Data Validation the Best Practice for Data Quality In Fixed Asset Management

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Abstract

Data quality has been identified as a major contributor to enormous cost overruns and ineffectiveness. By one study, American business incurs a $611 billion annual cost because of bad data. Data quality affects fixed asset management and property related challenges. This can take the form of personal property tax, insurance premium overpayments, inaccurate decision based information, and other key operational inefficiencies. Data quality in conjunction with data validation is the best practice for ensuring the maximum achievable benefits in asset management.

Data Quality

A recent analysis by The Data Warehouse Institute (TDWI) estimates that poor data quality costs American businesses $611 billion a year in operating expenses and overhead. The most serious problems occur when poor quality data is used to report corporate financials or to make strategic business planning decisions.

Another study performed by PricewaterhouseCoopers in 2001, estimated that poor data management (quality) was costing businesses more than $1.4 billion per year. Over one-third of those surveyed were forced to delay or scrap new system implementations due to poor data quality.

Other research published by the not-for-profit Information Integrity Coalition, an organization that promotes the awareness and understanding of information integrity, has estimated that the pervasive lack of information integrity "costs the economy hundreds of billions of dollars." Studies at MIT and other notable institutions of higher learning echo similar estimates about the impact of poor data quality on the cost structures of our corporate organizations.

These are staggering statistics when considering the financial implication on operational profitability, global competition, and effective financial management.

(**Please note** that these studies are not focused on fixed assets specifically, but the overall impact of poor data quality in general. However, this does not diminish the empirical experience commonly uncovered during AMR's inventory engagements.)

It is interesting to note that in recent years an entire industry has grown to address these quality issues found in corporate application systems. These technologies provide comprehensive and intelligent algorithms that programmatically mend, consolidate, and attempt to repair the data resident in corporate databases.

Furthermore, the realization that data quality is a major contributor to the overall cost structure of an organization has led to major system initiatives intended to address this issue. System integration efforts among disparate application systems, databases, and business processes are evaluated and when possible consolidated to minimize poor data quality.

All these efforts are critical to the on-going operational effectiveness and corporate agility of the global enterprise.

The Problem

Company fixed assets make up a large portion of the Balance Sheet. After 14 years of experience, AMR has repeatedly found that 65% of fixed asset data is incomplete, inaccurate, or altogether missing, while 10% to 30% of fixed assets are no longer owned. This presents challenges for tax, capital budgeting, insurance, and other related issues. Additionally, it represents a potential disclosure risk for executives now

responsible for certifying the accuracy of financial data, as in the case of Sarbanes-Oxley compliance. This data validation/quality issue has become a potential risk for executive exposure.

Over the years, users of corporate information have come to recognize the age old adage “garbage in, garbage out.” For these reasons programmatic steps are taken to ensure data quality. Data entry and field edits are imposed to catch the obvious typographical errors and database triggers and rules are instituted to prevent the entry of duplicate records. While these measures serve an important role in the information capturing activity, many errors, omissions, and duplicates can and do occur. In this context, data quality and data validation are two separate and distinct steps necessary to ensure best practices.

If we examine Financial Systems, for example, they are intended to reflect the current state of a business enterprise. The transaction systems and the fixed asset ledger are intended to interrelate such that an executive can understand the financial condition of the enterprise at any moment in time. The reality is most systems disconnect between the information gathering phase and the business process. Either the transactional data entry fails to support the level of detail needed to reflect the business process or the business process is not followed. The latter is more common.

For example, a financially justified decision is made to upgrade a portion of an original $5,000,000 investment in a production machine. The added $250,000 investment will improve production quality and manufacturing efficiency. The corresponding transaction is entered as $250,000, for the equipment upgrade. Presumably, this upgrade replaces a portion of the original equipment. Since this is a partial retirement with insufficient detail in the fixed asset data, the user has no corresponding record to offset. The result is the partial retirement never gets recorded. The net effect is an asset with a gross book value (GBV) of $5,250,000, an unbooked ghost entry, and an inaccurate depreciation value.

