



# Welcome

CompuwareCorporation

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**Compuware Corporation**  
**September 15, 2004**



# **SOX, SOA, SarbOx and IT What does it mean to DB2?**

# Technology/Business Challenges

## IT Business Growth



### Technology

California is at the top 10 of those states with the most vigilant privacy laws.

In the following order:

- California**
- Minnesota
- Connecticut
- Florida
- Hawaii
- Illinois
- Massachusetts
- New York
- Washington
- Wisconsin

### IT/Business Issues

- Wireless
- .net
- ries
- SOA C-6
- CA SB 1386
- NPI
- BASEL II
- HIPAA
- US Patriot Act
- Gramm-Leach-Bliley Act
- Six Sigma
- ITIL
- CMM
- IEEE
- ISO9001
- IPS Reduction
- Legacy
- Performance
- Modernization
- M/SLAs
- Server Consolidation
- ons
- ELAs
- 24 x 7
- Outsourcing
- business
- Cost Containment

COMPLEXITY

IT viewed as Expense

IT viewed as Asset

IT viewed as Expensive Asset

1980

1985

1990

1995

2000

2005

Compuware Corporation

\* Not meant to be an historical timeline

# A Review: What is Sarbanes-Oxley???



- Major changes to financial practice and corporate governance regulation
- Stated Objective: to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws
- To deter and punish corporate and accounting fraud and corruption, ensure justice for wrongdoers, and protect the interests of workers and shareholders
- Signed in to law on July 30, 2002
- Named after architects: Representative Michael Oxley and Senator Paul Sarbanes

# What CxO's are saying about SOA? or is it SOX? or SarbOx?



Enron and WorldCom were isolated cases

I could spend \$1 million to a \$100,000 problem

Like it or not, IT will be at the heart of your SOA solution

I did a Google search on Sarbanes-Oxley and got over a 1000 hits

The Corporate legal staff is breathing down my neck

SOA is a process, not an event

Business is the goal of the market economy

Now, the Vendor presentations all have SOA in them

Now, I have insight into my competitor's financial problems

Sarbanes-Oxley is like 12K, but without an end

It's a Brave New World of transparency and disclosure

# SOA, SOX, SarbOx – What ever you want to call it!



Section 201: Services Outside the Scope of Practice of Auditors

Section 202: Pre-Approval Requirements

Section 203: Audit Partner Rotation every 5 years

Section 204: Conforming Amendments

Section 205: Conforming Amendments

Section 206: Conflicts of Interest

Section 208: Commission Authority

Section 209: Considerations by State Regulatory Authorities

Section 301: Public Company Audit Committees

Section 302: Corporate Responsibility for Financial Reports

Section 303: Improper Influence on Conduct of Audits

Section 304: Forfeiture of Certain Bonuses and Profits

**Applies  
to Public  
Companies**

oration |

# Three Sections that interest most IT Organizations



Section 305: Officer and Director Bars and Penalties

Section 306: Insider Trades During Pension Fund Blackout Periods

Section 307: Rules of Professional Responsibility for Attorneys

Section 308: Fair Funds for Investors

Section 401: Disclosures in Periodic Reports

Section 402: Enhanced Conflict of Interest Provisions

Section 403: Disclosures of Transaction involving Management and Principals

Section 404: Management Assessment of Internal Controls

Section 405: Exemption

Section 406: Code of Ethics for Senior Financial Officers

Section 407: Disclosure of Audit Committee Financial Experts

Section 408: Enhanced Reviews of Periodic Disclosures by Issuers

Section 409: Real Time Issuer Disclosure

# SOA, SOX, SarbOx – What ever you want to call it!



Section 104: Inspections of Registered Public Accounting Firms

Section 108: Accounting Standards

Section 001: Sec Resources and Authority

Section 002: Rules of Professional Responsibility for Attorneys

Section 804: Statute of Limitations for Securities Fraud

Section 806: Protection for Whistleblowers

Section 802: Criminal Penalties for Altering Documents

Section 906: Management Certifications(Criminal Provision)

Section 1101: Sense of Congress regarding Corporate Tax Returns

Section 1102: Record Tampering or Otherwise Impeding an Official Proceeding

Section 1103: Temporary Freeze Authority

Section 1105: SEC Authority to prohibit persons from serving as officers or Directors






# SOA – Sections that are important to IT organizations

## Section 302: Corporate Responsibility for Financial Reports

The officers certify with signed statements the validity of each quarterly and annual financial report. Directs the officers to be responsible for “establishing and maintaining Internal Controls”.



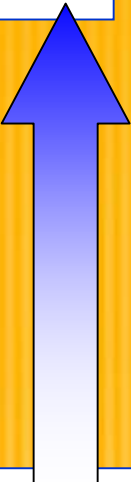
## Section 404: Management Assessment of Internal Controls

Annual reports will need to include an Internal Control report that shows the procedures and structure of financial reporting, as well as assessment of the effectiveness of them.



