EWDQ helps avert this situation and protects the bottom line from inaccurate billing that might mask the real financial picture. Moreover, EWDQ prevents unnecessarily referral of accounts to collection agencies because of incorrect data.

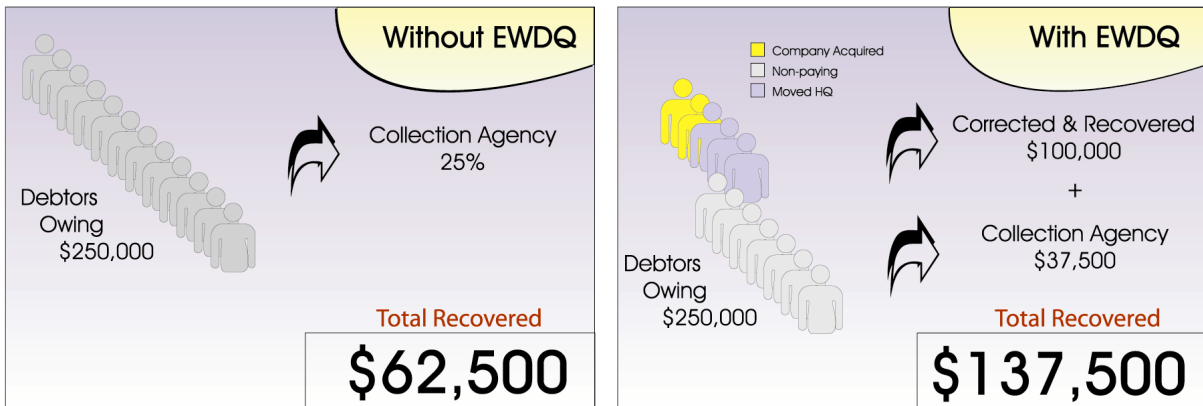
To demonstrate potential ROI, imagine a fictitious company, Widget, Inc. Say its accounts-receivable department identifies \$250,000 in debt one month attributed to non-payment. How much of the missing receivables is due to slow payment remittance and how much is due to data quality?

Widget knows through experience that about 20 percent of records in a given database reflect changes in address data each year. Customer moves, mergers and acquisitions can wreak havoc on customer data: some business customers might be acquired, for example, and request billing through another party. With this information, it is easy to compare the capital impact of data quality on Widget’s accounting department.

With no data quality system in place, Widget would send its \$250,000 in bad debt to a collection agency. This might yield about 25 percent of the debt, or \$62,500.

With an EWDQ implementation, Widget could consistently track billing redirects and address changes across all customer accounts, allowing it to collect \$100,000 of the debt before sending the balance to its collection agency. Yielding the same 25%, the agency would return an additional \$37,500.

Comparing total debt recovery between the two scenarios, the bottom-line impact is clear. The EWDQ implementation would allow Widget to collect more than double the amount it could recover through the collection agency alone (see graphic, *below*).



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There are other liabilities to consider when estimating the impact of EWDQ on billing. For example:

- corporate divisions with a single customer billing record, inaccurate billing can be a false indicator of actual revenue. Since companies tend to over bill—rather than under bill—earnings reconciled after customer complaints, actual final revenues might come as a shock to stockholders. In addition to receivables ROI, the ROI of EWDQ can also be found in avoiding negative stockholder reaction to earnings falling short of estimates and the value of customers lost due to erroneous billing.
- When customers find or suspect billing errors, their decision process is affected. Even when poor billing accuracy doesn't cause customer loss, it can erode customer loyalty and confidence in your business. Something as apparently minor as two bills with slightly different addresses—instead of one consolidated bill—can reduce customer retention and yield.
- The effect of unreliable data can reach across the enterprise, impacting diverse departments. Although the tangible impact can be subtle, the speed of of customer service in handling customer calls, marketing response rates and the effectiveness or even frequency of sales efforts all provide returns directly related to the quality of data in support systems.

