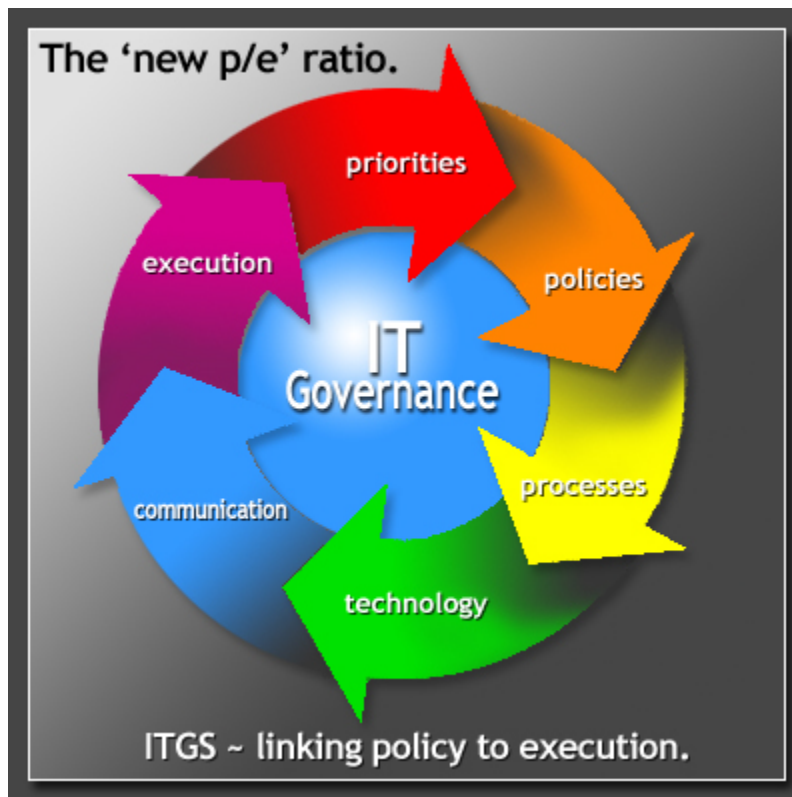




***HOW COMPANIES INCREASE PROFITABILITY, VALUATION AND  
SHAREHOLDER RETURNS BY ADOPTING IT GOVERNANCE***



*An ITGS ~ IT Governance White Paper*

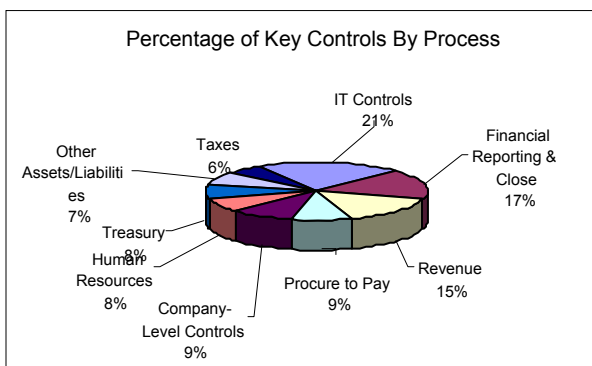


## HOW COMPANIES INCREASE PROFITABILITY, VALUATION AND SHAREHOLDER RETURNS BY ADOPTING IT GOVERNANCE

### An IT Governance White Paper

**Executive Summary.** *IT Governance adds value to the corporation. It increases profitability, valuations and price per share. Yet, 52% of corporate executives question IT's value. This may be because fewer than 20% of companies have adopted a standard framework and 75% of firms have ineffective IT Governance. Today, shareholders have little tolerance for IT failures. Shareholder activism, inflated D&O premiums, decreased liability coverage, increased costs, in-depth audit probing and the attention of the Securities and Exchange Commission have elevated IT Governance to purview of the Board of Directors. Companies are most vulnerable and incur the highest risk in software asset management. Nine COSO/COBIT control objectives directly cover software assets. This paper examines the best practices and business benefits of a comprehensive software asset management initiative as it fits into the greater IT Governance framework.*

IT Governance increases profit margins, raises market capitalization and enhances shareholder returns.



The 404 Institute, Sarbanes-Oxley  
Benchmark Study, March 2005

- *Companies with above average IT Governance are 20% more profitable than similar firms with poorer governance.<sup>1</sup>*
- *Investors pay 14%-22% more for well-run, well-governed companies.<sup>2</sup>*
- *Top-rated Corporate Governance companies consistently return more than triple to investors than that of lower-rated companies over 3-, 5- and 10-years<sup>3</sup>.*

***What more could a board or executives ask?***

In a worldwide survey of 7,000 companies, the IT Governance Institute to the delivery of strategic vision.<sup>4</sup> Yet, 52% of CEO's question the value their IT departments deliver<sup>5</sup> and 70% identified system controls as a significant challenge to the company's ability to achieve on-going compliance.<sup>6</sup>

It gets worse. The evidence shows up in a company's financial statements. In its study of 2004 financial reports, The 404 Institute found:<sup>7</sup> IT Controls represent 21% of all controls, followed by financial report and close (17%) and revenue (15%). IT controls account for