Other contributors that affect fixed asset management include the complete replacement of an asset with no corresponding retirement, unrecorded equipment transfers from one corporate entity to another and/or incomplete consolidation of assets from a newly acquired company.

Given these circumstances most organizations require data validation beyond any measures taken to ensure data quality. Data validation, in this context, is the human effort to certify that the information in corporate systems reflects reality. Fixed assets are one area where data validation is not only possible, but desirable.

Personal Property Example

Most organizations have automated financial systems to capture transactions, post ledger entries, and properly account for fixed assets. However, it is the unrecorded data detail that can lead to unnecessarily high personal property tax (PPT) liabilities. An example will clarify this data visibility issue.

A Michigan based manufacturer acquires a machine press and enters the transaction in the fixed asset ledger at a $4,000,000 acquisition cost. This transaction can be seen in Exhibit 1 below. The tax rate used in this example is a five mill PPT rate. Thus the estimated PPT in 2003 is approximately $89,000.

Exhibit 1

Line Items	Investment	PPT Class	Millage	Est. PPT 2003
Press	$ 4,000,000	ME	5.00	$ 89,000

However after careful examination the following is learned about the make up of this transaction. The $4,000,000 investment is comprised of eleven (11) major component costs. A breakdown for this example can be seen in Exhibit 2 below.

Exhibit 2

Line Items	Investment	PPT Class	Millage	Est. PPT 2003
Press	$ 2,950,000	ME	5.00	$ 65,638
Training Expense	$ 15,000	Exempt	5.00	$ -
Demolition	$ 50,000	Exempt	5.00	$ -
Press Pit	$ 250,000	ME	5.00	$ 5,563
Safety Railings	$ 50,000	ME	5.00	$ 1,113
Hydraulic Mule	$ 100,000	ME	5.00	$ 2,225
Furniture	$ 25,000	FF	5.00	$ 569
Computer Hardware	$ 150,000	CE	5.00	$ 2,250
Software	$ 190,000	Exempt	5.00	$ -
Conveyor	$ 80,000	ME	5.00	$ 1,780
Crane	$ 140,000	ME	5.00	$ 3,115
Total	**$ 4,000,000**			**$ 82,251**

It is apparent that after the detail is properly recognized these costs can be classified for optimal tax savings. As can be seen, $255,000 of the investment is actually exempt from tax, while $175,000 of the investment is reclassified as Furniture & Fixtures (FF) and Computer Equipment (CE). In the latter case, although a PPT is required, it is at a

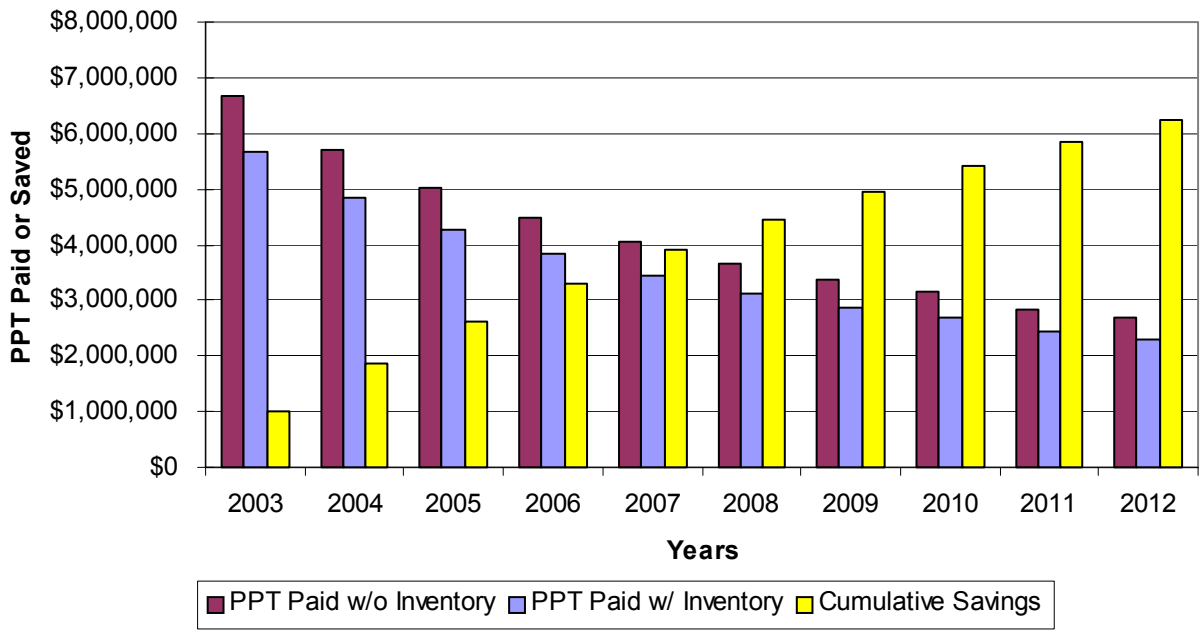
different rate because these items are in accelerated depreciation categories. The difference in tax liability is $6,749 (7.58%). Admittedly, this is not a significant savings, but it should be recognized that this example applies to a single investment or transaction.