## Section 409: Real Time Issuer Disclosure

Directs companies to publicly disclose “on a rapid and current” basis such additional information concerning material changes in the financial condition or operations of their corporation, in plain English.



## Section 802: Management of Records

Criminal penalties to anyone who knowingly alters, destroys, mutilates, conceals, covers up falsifies any record, DB2 row, document, or tangible object with the intent to impede, obstruct, or influence the investigation of a corporation’s financial statements.



# Sustainable Documented Process, Control Management and Reporting for Financial Systems

# A survey of Fortune 1000 public companies

Many CIOs are ready for major IT investments to meet SOA compliance

As much as “\$5 Billion” 2004 dollars will be allocated to SOA

Update 6/7/ 04  
Gartner Group

88% predict changes in IT and application infrastructure in support of SOA

67% say their companies are investing in financial systems to aid in compliance

59% have no IT executive specifically responsible for compliance

44% say their companies will require their CIOs to certify financial results

A broad-based view must be applied to companies that are decentralized

The SOA ROI will let my CEO and CFO sleep at night and out of jail

Adequate internal controls, not automated controls

**SOA applies to Fiscal Years ending on or after 11/15/04 for U.S. companies with market capitalization over \$75 million and 7/15/05 for smaller companies**

# Can implementation of these help IT?

**CMM**(Capability Maturity Model)

**Six Sigma**  
for IT

**ITIL**(IT Infrastructure Library)

**ISO9001**(Intl. Organization for Standards)

**Privacy Laws**(in 48 or the 50 States)

**Basel II**

**Internet Tax Moratoriums**

**C-6**

**Homeland Security**(affecting any industry that touches money  
airlines, credit cards, banks, etc)



# Many Companies are already doing this

- **Building the Sarbanes-Oxley Compliance Team:**
  - Internal Auditors**
  - Legal staff Representatives**
  - External Auditors**
  - CxO Representatives**
  - Information Technology Experts with Financial Expertise**
  - Human Resource people**
  - SOA Consultants and Experts**
- **Allocating a Sarbanes-Oxley Budget or not!**
- **Scheduling SOA meetings on a regular basis to discuss and track your company's progress**
- **Setting up a website to report fraud or irregularities as part of the whistle-blower provision(it needs to be confidential)**
- **Doing background checks of all your people who work with the financial applications and processes**
- **Purchasing some SOA software to document your Financial assets. Are your external Auditor providing guidance with this decision?**
- **Responding to the pressure on IT to work better, faster and cheaper**



# Software Vendors have new software, new releases and upgrades waiting for you..

Oracle

IBM DB2 Records Manager

PeopleSoft

PSS Systems

Hyperion

Paisley

Consul InSight Security

OuterBay Tech.

IBM Lotus Notes

Documentum Inc.

ACL

BlindView Corp.

Symantec

OpenText Corp.

Movaris Certainty

Configuresoft Inc.

Watchfire Corp.

KPMG

SAS

Nth Orbit Inc

Tivoli Privacy Manager



# Software Vendors have new software, new releases and upgrades waiting for you..

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By the way, many of these software and hardware companies are talking to Accounting/Audit firms about what they can do.

ech.

IBM

CL

BlindV

p.

MOVANS Certainty

Watchfire Corp.

KPMG

Configuresoft Inc.

SAS

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# Software Vendors have new software, new releases and upgrades waiting for you..

Oracle

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Pa... h.

As of July 15, 2004, 55 percent of the IT organizations plan on significant use of technology to satisfy their SOX requirements.

Blindview Corp.

Open text Corp.

Movaris Certainty

Configuresoft Inc.

Watchfire Corp.