- 35% of deficiencies
- 23% of significant deficiencies
- 27% of material weaknesses

IT deficiencies surpassed revenue recognition as an indicator of an inadequate control environment by the Securities and Exchange Commission.<sup>8</sup> The Sarbanes-Oxley Act requires the SEC to review all financial reports of all companies every third year. With the number of deficiencies, significant deficiencies and material weaknesses in IT eclipsing revenue recognition and taxation, you can count on the SEC noticing. Next year, the auditors will probe deeper. The Securities and Exchange Commission said,

*The PCAOB has determined that compliance with legal, statutory, regulatory and contracts represents a significant deficiency and should be viewed by auditors as an indicator of material weakness elsewhere. Auditors are admonished to dig deeper.*

Software asset management involves both legal and contractual compliance. IT catapults right to the top of the list of Board attention.

Gartner expects compliance deficiencies attributable to IT will double by 2008.<sup>9</sup> Perhaps this is because <20% of companies have adopted a standard or framework, such as COBIT, ITIL, CMMi, ISO 9000 or Six Sigma<sup>10</sup> and 75% of companies have ineffective IT Governance according to Gartner.<sup>11</sup>

***It costs cold, hard cash***

IT expenditures represent at least 40% of capital expenditures today.<sup>12</sup> No wonder board interest is piqued. Only 20%-25% of those budgets go to strategic objectives. The remaining 75% - 80% go to day-to-day "keep-the-lights-on" activity.<sup>13</sup>

Board oversight is especially relevant since 20% of Corporate IT budgets go into projects that fail to achieve corporate objectives. 68% of IT projects are late, over budget and do not meet their objectives.<sup>14</sup> 90% are delivered late,<sup>15</sup>

*One-third of all companies reporting on internal controls for FY 2004 were found to have deficiencies or material weaknesses in IT.*

*"Sarbox & IT: How Bad Can It Get?"  
cfo.com, June 22, 2005*

50% are over budget,<sup>16</sup> 50% fail to meet objectives,<sup>17</sup> and 30% of projects are cancelled prior to completion.<sup>18</sup>

The cost in the U.S. is \$100 to \$150 billion.<sup>19</sup> It amounts to \$500 billion in waste worldwide.<sup>20</sup>

#### **Why Boards Take Note**

Auditors pour over IT controls  
Deficiencies run rampant  
Runaway IT costs  
Corporate reputations at stake  
Shareholder activism threatens their jobs  
Director performance and compensation under scrutiny

#### **Intangibles**

An ever-larger percentage of market value has moved from tangibles to intangibles. According to the Brookings Institute, 85% of a company's assets reside in intangibles.<sup>21</sup> A large part of intangibles are IT assets. Because IT projects consume so much of a company's financial, human, intellectual property, technology and relationship assets, and profitability for organic growth it is imperative companies treat these intangibles the same as other corporate assets.

Software Asset Management is key to protecting these assets.

#### **Risk**

The risk is greatest and you are most vulnerable in software asset management. Software gets on company computers from many sources:

- Employees bring software in from home and load it onto company computers
- Employees purchase software retail and add it to their expense reports
- Downloading software from the Internet is epidemic
- Laptops are used for more than company business
- Employees borrow software to use at home while working on company business
- The wrong set up CD is used to install standard images

Because it is so easy to use software without proper licensing, your exposure increases exponentially with each employee.

Today, there is little shareholder tolerance for IT failures. When shareholders vote their pocketbooks, boards of directors take heed. Boards of directors are involving themselves in the oversight of IT because their jobs are at stake. With auditors digging in, the SEC looking over their shoulders, shareholder activism and the direct impact on business – such as cost of capital, D&O insurance coverage and premiums, professional services fees, M&A transactions and valuations – you bet boards have their ears perked.

#### **How does this impact business?**

**Cost of capital** – Commercial lending institutions and investors alike require Sarbanes-Oxley type governance.

**Credit Ratings** – Credit bureaus have created rating mechanisms on governance criteria. These scores go into credit ratings and rankings for commercial paper and bonds. Credit ratings affect access to capital and debt, and determine interest rates. It affects the amount you pay to borrow money.

**Commercial loans** – Debt instruments from lending institutions include clauses that require adherence to all applicable State and Federal Laws and regulations. Banks in the Basell II and Community Banking Act environments require evidence of Governance provisions aligned with Sarbanes-Oxley. In the medical arena, HIPAA, Title XX §11 and adherence to financial criteria requires more stringent governance.

**D&O Insurance** – Premiums have increased 3- and 4-fold in the last two years.<sup>22</sup> At the same time, coverage has decreased or ceased all together.<sup>23</sup> Insurance companies are using the fact that companies report deficiencies as reason to cancel liability and D&O policies.<sup>24</sup> D&O insurance does not cover incidents, individuals or Board Members when Federal law is broken – even if it is inadvertent.

**Professional services fees** – Audit fees have doubled.<sup>25</sup> Legal fees have doubled.<sup>26</sup> Board fees increased 150%.<sup>27</sup>

**M&A** – Acquirers require target companies to become compliant on Governance criteria before a deal closes. They are requiring the target company to pay for software license compliance – or they carve it out of the deal. It could easily delay the transaction by 6 months or more.