Inconsistencies, omissions and inaccuracies in customer information destroy its reliability and undermine existing systems, technologies and processes. EWDQ relieves these systemic stresses, enabling more efficient processes, reducing time and energy dedicated to poor data quality effects such as unnecessary billing disputes and supporting greater customer satisfaction.



## Case 2. Better Customer Service

A good customer experience for both the company and customer is one that takes place smoothly, accurately and—most importantly—quickly. In a recent article, Siebel estimated that the cost to handle a single customer service call ranges from \$300 to \$350, based on a company's infrastructure, training, peak times, downtime, personnel and facilities needed to handle the call. Better EWDQ lets you achieve more revenue per representative with:

- Faster response times for customer requests, since customer service representatives can more quickly find correct customer information. Representatives spend less time correcting records.
- Reduced costs of buying the product, since a complete customer profile is available to representatives. Reps can handle more calls, allowing management to staff fewer people in the call center.
- More responsive technical support staff that has access to customer's histories and the histories of other customers with the same product.
- Better understanding of buying patterns that allows representatives to better manage the sales process and ensure high conversion ratios.
- Stronger capabilities for up-sell and cross-sell. Business intelligence applications armed with more accurate data can accurately indicate customer profiles that are historically receptive to similar sales efforts.

Every second you can shave off of call center interactions saves you money. Over the course of a single year, even a two-second time savings per phone call could add up to hundreds of thousands of dollars. EWDQ provides the time savings that translate to cost savings. Moreover, it ensures the complete customer view that opens the door to broader sales opportunities and higher customer satisfaction.

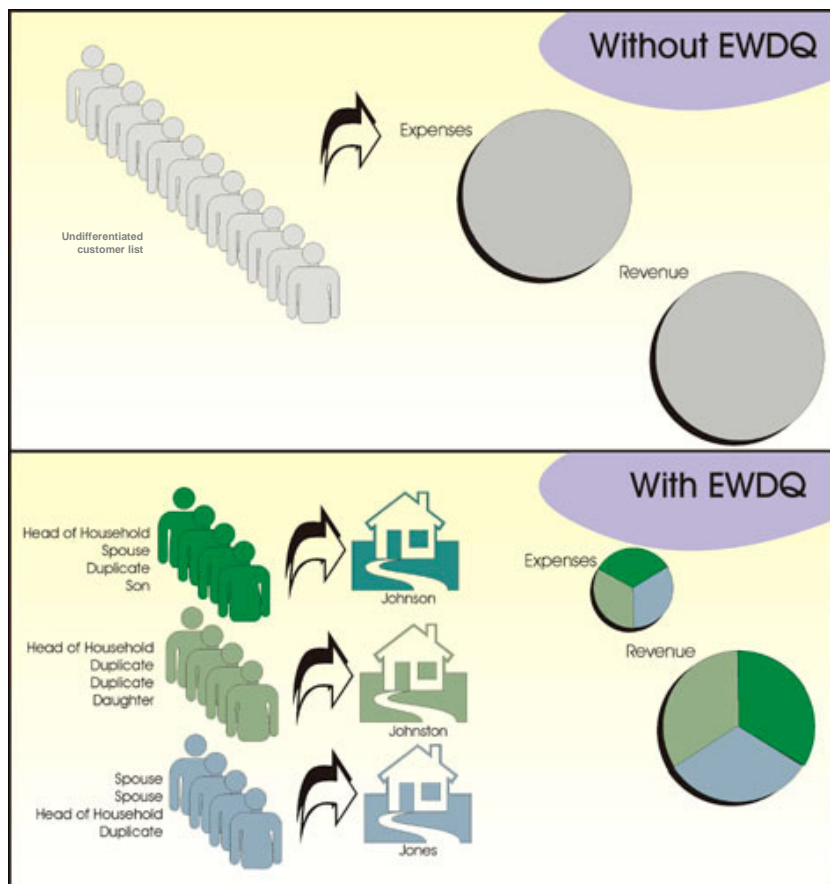
### Case 3. Deeper Brand Penetration

The goal of your investment in developing a respected recognized brand is to drive customers to your points of sale (POS). Wouldn't it be a shame if you failed to recognize a loyal, profitable customer at a given point of sale? Relationships that have lasted for years can be lost in a matter of seconds when call centers, Web applications and POS representatives fail to identify and understand the relationship with an existing customer or fail to respond appropriately to the total value of the customer across all accounts.