When this analysis is performed across an enterprise or facility the tax savings become significant. Furthermore, these savings over the many years that the PPT is paid can be huge.

In our single press example, when the savings are calculated over the following ten years, taking into account a declining tax depreciation rate, the savings accumulate to $47,908. This calculates to an aggregate savings of 8.62% over the ten-year period.

Consider a more dramatic example. Assume a facility that has $300,000,000 in Fixed Asset Gross Book Value (GBV). Applying the same percentage breakdown of PPT classifications, the first year of savings yields $506,175. Over a ten-year period, taking into account the appropriate depreciation schedules, the accumulated tax savings computes to $3,593,100. This value assumes the same percentage of aggregated savings of 8.62%.

Exhibit 3
Cumulative Savings



The example originally used was purposefully conservative. In a more realistic example, the tax savings gained from proper PPT classifications is nearer an aggregated savings of 15.0% over a ten-year period. Exhibit 3 demonstrates the potential savings that can be achieved with improved PPT classification of Fixed Assets.

In Exhibit 3, the first bar represents the PPT paid if no detail analysis and reclassification is performed, the second bar represents the PPT paid upon a reclassification being performed, and the third bar represents the accumulated savings achieved over ten years. These totals are based on an aggregated savings of 15.0% approaching $6,255,000. Dramatic savings can be achieved with improved data quality after data validation.

Ghost Asset Example

This example will examine a more complex scenario. Using the same press from the previous example, three transactions occur in 2003 and 2004. The first observation to note in Exhibit 4 is that these transactions usually do not tie to this specific fixed asset. Each transaction normally stands on its own within the fixed asset ledger. Notwithstanding, these entries assume connection to this specific press. It is difficult to reconcile how these entries affect the composition of the fixed asset without the associated detail, yet often transactions are recorded in this manner. As can be seen in Exhibit 4, the accumulated PPT paid through 2005 comes to $252,580 and the Press has a GBV of $4,720,000.

Exhibit 4

Year	Line Items	Investment	PPT Class	Millage	Est. PPT by Year
2002	Press	$ 4,000,000	ME	5.00%	$ 89,000
	2002 Total				**$ 89,000**
2003	Press	$ 4,000,000	ME	5.00%	$ 76,000
	Press Upgrade	$ 165,000	ME	5.00%	$ 3,671
	Press Enhancement	$ 75,000	ME	5.00%	$ 1,669
	2003 Total	**$ 4,240,000**			**$ 81,340**
2004	Press	$ 4,000,000	ME	5.00%	$ 67,000
	Press Upgrade	$ 165,000	ME	5.00%	$ 3,135
	Press Enhancement	$ 75,000	ME	5.00%	$ 1,425
	Project #3344	$ 480,000	ME	5.00%	$ 10,680
	2004 Total	**$ 4,720,000**			**$ 82,240**
	Grand Total				**$ 252,580**