For the acquirer, they must be totally compliant the day the deal closes. Many do not want to incur the risk. Acquirers are looking deeper in due diligence to see that companies are well-governed. It affects their own valuations after the merger.

Targets not in compliance with software licenses are having their valuations reduced or carved out to offset the costs the acquirer will have to bear to bring them current.

**Valuations** – As we have seen, good governance garners 14% to 22% higher market capitalization than companies with poor governance.<sup>28</sup>

**Financings** – Investors scrutinize deals more closely today. When due diligence reveals company assets are not fully protected with formal policies and procedures and license compliance, deals turn south quickly. One client called yesterday. They are seeking outside financing and the new investors are requiring a software audit.

*Sustainable  
compliance and  
extracting value*

**What is your strategy?**

Is it merely to pass the audit? Or, is it to make sure the \$5 to \$8 million you invested in compliance this year gives value back to your business?

This is where IT Governance comes in. It is shown that well-run companies quickly identify when projects start to drift; problems are identified and reported on; joint decisions (between business units, executives and IT) are made on whether to continue to invest to make them succeed or cut losses and cancel them.

Corporate executives are expecting compliance with §404 to have residual benefits such as improved controls, processes, efficiencies and work environment.

The key driver is the value of information to the corporation. Software asset management affects the quality and value of information.

*IT assets are more and more important to the performance of most enterprises. A reliable, cost-effective, regulation-compliant, secure, strategic IT portfolio is more critical today than ever before.<sup>29</sup>*

According to the IT Governance Institute and the National Association of Corporate Directors, “organizations should satisfy the quality, fiduciary and security requirements for their information as for all assets.”<sup>30</sup> Boards play an oversight role and can require measurable results.

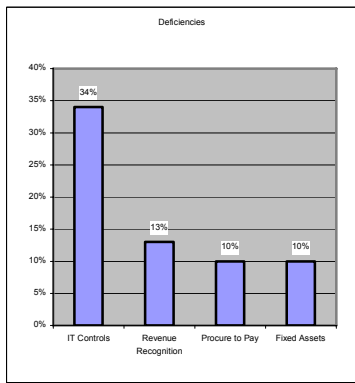
The value of IT Governance is measurable. One can quantify its contribution to improved operational margins; increased return on assets and achieving corporate strategic priorities sooner.

Now the first round of Sarbanes-Oxley reporting is complete, Gartner predicts two themes for 2005: They are: adoption of best practices and accelerated focus on use of IT.<sup>31</sup>

The remainder of this paper covers both. First we will show how SAM adds value to your business. Then, we will describe how SAM fits into IT Governance. Next, we will review the 9 COBIT Control Objectives related to SAM and will weave in SAM best practices. Then, we will conclude with IT Governance Best Practices.

### **How SAM adds value to your business.**

Software Asset Management enables the achievement of business goals by providing the technology that delivers productivity, efficiency and organizational effectiveness. SAM contributes to market value and competitiveness by enhancing the organization's ability to exploit its information assets. It contributes to growth by increasing productivity and margins enabling organic growth. IT Governance enhances shareholder value, improves market capitalization and protects reputation.



SAM provides opportunity to achieve competitive advantage. Round the clock business system and network capacity availability is essential for global business. A comprehensive software asset management program helps reduce the introduction of worms, viruses and malicious code to keep networks up and running. SAM best practices, for example, would control or limit downloads to pre-approved titles offered by reputable sites. Thus giving IT control to manage system resources and keep networks up and running.

It prevents security breaches and network damage by controlling the acquisition, installation and use of software; limiting software usage to authorized titles only and prohibiting the downloading of software by employees.

It is critical to elevate IT governance's priority.

*Companies that systematically manage lifecycles of the IT assets reduce costs per asset by as much as 30% in the first year, and between 5% and 10% in each of the next five years.<sup>32</sup>*

For software asset management this means physical, contractual and financial management of software and applications.<sup>33</sup> The physical management of software assets includes inventory of installed software, electronic distribution, version tracking, usage monitoring, hardware refresh and retirement and provisioning.

Contractual management includes license compliance, RFP preparation and review, negotiations, contract maintenance, supplier management, service-level management and surplus license management. Financial management includes procurement, budget, cost control, chargeback and operational efficiencies

### **What is IT Governance?**

IT Governance is about decision making. It's about risk management and controls. It is a set of responsibilities and practices exercised by the Board and executive management to provide strategic direction to IT, ensure corporate

directives are achieved, assess risks and assure shareholder interests are taken into account.