Consider just a small slice of customer service, marketing to existing customers. Clean data and proper analysis can let you increase your yield tenfold. Here's another example from Widget, Inc.:

The company is considering a direct mailing to its entire customer base to announce a new product offering. Since Widget doesn't have EWDQ, its database is full of duplicate records. It also contains some duplicate mailings to different members of the same household.

Skimming the records, a marketing executive can see that Frank Johnson, his wife, Frieda, and his son, Frank Jr., are all listed as separate customers at their address on Main Street. Because of these duplications, the planned marketing program is likely to be a failure, relative to its cost. The additional expense of sending redundant mail pieces to individuals and households will approach and perhaps even overtake any profit potential.



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An EWDQ solution would allow Widget to deduplicate individual customer records. Moreover, it would link the records within the database into households. This would allow Widget to send one mail just one mail piece to the Johnsons and other households in their database. Widget would still get its message across and considerably cut its costs per response.

The result is a cost/benefit analysis for direct mailing that makes sense. Lower mailing costs with a similar yield allows Widget to profit from the marketing program that would otherwise represent a loss.

Better attention to EWDQ also makes direct mail a winning scenario for your customer. When you inundate customers with fewer duplicate offers, your customers feel that you're paying attention to them as individuals. Better address accuracy also helps ensure that targeted messaging reaches the right person at the right time.

Yet another benefit of the complete customer views afforded by EWDQ is support for more accurate business and customer intelligence. Again, consider Widget and the Johnsons. Frank Johnson orders a super widget, which Widget records as revenue. Frieda doesn't like the shape of the widget, however, and returns it to the company, which Widget records as an expense. On the whole, Widget loses money on the sale because of processing overhead.

Still, Widget sees Frank as a very good customer, because his record doesn't reflect the returned item and nothing in the database ties him to Frieda. Widget would continue marketing to Frank based on its erroneous understanding of his transaction history, possibly offering discounts and promotions based on his perceived profitability. All of it would add up to more lost money for Widget, less profitable marketing programs as a whole, and less effective branding efforts.

In yet another example, Frank orders 100 widgets, setting up a new account under the name Frank Johnson. A month later, he orders 400 widgets, but he can't remember his customer number, so he gets another account under the name of Francis Johnson. Over a year, he orders 600 more widgets on the second account. One day, working from the information on an old receipt, he orders 900 widgets on the original account number. Frank's orders total 2000 widgets; however Widget can't unify Frank's accounts into a single customer view, so it only sees half of Frank's total revenue at one time. As a result, it doesn't effectively market to him, based on the total volume of his sales.

With EWDQ, widget could reconcile Frank's accounts and his household accounts, building a complete understanding of the Johnsons' relationship to the business. Only with such an understanding could Widget respond appropriately to the Johnsons' total business value.



### Case 4. Reduce Costs and Increase Productivity

Market leaders like Microsoft and 3M point to huge annual operational cost savings due to the efficiency of their data quality solution. Cost reduction is a major driver in the efforts of business to better understand customers.

For example, because large companies can be so highly diversified and operate in so many locations, they can have multiple sources of trading partner data. In these cases, most large organizations have significant data redundancy, inaccuracy and inconsistency, because different business units serving the same customer often have diverse ways of spelling or representing customer data.