Exhibit 5a

Year	Line Items	Investment	PPT Class	Millage	Est. PPT by Year
2002	Press	$ 2,950,000	ME	5.00%	$ 65,638
	Training Expense	$ 15,000	Exempt	5.00%	$ -
	Demolition	$ 50,000	Exempt	5.00%	$ -
	Press Pit	$ 250,000	ME	5.00%	$ 5,563
	Safety Railings	$ 50,000	ME	5.00%	$ 1,113
	Hydraulic Mule	$ 100,000	ME	5.00%	$ 2,225
	Furniture	$ 25,000	FF	5.00%	$ 569
	Computer Hardware	$ 150,000	CE	5.00%	$ 2,250
	Software	$ 190,000	Exempt	5.00%	$ -
	Conveyor	$ 80,000	ME	5.00%	$ 1,780
	Crane	$ 140,000	ME	5.00%	$ 3,115
	2002 Total	**$ 4,000,000**			**$ 82,251**
2003	Press	$ 2,950,000	ME	5.00%	$ 56,050
	Training Expense	$ 15,000	Exempt	5.00%	$ -
	Demolition	$ 50,000	Exempt	5.00%	$ -
	Press Pit	$ 250,000	ME	5.00%	$ 4,750
	Safety Railings	$ 50,000	ME	5.00%	$ 950
	Hydraulic Mule	$ 100,000	ME	5.00%	$ 1,900
	Furniture	$ 25,000	FF	5.00%	$ 500
	Computer Hardware	$ 150,000	CE	5.00%	$ 1,650
	Software	$ 190,000	Exempt	5.00%	$ -
	Conveyor	$ 80,000	ME	5.00%	$ 1,520
	Crane	$ 140,000	ME	5.00%	$ 2,660
		$ 4,000,000			$ 69,980
	Press Upgrade				
	Demolition	$ 35,000	Exempt	5.00%	$ -
	Conveyor	$ 40,000	ME	5.00%	$ 890
	Computer Controller	$ 85,000	CE	5.00%	$ 1,275
	Training Expense	$ 5,000	Exempt	5.00%	$ -
	Press Upgrade	**$ 165,000**			$ 2,165
	Press Upgrade Retirements				
	Partial Conveyor	$ (60,000)	ME	5.00%	$ (1,140)
	Computer Hardware	$ (75,000)	CE	5.00%	$ (825)
	Retirements	**$ (135,000)**			$ (1,965)
	Net Press Upgrade	**$ 30,000**			**$ 200**
	Press Enhancement				
	Software	$ 75,000	Exempt	5.00%	$ -
	Press Enhancement	**$ 75,000**			$ -
	Press Enhancement Retirements				
	None	$ -			$ -
					$ -
	2003 Total	**$ 4,105,000**			**$ 70,180**

In Exhibits 5a and 5b on the preceding page and below, the transactions are properly recorded with the correct level of detail. There are several differences between Exhibit 4 and Exhibits 5a and 5b. First, the GBVs differ. Exhibit 4 reports the Press GBV at $4,720,000, while Exhibit 5b reports the Press GBV at $4,345,000, an overstatement of $375,000. Second, the Exhibit 4 PPT payment amount is $252,580, while the Exhibit 5b PPT payment amount is $217,384, a PPT overpayment of $34,196.