We found several definitions. In 1998, Marianne Broadbent, a Gartner Fellow, gave this definition:

*The organizational capacity to control the formulation and implementation of IT strategy and guide proper direction for the purpose of achieving competitive advantage for the corporation.*<sup>34</sup>

Weill and Ross broadened the definition in their landmark work, *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*:

*IT Governance specifies the decision rights and accountability framework to encourage desirable behavior in the use of IT.*<sup>35</sup>

And, Gartner refined it:

IT Governance specifies the decision-making authority and accountability to encourage desirable behaviors in the use of IT. IT Governance provides a framework in which decisions made about IT issues are aligned with overall business strategy and the culture of the enterprise.”<sup>36</sup>

According to Gartner, effective Governance includes:<sup>37</sup>

- What decisions must be made
- Who should make these decisions
- How decisions will be made
- How will performance will be monitored

We take the consensus approach and use this definition:

*IT Governance specifies the rights and accountabilities related to:*  
*IT Strategy and alignment with business strategy*  
*Delivery of value to the business*  
*Verification that resources are used responsibly*  
*Ascertaining risks are managed appropriately*  
*Assurance that stakeholder values and expectations are taken into consideration*

What risks are appropriately mitigated at the board level? Boards want a solid understanding of the affects of the following:

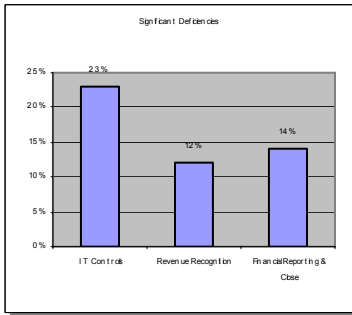
1. Interruption of operations
2. Excess spending
3. Business losses

4. Reputation damage – As Alan Greenspan put it, “Trust and reputation can vanish overnight. A factory cannot.”<sup>38</sup>
5. Regulatory non-compliance
6. Decentralized v centralized approaches to acquisition

IT Governance, the decision-making framework and its attendant accountability are responsibilities of the board.

This is reinforced by the IT Governance Institute and National Association of Corporate Directors in their treatise on Board responsibility:

*Providing strategic direction and establishing control over the execution of the business strategy are fundamental governance responsibilities. They must include the structural oversight of IT investments.*<sup>39</sup>



### **What should the Board ask?**

The appropriate level of questions the Board should ask are:

- Who has decision making rights over IT
- How to get IT to return value to the business
- How to protect the company's IT and other investments
- How to organize and control IT
- How to manage risk of using i.p.
- How to prevent bad investments in IT projects
- How to prevent business losses from IT
- How to achieve accountability
- How to select metrics to determine what gets measured, tracked and scored by business executives. If it's measured, it gets done.

Questioning does not stop with design. It is a continuous process for sustainable compliance.

Until now, we have looked at IT Governance as the Board would, in their fiduciary responsibility to protect corporate assets. Now, we will look at how the auditors who report to Boards and shareholders view SAM.

### **Top 5 Control Weaknesses**

In the §404 Institute study, the top five control weaknesses are:

#### **1. Application change management**

Employees come and go, computers get swapped out, new software is installed, versions are upgraded. Change on company computers take place at break-neck speed. Keeping up with changes falls by the wayside – much less keeping up with the documentation. Timely set up of accounts and termination of old ones is not being done.

## **2. Segregation of duties**

Often the same person authorizing changes to computers and networks also executes application installation and de-installations. Checks and balances require one individual to authorize and another to perform the work.

## **3. Review of audit logs**

The §404 Institute found audit logs were being run and kept, but no one reviews the logs periodically. The §404 Institute recommends auditing the audit logs.

## **4. Timely identification of abnormal transactions**

Some applications inherently sound alarms when abnormalities and anomalies occur. Best practice is for all software that touch transaction software integrate with alerts and alarms.

## **5. System configuration**

IT departments could not describe their network or their system configuration. Simply knowing the composition of the server farm and what is on company computers goes a long way to understanding what is needed to keep the lights on.

### **9 COBIT Control Objectives Related to SAM**

In the U.S., auditors adopted the COBIT standard for evaluating IT. There are 34 Control Objectives in the COBIT framework.<sup>40</sup> Nine of them relate directly to software asset management.

#### **1. Acquire application software**

SAM best practice is to have a written procedure that spells out how to acquire fundamental tools to accomplish corporate mission and objectives. There are three primary reasons for this:

- i. When employees need tools to do their jobs, to do it better or more efficiently, they need to know how to go about requesting it and obtaining approvals
- ii. IT departments need to control the system environment and keep track of the software assets installed on company computers
- iii. Employees need to understand software is copyright protected and a violation of copyright is a federal offense. The company is held liable and accountable. If disciplinary action is prescribed, it is fair to advise employees in advance what is expected of them and they will be held accountable.

Controls over acquisition, purchasing and approvals are required to assure corporate assets are being applied appropriately and wisely. Thus,

auditors are looking at IT processes, testing purchasing transactions and reviewing HR policies and procedures in this area of software asset management.

## **2. Develop and maintain policies and procedures**

In fact, having written, well-articulated policies and processes with respect to SAM are another best practice. ITGS, Inc. has identified 30 SAM policy areas that may come under further scrutiny this year. Without a clear, written policy statement or process, employees are free to go out and purchase what they want and load it on company computers. It places substantial burden on system resources.

Centralization of purchases is highly recommended. Centralized purchasing enables companies to take advantage of higher levels of volume purchases with commensurate deeper discounts. When decentralization is preferred, there should be an assessment and acknowledgement of the monetary and compliance risks by those responsible.