KPMG

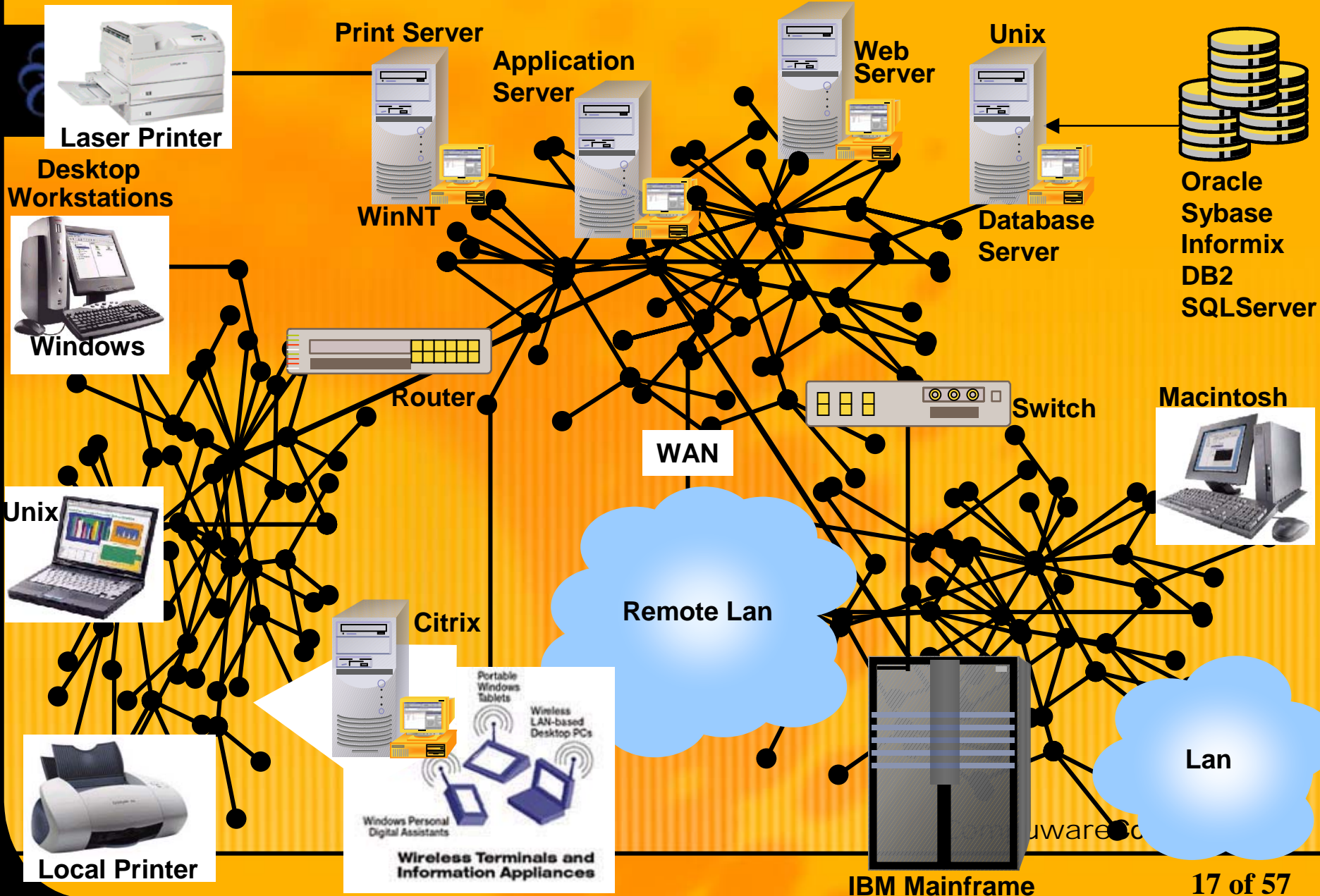
SAS

Nth Orbit Inc

Tivoli Privacy Manager



# Financial Enterprise Environment



# What are the SOX issues?

## Process Controls: Definition

**Manual or Automated control procedures that:**

- typically operate at a detail business process level (i.e. transaction)
- are designed to ensure the integrity of the accounting records

**Process controls, which can be preventative or detective in nature, they directly support the control the following IT objectives:**

- Accuracy
- Completeness
- Validity
- Restricted Access

# What are the SOX issues?

## Types of Process Controls

**Preventative controls are mechanisms that are designed to prevent certain high-risk activities from occurring**

**Detective controls are mechanisms that expose problems and risks, providing insight into Financial Applications. The detective work will help resolve problems and answer questions.**

# What are the SOX issues?

## IT Control Objectives

**Completeness**

**Accuracy**

**Validity**

**Restricted Access**



# What are the SOX issues?

## IT Control Objectives

### Completeness

- **All recorded transactions are accepted by the financial system, once and only once**
- **Duplicate postings are rejected by the systems**
- **Any Transactions that are rejected are addressed and fixed**

# What are the SOX issues?

## IT Control Objectives

### Accuracy

- **Controls for accuracy ensure that key data elements for the transaction are correct/reasonable**
- **Key data elements for each transaction are recorded and input to the computer correctly**

# What are the SOX issues?

## IT Control Objectives

### Validity

- **Transactions and updates are authorized by appropriate personnel**
- **No fictitious transactions are accepted by the system. No fictitious outputs are created by the system.**

# What are the SOX issues?



## IT Control Objectives

### Restricted Access

- Data is not modified by unauthorized personnel
- Sensitive material remains confidential and private
- Company assets are physically and logically protected from theft and misuse
- Access to processing functions are appropriately segregated