Exhibit 5b

Year	Line Items	Investment	PPT Class	Millage	Est. PPT by Year
2004	Press	$ 2,950,000	ME	5.00%	$ 49,413
	Training Expense	$ 20,000	Exempt	5.00%	$ -
	Demolition	$ 85,000	Exempt	5.00%	$ -
	Press Pit	$ 250,000	ME	5.00%	$ 4,188
	Safety Railings	$ 50,000	ME	5.00%	$ 838
	Hydraulic Mule	$ 100,000	ME	5.00%	$ 1,675
	Furniture	$ 25,000	FF	5.00%	$ 431
	Computer Hardware	$ 75,000	CE	5.00%	$ 600
	Software	$ 190,000	Exempt	5.00%	$ -
	Conveyor	$ 20,000	ME	5.00%	$ 335
	Crane	$ 140,000	ME	5.00%	$ 2,345
	Conveyor Upgrade	$ 40,000	ME	5.00%	$ 760
	Computer Hard. Upgrade	$ 85,000	CE	5.00%	$ 935
	Press Enhancement	75,000	Exempt	5.00%	$ -
		$ 4,105,000			
	Project #3344				
	New Crane	$ 180,000	ME	5.00%	$ 4,005
	New Hydraulic Mule	$ 80,000	ME	5.00%	$ 1,780
	Press Pit Modifications	$ 75,000	ME	5.00%	$ 1,669
	Demolition	$ 50,000	Exempt	5.00%	$ -
	Training Expense	$ 25,000	Exempt	5.00%	$ -
	Software Enhancements	$ 70,000	Exempt	5.00%	$ -
	Project #3344	**$ 480,000**			
	Project #3344 Retirements				
	Old Crane	$ (140,000)	ME	5.00%	$ (2,345)
	Old Hydraulic Mule	$ (100,000)	ME	5.00%	$ (1,675)
	Retirements	**$ (240,000)**			
	2004 Total	**$ 4,345,000**			**$ 64,953**
	Grand Total				**$ 217,384**

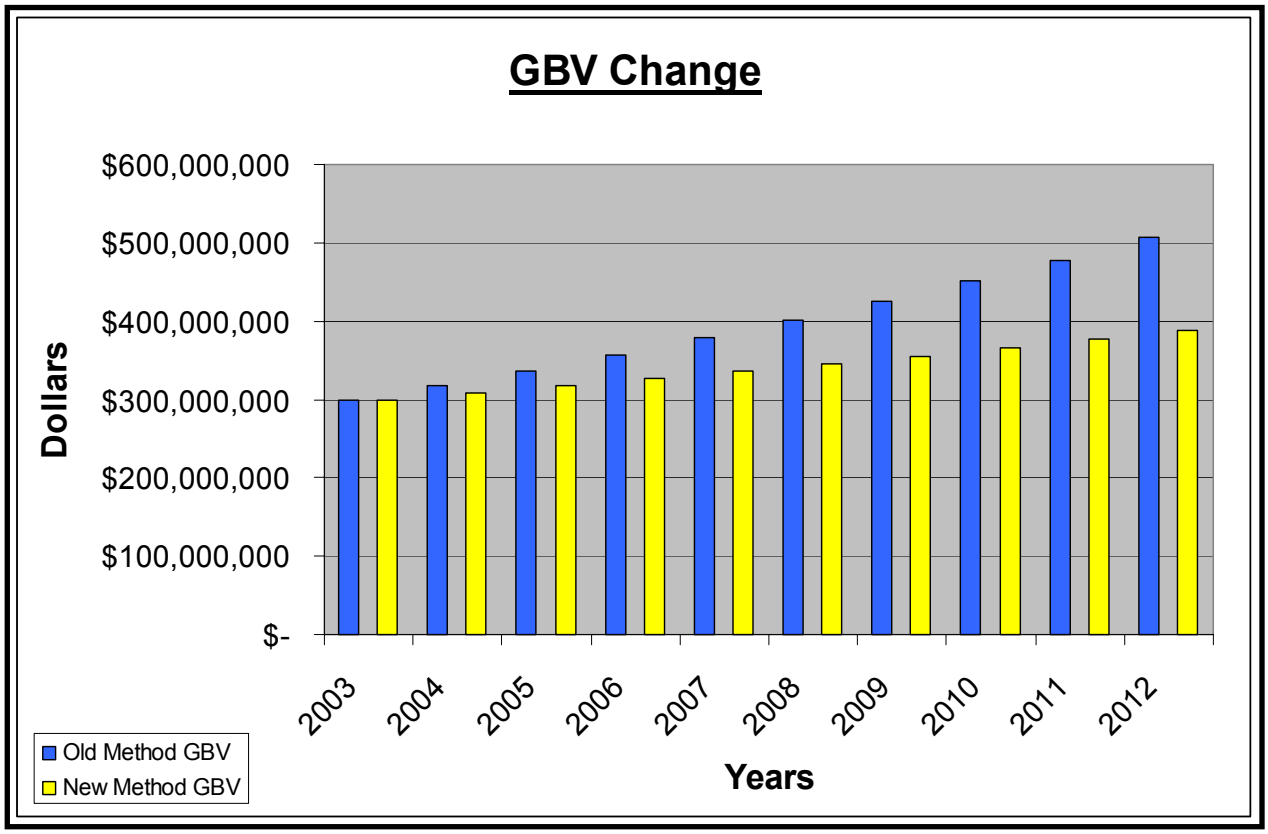
To recap: the fixed assets were overstated by $375,000 of Ghost Assets that led to a PPT overpayment $34,196.