Integration of the SAM policies with the company's IT, HR and Accounting Procedures is essential for the organization to understand how it all works together and everyone is responsible for SAM. It's not just an IT thing.

## **3. Install application software**

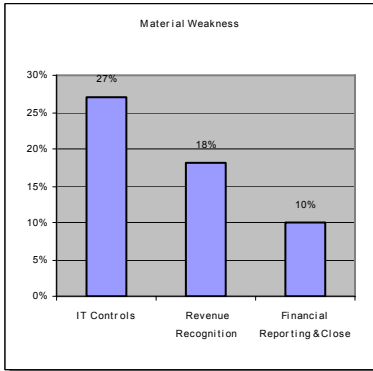
Especially today when network and system security measures are so intricate and complex, employees cannot be expected to install software themselves. Best practice formalizes the installation by IT departments to protect the network and make sure individual systems stay viable. Administrative rights enforce the limitations of installing software – but it is only a matter of time until someone figures out work-arounds or back doors to bypass admin rights.

## **4. Manage application change**

Best practice is a regular, rigorous program to profile each user and computer and keep up with changes on each. It's a challenge!

Change is inevitably the first area auditors will gravitate to. Keep an audit trail of changes.

- i. Monitor change pre-approvals.
- ii. Track all user and application changes across the infrastructure including servers
- iii. Track all user and application activity specific to control points
- iv. Define policies or objectives associated with control points and actively enforce them.



As show earlier, application change management was the leading control deficiency.

## **5. Ensure system security**

Best practice is to store original and backup media in separate locations. It assures quick disaster recovery.

In fact, another best practice is to include in the Disaster Recovery plan who is responsible for locating backup media and installing it so the business can be up and running quickly in event of disasters. Identify an alternate also, in case the primary person is unavailable. This hit home especially in Florida last year when the state was pummeled by four hurricanes one after another after another and another. One Miami client said, even though they did not suffer the brunt of any of them, with each hurricane warning, they were reminded of how inadequate their plan for emergencies and for disaster recovery was. They took the opportunity last September to really go through and create a comprehensive disaster recovery plan. It now includes the location of original and back-up media and identifies both primary and secondary employees responsible for locating the media. They also keep their paper trail documentation in a secure, fire-safe, water-tight location to show their insurance carrier proof of their rights to use the licenses in case replacement claim is made.

This brings us to record retention. Most businesses require two or three quotes on an RFP and they take the best price. Consequently, they use multiple vendors. The VARs, LARs and vendors keep track of only the licenses *they* sell to the company. No one is keeping track of the totals for the company. Best practice is to retain paper trail records and reconcile them periodically with vendor records.

Also, the vendors do not keep good tabs. One client relied on a vendor to provide proof of licenses. When the company went to upgrade, they found the vendor had recorded only 25 copies of Microsoft Office. They had nearly 400 employees. ITGS, Inc found 8 times the number of licenses the records indicated. This saved the company from having to repurchase licenses for software they had already bought.

As discussed previously, downloading software or using shareware can open a Pandora's box of worms, viruses and insidious, malicious code to bring a network down.

## **6. Manage configuration**

Best practice is to monitor configuration, versions, upgrades. Keep profiles of computers and individuals over different time periods and

historical archives. Standardize on titles and versions where possible. Asset Management Software tools can help. Use configuration management to plan for upgrades, refreshes, inventory control and asset allocation

#### **7. Mitigate exposure to risk**

Best practice is to have processes in place to assess compliance risk, investigate deviations and remediate. SAM controls include:

- i. Monitoring software purchases for planning and budgeting purposes
- ii. Change management on computers
- iii. Inventory reconciliation
- iv. Security
- v. Release deployment and management
- vi. Disciplinary action applied to violators of company policy

#### **8. Manage problems and incidents**

Best practices is to monitor help desk incident reports to surface recurring patterns to avert problems of epidemic proportions. Monitor usage. Not everyone needs the professional versions of applications, for example. You can save money by buying only those copies of advanced versions that are needed.

#### **9. Test and remediate**

Best practice is to conduct periodic inventories of installed software and reconcile inventories with licenses and purchase verifications regularly. Test the process to evaluate effectiveness. Sarbanes-Oxley requires companies to evaluate effectiveness quarterly.

#### ***What are the IT Governance practices of best run companies?***

In the Weill/Ross study,<sup>41</sup> they found these practices in common for the most profitable and highest valuation companies.

1. IT Governance Committee composed of board members, business executives and top IT executives
2. IT Governance principles are communicated frequently. Top managers can articulate the company's IT Governance strategy.
3. Project management office monitors projects and continually assesses their impact on returning value to the business
4. Formal tracking and measurement of performance, such as benchmarking and balanced scorecards are used.
5. Use of techniques to monetize results to demonstrate value going back to the business – such as Chargebacks.