# What are the SOX issues?



## Documentation of Controls and Processes

**Documentation of Controls and Processes must be “Auditable” with the following characteristics:**

**How is the control or process performed?**

**Who performs the control or process? Do they do this manually or with automated techniques?**

**How often is the control or process performed?**

**How is the control of process implemented, monitored and verified?**

# What are the SOX issues?



## Documentation of Controls and Processes

**Documentation of Controls and Processes must be “Auditable” with the following characteristics:**

**E** Documentation of a control or process is not evidence of a control or process being consistently used! **S**

**manually or with automated techniques:**

**How often is the control or process performed?**

**How is the control of process implemented, monitored and verified?**

# What are the SOX issues?

## Sources of Documentation

**Formal Procedure and Process standards**

**Corporate Communications**

**Finance Manuals/Corporate Systems Manuals**

**Policies and Procedure manuals**

**User Department manuals**

**Desk procedure**

**Process flows of IT applications, working standards, etc**

**Interoffice memos**

**QA Testing standards**

**Financial input data**

**IT Backup and Recovery procedures**

**Security requirements, standards and access history**



# What are the SOX issues?



## Controls/Processes, Documentation and Adherence

**Adherence verifies that the control/process is functioning as designed:**

- Is it being performed as documented?
- Is the correct or authorized person performing it?
- Does evidence support that it is functioning consistently?
- Is it being monitored and reviewed as specified in the documentation?
- Who is being alerted when it is not working as documented?
- Does historical documentation exist?

# What are the SOX issues?

## Adherence Verification

**Inquiry**

**Observation**

**Examination**

**Re-Performance**

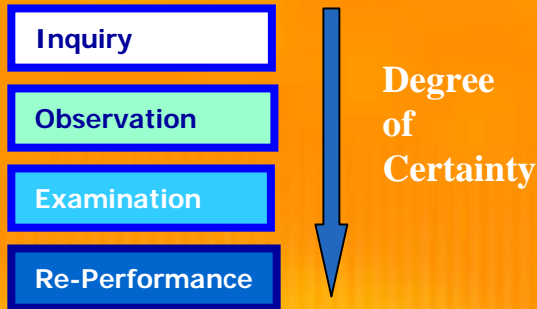


**Degree  
of  
Certainty**



# What are the SOX issues?

## Adherence Verification

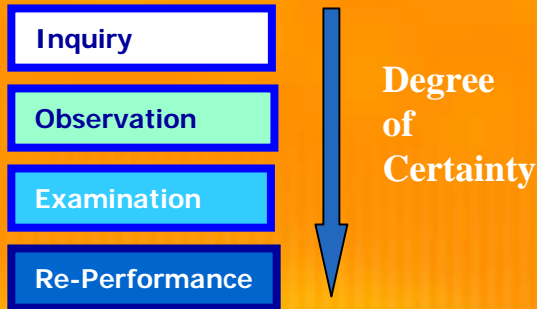


### Inquiry

- Identifying control procedures and processes
- Interviewing process implementers
- Documenting control procedures and processes
- This can be manual or automated processes

# What are the SOX issues?

## Adherence Verification

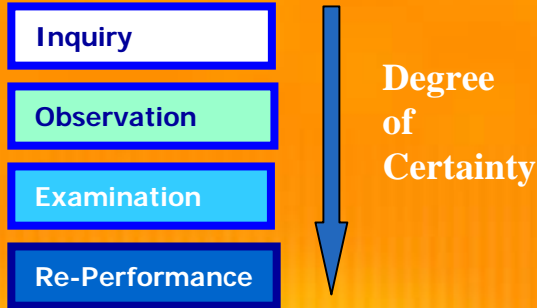


## Control Procedures and Processes

- Security into the financial data
- Data entry of the financial data
- Processing of the financial data
- Understanding who is responsible to the data
- Reporting of the financial data
- Backup and recovery of the financial data
- Analysis of the the financial data

# What are the SOX issues?

## Adherence Verification



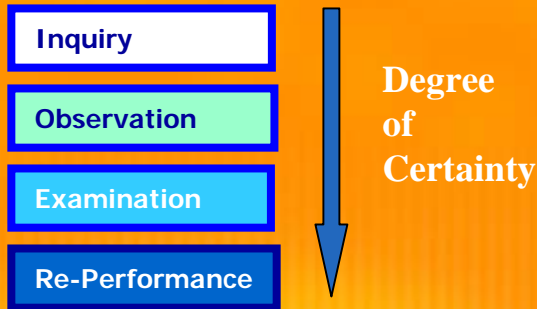
## Observation

- At one point in time, observe employee performing the control procedure
- Take tours of the department to understand the business
- Examples:
  - Observe on-line screens entry
  - Confirm output results