Extrapolating this scenario to a facility with fixed assets valued at $300,000,000 over a ten year period, the GBV is overstated by $119,666,386 and the estimated PPT overpayment is $14,624,863. This example is quite conservative. It assumes a 2.9% compounded growth rate in total fixed assets. The next two charts demonstrate the significant differences that result from improved data quality methods.

The Solution

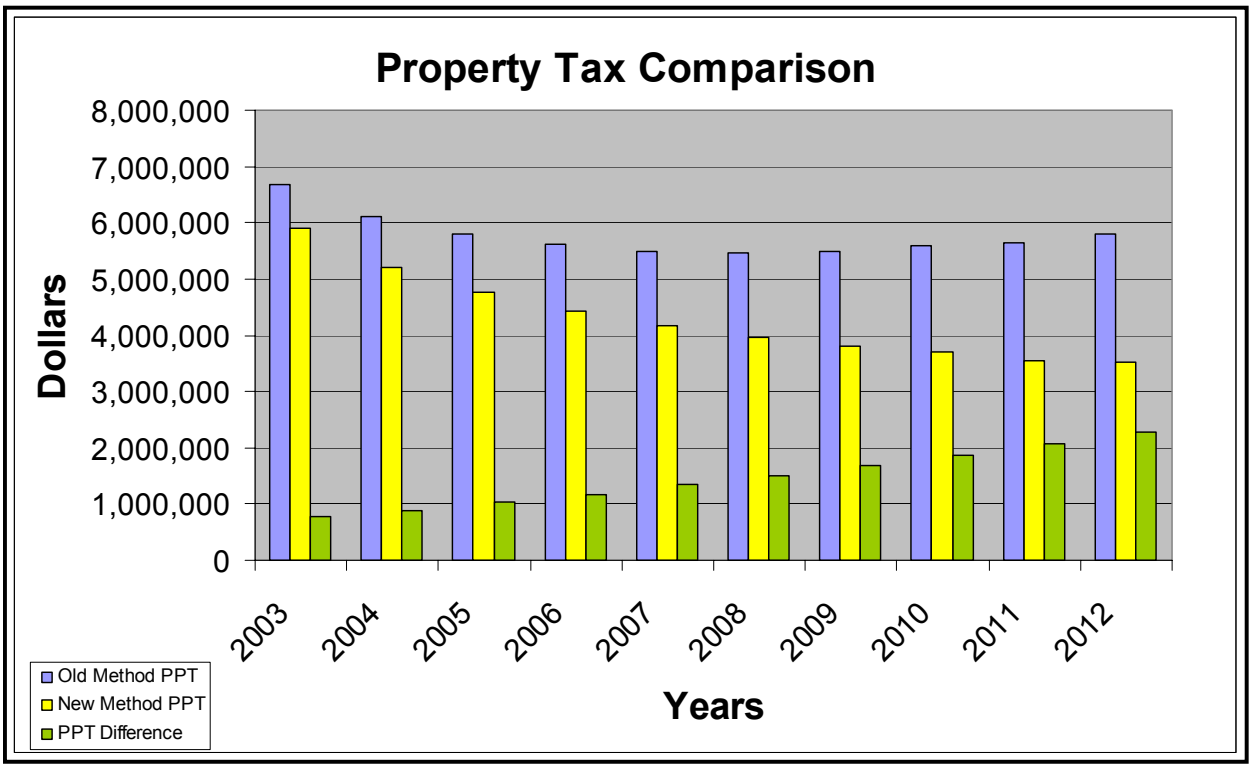
In the depicted examples improved data quality helped achieve these projected results. More importantly, these tax mitigation improvements can be achieved regardless of when assets are put into service.