#### ***Top 5 IT Governance Deficiencies:***

1. Application change management
2. Segregation of duties
3. Audit log review
4. Timely identification of abnormal transactions
5. System configuration understanding

### ***One Size Does Not Fit All***

Peter Weill and Richard Woodham of MIT's Sloan School of Management advise "Effective IT Governance requires harmonization of business objectives, IT Governance style and business performance goals."<sup>42</sup>

Mercury Interactive recommends designing "Governance as a set of end-to-end processes to define roles and responsibilities and create practical and actionable Governance mechanisms tailored to the enterprises decision-making style and management culture."<sup>43</sup>

There are no cookie cutter solutions. Tailor your IT Governance initiatives to fit your organizational structure, industry, control environment, corporate culture, strategic objectives and business goals. Software Management Systems, Inc. identified 48 IT Governance best practices that can be implemented.

One theme is automation. It is ironic the department that has overarching responsibility for automating other aspects of the business is the least automated of all. 90% of mission-critical controls are automated. Nearly all IT controls remain manual.<sup>44</sup>

### ***Business Benefits of good IT Governance***

Formal policies and procedures are the hallmark of well-run organizations who are also well-governed. As we have seen, good governance practices leads to greater profitability and higher valuations. Software assets require specific policies and procedures which guide employee conduct for the acquisition and use of software.

Inventorizing software periodically as you do other tangible assets, gives insight into the assets you have. You can harvest unused licenses to save money, plan upgrades and forecast for future purchases.

By documenting all licenses and purchase verifications, you may find more licenses than you knew you had. We found nearly double the number of licenses one client had rights to than they even knew, preventing them from having to repurchase licenses they already paid for.

Record retention and media storage is important for business continuity and quick disaster recovery. Ask your counterparts in Florida about disaster recovery. What if you were left with having to reconstruct your operations center? Could you show your insurance carrier proof of software licenses so you can replace them?

Employee training and communications ensure employees are aware of their responsibilities with respect to software copyright protection and raise awareness they will be held accountable.

How does one keep up with all these? One client stated, “it’s a big job – bigger than it looks. Having someone come in and do it was excellent.”

#### **How to Select a SAM / IT Governance Advisor**

ITGS, Inc. recommends you select advisors experienced in all facets of software and IT asset management and have handled the business challenges you encounter. Look for advisors with industry experience, sound judgment based upon years at the top and who have demonstrated keen execution.

#### **Conclusion**

Corporate executives are expecting compliance with §404 to have residual benefits such as improved controls, processes, efficiencies and work environment. By adopting a comprehensive program of software asset management, you demonstrate you are taking steps to protect company assets and shareholder interests on a sustained compliance basis

In this paper we showed how IT Governance adds value to your business, described how software asset management fits into IT Governance. We reviewed the nine COBIT control objectives related to software asset management and wove in SAM best practices. We outlined the top five IT deficiencies uncovered in the 2004 financial statements and showed how SAM impacts them. We concluded with IT Governance best practices and benefits of software asset management.

For a confidential consultation about how IT Governance, ITAM or SAM initiatives can benefit your company, please contact ITGS, Inc. at 425-829-0717 or visit our website at [www.itgovernanceservices.com](http://www.itgovernanceservices.com)

IT Governance Services, Inc. is the preeminent IT Governance firm. ITGS, Inc.’s clients are located across the nation, in a variety of industries and range from Forbes 400 Best Companies to mid-caps and small business enterprises. We enable our clients to increase margins, raise market capitalization and return more to investors in dividends and stock price. Our founders and principles have been in the software industry since 1980 and have been responsible for billions of dollars of software assets during that time.