In large organizations, resolving these issues to create high data quality is critical to meeting customer service expectations. The data quality process starts with creating accurate customer names and addresses. This can be a complex process, but it is critical. In some regions of the world, for example, customers might reject entire shipments at the point of entry, if the shipment's invoice is incorrect. The result is extra work, lost time, additional shipping expenses and lower productivity—all expensive side effects of poor data quality.

EWDQ and a data warehouse provide opportunities to make data more universally accessible and to cleanse data for uniform representation across business units. The data warehouse allows cleansed data to be distributed to legacy and other operational and customer-facing systems with mission-critical functionality.

EWDQ can be extremely beneficial in multi-divisional corporations. For example, corporations with no way to monitor customer activity across touchpoints may face the unfortunate scenario of sales divisions bidding against each other for business, lowering profits and threatening customer confidence. EWDQ ensures the organization can understand how it is interacting with a customer, no matter how complex, distributed and multiform the interactions.

Another impact of EWDQ is on the sales force. A sales force is likely to lose confidence in a prospect database with more than 10 or 20 percent invalid addresses. Sales representatives that use unreliable databases become less productive as they chase more poor leads. As a result, they might seek out database alternatives that further fracture and distort customer views.

In the physical warehouse, poor knowledge of customer buying patterns can lead to inappropriate inventory levels that make costs soar and contribute to earnings losses. It might also be difficult to track product sales if part identification isn't standardized. What appears as a KMX -123, KMX123, and K123MX in the French sales database, may appear as WIDGET-Pro and Widg. Pro in the U.S. database. If the corporation tracks inventory using only one or two of the identifiers, it might severely misestimate real inventory. Without EWDQ, it might be easier, more cost efficient and more reliable to ask a given customer what it is buying, instead of piecing together disparate information from a fragmented database system with poor quality data—although both are expensive and unattractive options.

CASE IN POINT

Here's an example from Widget, Inc. Bob Smith registers for an account using the following information:

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Bob Smith  
5518 12th St.  
Lubbock, TX 79416  
(806) 797-1105

Within a year, Bob defaults on \$10,000 in payments. Soon thereafter attempts to open a new account as:

Robert K. Smith  
5518 12th St. Apt. 1  
Lubbock, Tx 79416  
(806) 797-0055

In many databases, even the minor variations in name and address information would allow Bob to again become Widget's customer. Widget might say their prices are practically a steal, but in Bob's case, the lack of EWDQ ensures that they really are.

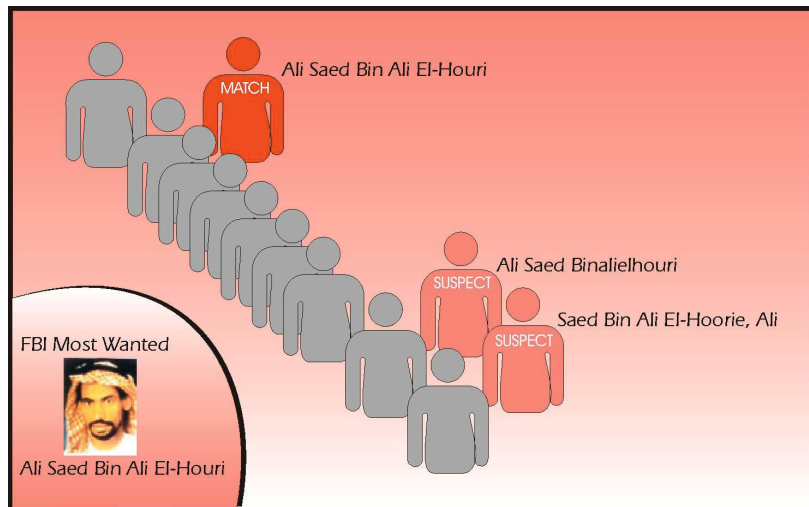
Case 5. More Accurate Fraud Detection

The banking industry knows the importance of fraud detection in controlling operating costs. Matching your customer and prospect list against a list of "bad guys" and their aliases is a key step in protecting your organization against fraud.