# What are the SOX issues?

## Adherence Verification

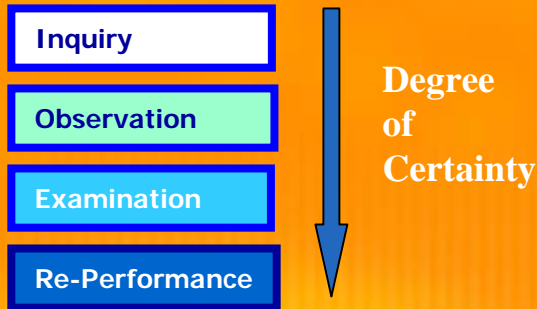


## Observation

- **Verify the Controls and processes are being executed the way they are defined**
- **Be prepared to discover inconsistencies**
- **Are the results accurate?**
- **What appears to be missing?**
- **Where are the control and processing gaps?**
- **Is a Business Analyst doing this job?**

# What are the SOX issues?

## Adherence Verification

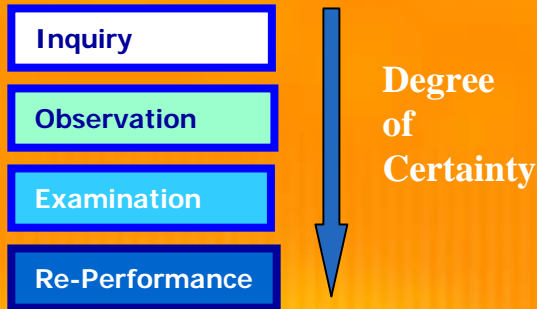


## Examination

- Inspect evidence, reports, and/or results
- Easiest way of verifying of the existence of assets, such as cash and inventory
- Examples:
  - Inspecting current and historical financial data
  - Find, search and analyze of how data got to it's current values

# What are the SOX issues?

## Adherence Verification



## Examination of what is going on

- Are the control or process results accurate?
- Discover how financial data is processed in the code
- Analyze the data for specific values, patterns, and errors
- Keeping the history: Databases, transactions, outputs and more
- Understand what you are testing in the code and it's impact
- Identify what was missed at the application level

# What are the SOX issues?

## Adherence Verification



Inquiry

Observation

Examination

Re-Performance



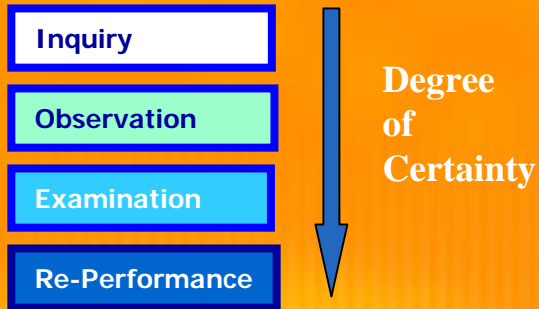
Degree  
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## Re-Performance

- Trace the path of the data through a system
- Perform independent calculations that mimic the system
- Hunt for discrepancies
- Enter hypothetical transactions into the group's test systems and compare expected results to actual results

# What are the SOX issues?

## Adherence Verification



## Execute again to verify correctness

- Be able to re-establish the target environment
- Re-execute a financial process with the goal of producing the same or verifiable results
- Analyze all outputs
- Create a repeatable process
- Be able to understand and verify hypothetical inputs (such as: transactions, data records, etc)
- Attest to accuracy

# What are the SOX issues?

## Evaluating Deficiencies


**Minor Adherence** – Requires corrective action monitored Financial Controls Department. These gaps will be consolidated through the IT Security group

**Major Adherence** – Requires posting to GAO website

**Significant Deficiency** – Requires disclosure to Audit Committee

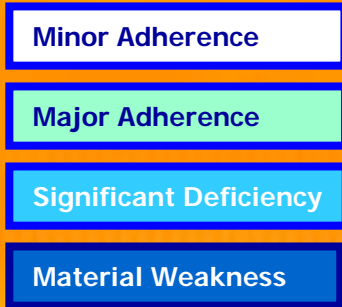
**Material Weakness** - Prevents unqualified 404 Attestation

**Materiality  
of  
Internal  
Control  
Deficiencies**



# What are the SOX issues?

## Evaluating Deficiencies



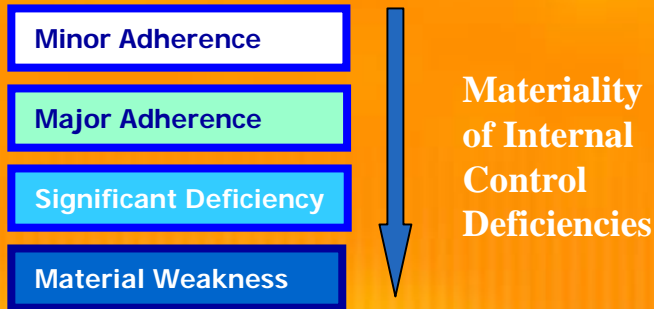
Materiality  
of Internal  
Control  
Deficiencies