## ***IT Governance Bibliography***

- “Audit Fees Double Due to Sarbox,” *CFO Magazine*, February 11, 2005
- Benchmarking COBIT*, ISACA.org, March 2005
- “Best Practices in IT Portfolio Management,” *CIO Insight*, February 1, 2004
- “Best Practices for Project Management Offices,” *CIO Research*, July 2, 2003
- “Best Practices for Project Management Offices,” *Darwin Reports*, July 2, 2003
- “Big Settlements in 2004 Follow Big Losses in the Bear Market,” *NERA Economic Consulting Press Release*, February 14, 2005
- “Board Briefing on IT Governance,” *IT Governance Institute*, 2004
- “Board Self-Evaluations: Do the Benefits Outweigh the Potential Pitfalls,” *Perkins Coie*, February 11, 2005
- “Building Brilliant Business Cases,” Gartner, January 2004
- “Business Value of IT,” *Harvard Business Review*, 1999
- Capability Maturity Model II*, Carnegie Mellon SEI 2003
- “Capability Maturity Model: Guidelines for Improving the Software Process,” SEI, June 1, 1995
- “Chargeback – How Far Should You Go?,” Gartner, May 2003
- COBIT Framework 2000*, ISACF, Information Systems Audit Control Foundation, 2000
- COBIT, Control Objectives for Information and Related Technologies, 3<sup>rd</sup> Edition*, July 2000
- “Completing IT Value Equation,” *Enterprise Application Pipeline*, May 18, 2004.
- COSO*, Committee of Sponsoring Organizations of the Treadway Commission, AICPA, AAA (American Accounting Association), FEI (Financial Executives Institute), IIA (Institute of Internal Auditors), IAM (Institute of Management Accountants)
- “Deciding Factors – The Resourceful 100,” *CIO Magazine*, August 15, 2003
- “Don’t Just Lead, Govern,” *Implementing Effective IT Governance*, Peter Weill and Richard Woodham, Center for Information systems Research, Sloan School of Management, MIT, April 2002
- “Enterprise Architecture Research Agent for 2005,” Gartner, April 14, 2005
- “Enterprise Project Management: IT Governance and the Program Management Office,” Microsoft, 2004
- “Fixing the Corporate-IT Disconnect,” Gartner, *Harvard Business Review*, March 15, 2004.
- Global Investor Opinion Survey*, McKinsey and Company, 2003
- “Governing in Tough Times,” *Technology Decisions for Insurance*, November 2004
- “How CPM Software Empowers Users,” *CFO Research Services*, February 15, 2005
- “How Predictive Analytics Enables Enterprises To Stay Ahead of Market Forces,” *Business Intelligence*, February 2005
- “How To Make BI Less of a Gamble,” *Intelligence Enterprise*, February 2005
- “Increasing Risks to Corporate Directors,” *Perkins Coie*, January 19, 2005
- Information Security Governance, Guidance for Boards of Directors and Executive Management*, 2001
- IS Standards, Guidelines and Procedures for Auditing and Control Professionals*, ISACA (Information Systems Audit and Control Association), February 8, 2005
- ISO/IEC 13335*
- ISO/IEC 15408*, 1999, Common Criteria, ITSEC
- ISO/IEC 17799*, 2000
- ISO/IEC 19770-1 Standard on Software Asset Management Draft*, April 21, 2005
- IT Control Objectives for Sarbanes-Oxley*, COBIT, April 2004
- “IT Governance Gaining Momentum,” *ADT Magazine*, 2004

*IT Governance Global Status Report*, ITGI and PricewaterhouseCoopers, 2004  
“IT Governance Portal for Information, Services and Tools,” ITGI.org, 2005  
“IT Governance Practices,” ITGI, 2004  
“IT Governance Workshop, MIT Open Courseware,” *Sloan School of Management EMBA*.  
“IT Governance: The Road to Higher Profit,” *Harvard Business Review*, March 15, 2005  
“IT, Compliance and Performance Management,” *CFO Research Services*, February 9, 2005  
“IT: The Next Target For Alignment,” *Intelligent Enterprise*, April 2005  
“Look for Gaps,” *CFO Magazine*, February 1, 2005  
“Navigating the Complexities of Corporate Reforms,” *Accelerated Edge Incorporated White Paper*, 2003  
*NIST 800-14*  
*Optimize IT Governance: In Control, In Compliance, In Alignment*, Mercury Interactive, 2005  
“Playing to Your Advantage: Proven Practices of Mid-sized Enterprise CIO’s,” *Gartner*, March 2005  
“Record Number of Restatements in 2004,” *CFO Magazine*, January 21, 2005  
“Regulatory Compliance and IT – Converging Challenges,” September 5, 2004  
*SAM – The Keys to Managing IT Services*, ITIL, 2003  
*Sarbanes-Oxley Section 404 Benchmark Study*, The 404 Institute, KPMG, LLP, February 2005  
“Sarbanes-Oxley is an IT Responsibility and Business Opportunity,” *DM Review*, December 2004  
“Smaller Than a Sarbox?” *CFO Magazine*, March 24, 2005  
“Software Configuration Management: New Tools to Streamline Development,” *ADT Magazine*, March 2005  
“Sticker Shock,” *CFO Magazine*, September 1, 2003  
“Strategy Execution: The Road Not Taken,” *Business Intelligence*, February 2005  
“Tailor IT Governance to Your Enterprise,” *Gartner*, October 2003  
“Ten Principles of IT Governance,” *Harvard Business School Working Knowledge*, July 5, 2004  
“The Balanced Scorecard and IT Governance,” *ITGI*, January 20, 2004  
*The Board’s Responsibility for IT*, 2005, NACD, National Association of Corporate Directors, 2005  
“The Business Value of IT Governance,” Microsoft, 2003  
“The CEO’s Guide to IT Values at Risk,” *ITGI*, March 26, 2005  
*The 404 Institute September 2004 Survey*, KPMG, September 2004  
“The IT Director’s Practical Guide to Sarbanes-Oxley,” *Ecora*, 2005  
“The Need for IT Governance: Now More Than Ever,” *Gartner*, January 20, 2004  
“The Rise (or Fall) of Class Action Costs,” *CFO Magazine*, February 15, 2005  
“The Sarbox Conspiracy,” *CIO Magazine*, July 1, 2004  
“Warnings Cast Doubt on Strength of Capital Spending,” *Financial Times*, July 13, 2004  
Weill, Peter & Ross, Jeanne W., *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, 2004  
Weill, Peter & Woodham, “Don’t Just Lead, Govern,” *Implementing Effective IT Governance*, Center for Information systems Research, Sloan School of Management, MIT, April 2000  
“What Matters in Corporate Governance,” *IIRRC* (Institute for Investor Relations Research, November 2004  
“Where Material Weakness Really Matters,” *CFO Magazine*, November 18, 2004