The good news is that fixed asset data validation is not an extraordinary exercise costing millions of dollars. In fact, the final result is often a reduction in operating costs, tax savings, and efficiencies that far outweighs the fractional cost of fixed asset verification.



The Best Practice for data validation is an independently conducted wall-to-wall physical inventory and reconciliation of all fixed assets. This comprehensive approach can dispel any uncertainty about the financial accuracy of fixed assets. This method establishes the foundational baseline for business process improvements and the management of fixed assets on a cycle-basis.

For companies that implement new ERP and other financial systems, the validation of incoming data can substantially reduce the continuation of errors. It can shorten the implementation time and effort by eliminating a large portion of non-validated legacy



data from being transferred to the new system. In this scenario, the user gains in both data quality and data validation.

The establishment of controls and audit procedures required by Sarbanes-Oxley are relevant to mitigating management risk. But these steps alone are not sufficient given the historical nature of past practices and circumstances. Additionally, the ever changing landscape of Corporate America, with the commonality of acquisitions, reorganizations, and divestitures, points to the need to establish a new fixed asset baseline if any certainty can be realized. This approach can become the definitive method for attestation required for Sarbanes-Oxley compliance.

The savings achieved directly impacts the bottom line based on factual and validated cost data (not subjective valuation data). Data validation delivers confidence for regulatory compliance and data quality for better strategic decisions.

Summary

Lack of data quality is a significant deterrent for reducing operational profitability and effective financial management. An entire industry has developed in an attempt to deliver a systematic data scrubbing capability to address this issue. However, data

quality systems cannot validate the data. This requires human intervention and a data validation process.

Through data validation, a company can confidently reduce operational inefficiencies and costly errors. A wall-to-wall physical inventory achieves verifiable results while cleansing fixed asset data. It provides the following advantages:

- It eliminates the "ghost" asset problem that often arises from unrecorded partial retirements and aggregate records.
- It fortifies and corrects fixed asset data; reducing the 65% error rate substantially below a 5% error rate.
- It ensures the quality of data in corporate information systems.
- It validates fixed asset data required for Sarbanes-Oxley compliance.
- It delivers personal property tax relief from improved knowledge of fixed asset data and proper classification as shown by the example in this paper.
- It simplifies system deployments where legacy information falls short of accuracy and validity; the user can repopulate new systems with fortified data rather than transferring suspect legacy data.

Data validation is the Best Practice for data quality in Fixed Asset Management.

About Asset Management Resources (AMR)

Since 1990, AMR has inventoried millions of fixed assets with GBV in excess of $150 billion dollars through 2003. Our expertise encompasses the project management and technological competencies to collect information within a corporate operating environment with limited disruption and maximum efficiency. The process incorporates a variety of quality control mechanisms to ensure completeness, accuracy, and uniformity of data. Additionally, many companies can enjoy personal property tax relief with confidence.