### Minor Adherence

- Low impact on the financial reporting
- Low risk to financial results
- Examples:
  - Lack of verifiable documentation
  - Too many people accessing the financial data
  - Individuals with multiple financial responsibilities
  - Reliance of manual verification

# What are the SOX issues?

## Evaluating Deficiencies



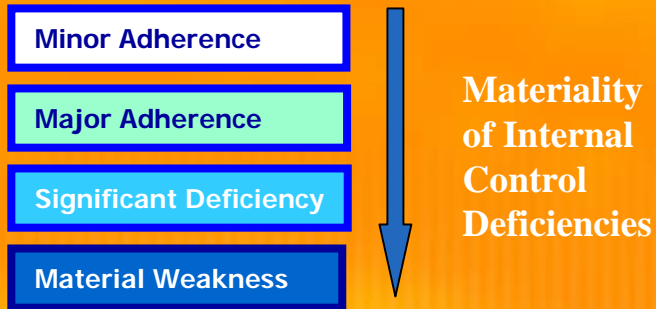
## Major Adherence

- Significant impact on the financial reporting
- High risk to financial results
- Examples:
  - Processes that may lead to major problems
  - People who have unique and powerful access to the financial data
  - Undocumented access to the financial data
  - Re-occurring application faults and corrections



# What are the SOX issues?

## Evaluating Deficiencies

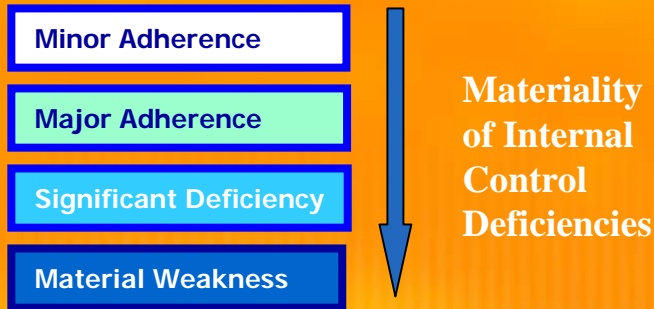


## Significant Deficiency

- Adversely affect the entity's ability to initiate, record, process, and report financial data consistent with the assertions of management in the financial statements
- A single deficiency or aggregation of deficiencies

# What are the SOX issues?

## Evaluating Deficiencies



## Significant Deficiency

- Likelihood of a Financial Misstatement
- Magnitude of potential Financial Misstatement
- High frequency of financial exceptions, leading to doubt in regards to the Financial Statement
- Nature of account balances in error, bad data values
- The type of financial transactions that are questioned
- Importance of a financial control that is deficient

# What are the SOX issues?

## Evaluating Deficiencies



Minor Adherence

Major Adherence

Significant Deficiency

Material Weakness



Materiality  
of Internal  
Control  
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## Material Weakness

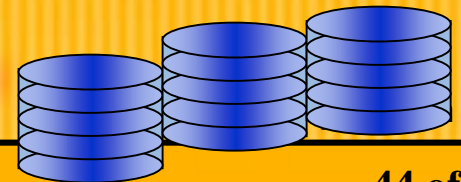
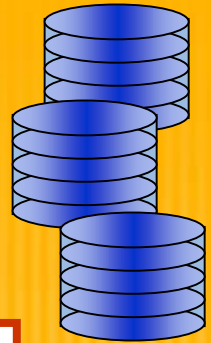
- A major Significant Deficiency
- A group of Significant Deficiencies that reflex very poor controls and processes
- A ongoing pattern of behavior that has distorted the financial reporting of your company
- A financial control or process that is not legal

# Your Corporation's Data Issues when supporting IT governance mandates

Documentation requirements

Data storage requirements

Data management requirements





# Your Corporation's Data Issues when supporting IT governance mandates

New data requirements

Data gathering issues

Data Access Controls

Frequency of backup/recovery

Data analysis/discover

Data verification

Data Correction

Data Formats

Data Disguise

Archiving of Historical Data



# Your Corporation's Data Issues when supporting IT governance mandates

**The DB2 Relational Database Management System with its ability: to storage large volumes of data, to search with a powerful Structured Query Language, to secure data at multiple levels, and to backup and recover data in many locations is the best choice as the repository for the corporate financial data. The new and expanded features of DB2 V8 just add to importance of DB2 as the central source for SOX documentation and control.**

# How can DB2 help with IT governance

## New DB2 V8 Limits



	V7	V8
<b>Virtual Storage</b>	$2^{31}$	$2^{64}$
<b>Table, View, and Alias Name Size</b>	18	128
<b>Column Name Size</b>	18	30
<b>Number of Partitions</b>	254	4096
<b>SQL statement Length</b>	32K	2MB
<b>Index Key Size</b>	255	2000
<b>Character Literals</b>	255	32704
<b>Hex Literal Digits</b>	255	32704
<b>Predicates</b>	255	32704
<b>Number of Active Logs</b>	31	93
<b>Number of Archive Logs</b>	1000	10000
<b>Current Optimization Hint</b>	8	128
<b>Character Literals</b>	255	32704
<b>Number of Tables in Join</b>	15	225