## Notes:

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- <sup>1</sup> Peter Weill and Jeanne W. Ross, *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results.*, Harvard Business School Press, 2004
- <sup>2</sup> *Global Investor Opinion Survey on Corporate Governance*, McKinsey Company, 2003
- <sup>3</sup> *GMI 2004 Governance and Performance Analysis*, Governance Metrics International, Inc., March 2005
- <sup>4</sup> *IT Governance Global Status Report*, ITGI, 2004.
- <sup>5</sup> "Completing the IT Value Equation," *Enterprise Application Pipeline*, May 18, 2004.
- <sup>6</sup> *The 404 Institute September 2004 Survey*, KPMG, September 2004. A study of 530 public companies.
- <sup>7</sup> *Sarbanes-Oxley §404 Benchmark Study*, The 404 Institute, KPMG International, LLP, 2005.
- <sup>8</sup> The 404 Institute, *Sarbanes-Oxley Section 404 Benchmark Study*, KPMG, 2005. IT controls represent 21% of all controls followed by financial reporting and close (17%) and revenue (15%). IT controls account for 34% of deficiencies followed by revenue at 13%, procure to pay 10% and fixed assets 10%. IT controls are attributed with 23% of significant deficiencies followed by financial reporting and close at 14% and revenue at 12%. IT controls account for 27% of material weaknesses followed by revenue at 18%, taxes 11% and financial reporting and close 10%.
- <sup>9</sup> Gartner, March 16, 2005
- <sup>10</sup> *Sarbanes-Oxley §404 Benchmark Study*, The 404 Institute, KPMG International, LLP, 2005.
- <sup>11</sup> Susan Dallas, "IT Governance: Who's In Charge Here?" U.S. Spring Symposium, Gartner, March 16, 2005
- <sup>12</sup> *Financial Times*, July 13, 2004
- <sup>13</sup> *Optimize IT Governance: In Control, In Compliance*, In Alignment, Mercury Interactive, 2005
- <sup>14</sup> Mark Jeffrey & Ingmar Leliveld, "Best Practices in IT Portfolio Management," *MIT Sloan Management Review*, Spring 2004.
- <sup>15</sup> Aberdeen
- <sup>16</sup> Gartner
- <sup>17</sup> Gartner
- <sup>18</sup> Aberdeen
- <sup>19</sup> Mark Jeffrey & Ingmar Leliveld, "Best Practices in IT Portfolio Management," *MIT Sloan Management Review*, Spring 2004.
- <sup>20</sup> "Fixing the Corporate IT Disconnect," *HBR*, Gartner, March 14, 2004
- <sup>21</sup> The Brookings Institute, 1998.
- <sup>22</sup> "Governing in Tough Times," *Technology Decisions for Insurance*, November 2004.
- <sup>23</sup> *Annual NERA Study of Shareholder Class Action Litigation*, National Economic Research Association, February 14, 2005
- <sup>24</sup> "Increasing Risks to Corporate Directors," *Perkins Coie*, January 19, 2005
- <sup>25</sup> *Corporate Executive Board Survey*, CFO Magazine, February 11, 2005
- <sup>26</sup> "Sticker Shock," *CFO Magazine*, September 1, 2003
- <sup>27</sup> "Sticker Shock," *CFO Magazine*, September 1, 2003
- <sup>28</sup> *Global Investor Opinion Survey on Corporate Governance*, McKinsey Research, 2003
- <sup>29</sup> *The Principles of IT Governance*, *HBR*, July 2004
- <sup>30</sup> Board Briefing on IT Governance, IT Governance Institute and National Association of Corporate Directors
- <sup>31</sup> Gartner Research Brief, March 4, 2005
- <sup>32</sup> Gartner, *ITAM Closed-Loop Cycle*, Patricia Adams, Research Director, "IT Asset Management: A Primer for Software Asset Management," May 10, 2005.
- <sup>33</sup> Patricia Adams, *The Value of Software Asset Management*, Gartner Group, 2005
- <sup>34</sup> Broadbent 1998; *Designing Effective IT Governance*, Gartner December 21, 1998.
- <sup>35</sup> *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, (Peter Weill and Jeanne W. Ross, HBS Press, 2004, p.8
- <sup>36</sup> Gartner, January 20, 2004
- <sup>37</sup> Gartner, January 20, 2004
- <sup>38</sup> Greenspan, Alan, 2002
- <sup>39</sup> *The Boards Responsibility for IT*, IT Governance Institute and NACD, 2005
- <sup>40</sup> IT Governance Institute, *Control Objectives for IT and Related Technologies*, 2001, 2003.
- <sup>41</sup> *Ibid*, Weill and Ross
- <sup>42</sup> Peter Weill and Richard Woodham, "Don't Just Lead, Govern," *Implementing Effective IT Governance*, Center for Information Systems Research, Sloan School of Management, MIT, April 2002, p.17.
- <sup>43</sup> Mercury Interactive, 2005
- <sup>44</sup> *Optimize IT Governance: In Control, In*, In Alignment, Mercury Interactive, 2005