Many fraudulent schemes involve criminals maintaining several accounts with a single organization. Criminals create and maintain these accounts by using multiple name aliases or other identity variations. With EWDQ, you can more easily spot and react to relationships between records and accounts by the same individual in multiple divisions that might indicate fraudulent activity.

Federal agencies such as the Treasury Department issue a list of suspected criminals (such as the Specially Designated Nationals and Blocked Persons list from the Office of Foreign Assets Control, <http://www.treas.gov/ofac/>) that companies can and might be required to match against their customer databases. Only a robust data quality tool provide this matching capability for complex name forms that overwhelm simple searches (see diagram, below). Moreover, only in an organization with EWDQ can ensure that the matching process includes all customer records.

There is no limit to the vulnerability of your organization when it comes to fraud. Consider the effect that an unsavory character may have on your insurance rates, credibility and liability. EWDQ is an effective weapon against fraud, increasing your ability to identify criminals and criminal behavior.



**Case 6. Increase Strategic Impact:**

**Productivity** – Business intelligence (BI) systems help instill knowledge of your business and sales processes. Raw customer and business data can be unreliable, however, and additional checks and balances are necessary to insure accurate analysis. EWDQ lets you rely more on BI reports without chasing down missing information or reviewing paper-based records.

But how accurate is accurate enough? If your company isn't thinking about data quality, it could be undermining profitable opportunities and repelling loyal customers—even if data is 90 percent accurate.

Widget Company USA, Inc.			
Customer ID	Name	Product	Quantity
P_346982	United Business Mechanics	Wid23334	100
P_346982	UBM	2334	234
UBM	U.B.M., Inc.	Wid - 23334	1710
U100	Un. Bus. Mech.	W23334	-99
U101	United	23334	500
346982Z	United Bus. Machiens	23344	225
346982	Selpia (Formerly UBM)	323334	1050

For example, given the inaccuracies in the data table at left, how many widgets did U.B.M buy last year? Was U.B.M. treated as a top customer last year or just one of the crowd? If your reports miss just one of U.B.M.'s

transactions, it could be missing as much as 20 percent of business in projecting sales from the company this year. Loss of confidence in the system devalues it, leading to a manual check of the database, a cross check against billing records and other productivity leaks.

**Going Concern** – Strategically, businesses must face the onslaught of data flow while thinking about the “going concern” of the corporation. Most businesses experience IT turnover. Experts agree that enterprises will experience turnover rates of at least 20% annually among key knowledge and leadership workers. A well documented and enterprise-wide business rules system helps a company to withstand such intellectual turnover. Data quality tools, such as the Trillium Software System, are the best way to implement and maintain a process that will continue to provide with clean data that withstands the evolution of the employee bases, the corporate direction and even the market.

**THE GOING CONCERN AND CALL CENTER COSTS**

*Company A does not have a data quality tool. When the call center manager leaves to pursue greener pastures, the new chief takes on the issue of data quality and sets up a new system. Research and training costs climb as the new chief implements a new methodology. All staff must be trained according to the new standards.*



*Company B uses the Trillium Software system to manage data quality. The new chief must investigate the business rules in place and continue to train new staff, but since data quality is a documented, repeatable process, it's easy to keep in place and tweak to the new chief's needs.*

### Data Quality Deployment Costs

Given all of its benefits to your bottom line, data quality is extremely important to your operating efficiency and competitiveness. Yet how to implement data quality—first in your project, then across your enterprise—is the conundrum. You could ignore the problem and hope it goes away, which is the least likely route to success. You could hire a group of interns to manually scour your database and deduplicate records. This wouldn't provide relationship matching, however, and would be expensive, given the training costs and challenges involved in making sure interns follow business rules. Nor could it be easily managed across multiple data systems. You could start a programming effort of your own to match records and filter out bad data. This solution tends to provide good-news-bad-news results. On the one hand, your database programmer will never be out of a job; on the other hand, she'll never be done! With all of the possible data quality issues, a home-grown solution can eat up your programming resources for months—even years—to come.