# How can DB2 help with IT governance

## New DB2 V8 Features

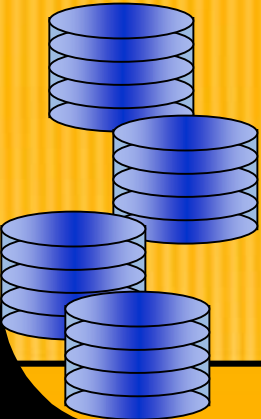
- **Table and Column Data Types**
  - Increase columns of numeric
  - Expand character data types
  - Change Varchar to Char
  - Change graphic data types
- **When do changes take place**
  - New definition is immediate
  - All data changed/converted at REORG time
  - New format at Insert or modification time
  - Retrieval time, new format materialized
  - May need to support “old” and “new” formats
  - Prior image copies not changed



# How can DB2 help with IT governance

## New DB2 V8 Features

- **Partitioned Tablespaces**
  - Add new partition at the end
  - Rotate Partitions
  - Data Partition Secondary Indexes(DPSI)
  - Ability to REORG parts
- **Greater sizes support by Partition Tablespaces**
  - 4096 partitions supported
  - 365 or 366 daily partitions can be created
  - 7 years of daily partitions, 2572, can supported
  - More partitions across more volumes(performance)
  - More mass processes



# How can DB2 help with IT governance

## New DB2 V8 Features

- **DB2 Stored Procedures**

- Use to isolated access to the Financial data
- Use to standardize access to the Financial data
- Hide within the procedure code security controls such as:

**ID checking**

**Tracking of financial data updates**

**Alerts to other applications**

**Financial audit trails of what, who and when**



# How can DB2 help with IT governance

## New DB2 V8 Features

- **Active and Archive Log Increase**
  - Maximum number of archive logs in BSDS is now **10,000 volumes per log copy**
  - Maximum number of active log data sets = **93/log copy**
- **DB2 Replication**
  - **Enhancements to performance, reliability and usability**
  - **Performance:**
    - Join reduction**
    - Multiple capture schemas**
    - Multithreaded transaction based capture**
  - **Reliability**
    - Better restartability**
    - More support for continuous operations**
  - **Usability**
    - Support for the long names**
    - Improved monitoring and New administration features**

# How can DB2 help with IT governance

## New DB2 V8 Features

- **Security**
  - **Multilevel security with row-level granularity**, which lets you restrict individual user access to a specific set of rows in a table
  - **Encryption and Decryption**
- **Special Register Identification**
  - **Client\_Applname** special register contains the value of the application name for the client information that is specified for a connection
  - **Client\_Userid** special register contains the value of the client user identifier from the client information that is specified for a connection
  - **Client\_Wrkstnname** special register contains the value of the workstation name from the client information that is specified for a connection.
  - **Client\_Acctng** special register contains the current value of the accounting string from the client information that is specified for a connection.



# How are you going to get there?

## Report and Prepare for the future

**Remember, Sarbanes-Oxley has been described as “Y2K without an End Date”. Evaluate how you have done, can you improve any Internal Processes in the future, and be prepared to apply all the SOA standards that you have developed to your new financial projects. Government legislation has forced public company to implement, document and provide proof accuracy to their financial reports.**

**The broad interpretation of Internal Controls over everything has been replaced with Internal Controls over the Financial Processes and reporting!**

# How are you going to get there?

## Better managed Projects

**Closer relationship between the IT project and the Corporate Business goals**

**Implementation of strict Software Testing standards, processes and controls**

**Well defined responsibilities – people with separate and defined job responsibilities**

**Manage and maintain the data repositories for all the finance documents and data**

**Be able to change software, data, and people and maintain high control standards**

**Include Security Testing as part of Acceptance Testing**

**Is this the time to standardize your financial applications across the entire corporation: user departments, subsidiaries, and acquisitions?**

**Documentation of Project cost overruns and failures to meet the Business goals**

How are you going to get there?

## Better managed Projects

Closer relationship between the IT project and the Corporate Business goals

Implementation of strict Software Testing standards, processes and controls

Well defined

Managed

Be able

Includ

Internal Controls, Workflow  
and Process Documentation  
are very important!

ilities

data

ards

Is this the time to standardize your financial applications across the entire corporation: user departments, subsidiaries, and acquisitions?