Large companies agree that the tool to help achieve EWDQ is Trillium Software. John Elliott, a senior manager at Microsoft and a Trillium Software customer, says "Within the first year, Microsoft experienced a tenfold ROI from our initial investment with Trillium Software." Since its initial success, Microsoft has expanded the use of the Trillium Software System across the enterprise, cleansing virtually all customer records.

Wes Hilman, the data quality project manager at 3M says, "Bad data was costing us mightily. 3M saves some \$200,000 a year with the Trillium Software System." 3M's project was featured in the November 20, 2000 issue of BusinessWeek.

Austin Bridges, the database development manager at Littlewoods Ltd in the United Kingdom says, "The ability to know which accounts belong to the same is worth over £100,000 a year to us in reduced bad debt costs. This savings alone more than justifies the cost of the Trillium Software System." Other such user testimonials are available on the Trillium Software Web site at [www.TrilliumSoftware.com](http://www.TrilliumSoftware.com).

### Trillium Software™

The Trillium Software System® is a complete integrated family of software solutions that can lead you to efficient and effective customer information management-increased productivity, lower costs, and increased value of your customer information database. The bottom line is quality customer information that drives improved profitability.

### Rapid Deployment Methodology

The Trillium Software System's rapid deployment lets you quickly improve the quality of almost any data type. For fastest time-to-launch the data quality suite includes a proven methodology for customer identification and relationship matching. This methodology is:

*Data Investigation:* You can't begin to fix data quality issues until you can see the problems. With our data investigation tools, you'll be able to see commonly mistyped addresses and cities. You'll gain insight from reports that show blank field occurrences, frequencies of data "shapes", and data that doesn't follow standard convention. You'll use these reports to tune the rules that will standardize your data. Later, you'll even be able to show the return on investment and hit that home run with management.

*Data Standardization:* These tools will bring consistency to your data set to allow for better household and business matching

- Customer name and address data: Utilities that focus on name and address standardization. Allowing you to standardize names (e.g., Bob, Robert, Rob), business names (e.g., IBM, I.B.M. International Business Mach) and address formats. Any misplaced or misspelled elements can be corrected.
- Business data: Utilities that standardize Tax ID numbers, part numbers, telephone numbers, and other non-customer information. Is the string "Dog in Back Yard" important to your delivery to this customer?

*Worldwide Verification:* With the Trillium Software System, you can check your records against worldwide postal directories and local business rules.

*Data Enrichment:* Incorporate third party data from Harte-Hanks Market Intelligence or D&B to add geographical information, for example, to your customer database.

*Complex Linking:* Match households and businesses on your own criterion and remove/consolidate duplicates. Find the relationships in your data that you may have been missing.

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*Enterprise Job Stream Exposure:* Once your legacy data is cleansed, incorporate the Trillium Software System into the job stream throughout your enterprise across platforms and applications. Our plug-ins support many of the top enterprise applications, including Microsoft DTS, IBM DB2, Siebel, Oracle and others.

The Trillium Control Center is a graphical user interface (GUI) application used to set up, tune and optimize the tailored output from the Trillium Software object libraries. Out of the box, the Trillium Software System includes more than 200,000 business rules that reflect the expertise Trillium Software has gained from processing millions of customer records a year. You can also create and edit business rules through the Trillium Control Center.

### Your Challenge

Picture your business 2, 5 and 10 years in the future. Now, focus on your prospect, customer, and transaction databases. Will they be full of valuable, timely information or a jumble of duplicate records and misleading data? Most experts agree that businesses will increasingly rely on worldwide data to make decisions and market products. It is crucial that you not let faulty data undermine this trend and your competitive position. An EWDQ solution from Trillium Software can help you gain a strategic advantage over your competition.

For more information on the Trillium Software System, see:

**<http://www.trilliumsoftware.com>**

For questions and comments about this paper, contact:

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