Documentation of Project cost overruns and failures to meet the Business goals



# Leverage SOX Expense into Investment

- **IT governance is an ongoing requirement**
- **Save on future attestation costs**
- **Implement processes and quality**
- **Improve the value of business**
- **Demonstrate corporate integrity**



# Have enough SOA Questions been raised?



## In Summary

**There must be SOA discussion within your Corporation**

**Understand what your Auditor is expecting**

**Reasonable solutions must be implemented**

**Most Companies are viewing SOA as an Expense rather than an Investment.**

**However, when done well, it will become an IT Investment for the future.**

**\* When things are done right, your CIO could be a “SuperStar”**

**Do you already have the building blocks and the talent to achieve Sarbanes-Oxley Act Compliance?**

# Sarbanes-Oxley Act reference sites:

[www.cio.com](http://www.cio.com)

[www.cfo.com](http://www.cfo.com)

[www.protiviti.com](http://www.protiviti.com)

[www.amrresearch.com](http://www.amrresearch.com)

[www.fishare.com](http://www.fishare.com)

[www.computerworld.com](http://www.computerworld.com)

[www.infoworld.com](http://www.infoworld.com)

[www.sunspot.net](http://www.sunspot.net)

[www.eweek.com](http://www.eweek.com)

**Compuware Corporation**



# COMPUWARE®

People and software for business applications<sup>sm</sup>

# Compuware MVS Solutions

## Performance & Availability Management

## Development & Integration



**STROBE/DB2/IMS/MQ/CICS**

**Strobe/ASM**

**iSTROBE**

**CICS Abend-AID/FX**

**CICS Abend-AID/FX/DB2**

**Abend-AID XLS/ASM/COBOL**

**Abend-AID/IMS/DB2**

**Abend-AID/MQ**

**File-AID/MVS**

**File-AID/DB2**

**File-AID/IMS**

**Fault Manager**

**XPEDITER/TSO/CICS/IMS**

**XPEDITER/DevEnterprise**

**XPEDITER/Code Coverage**

**XPEDITER/DB2**

**File-AID/MVS**

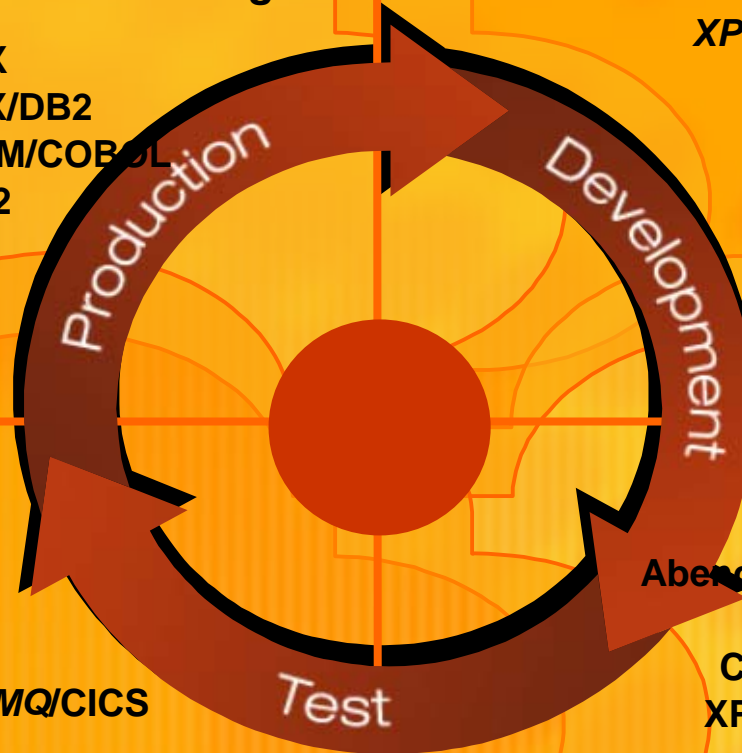
**File-AID/DB2**

**File-AID/IMS**

**File-AID/RDX**

**File-AID/DS**

**Reconcile**



**QACenter**

**STROBE/DB2/IMS/MQ/CICS**

**iSTROBE**

**Abend-AID XLS/ASM/COBOL**

**Abend-AID/IMS/DB2**

**Abend-AID/MQ**

**CICS Abend-AID/FX**

**CICS Abend-AID/FX/DB2**

**Test**

**Abend-AID XLS/ASM/COBOL**

**CICS Abend-AID/FX**

**CICS Abend-AID/FX/DB2**

**XPEDITER/TSO/CICS/IMS**

**XPEDITER/DB2**

**File-AID/MVS**

**File-AID/DB2**

**File-AID/IMS**

**File-AID/RDX**

**File-AID/DS**

**QAHyperstation/3270**

**QAHyperstation/MQ/APPC**

**QADirector**

**iSTROBE**

**STROBE/DB2/IMS/MQ/CICS**

**Production Readiness**

**Automated Software Quality**