

“In God we trust;
the others bring data”

Gestructureerd Zoeken & Vinden

Isaca, Breukelen, 1 September 2008

--Quote attributed to W. Edward Deming—

Agenda

- Some Computer Aided Audit Techniques (CAATs)
- How important are CAATs
- What if we do not do our work properly
- The why and the how

Stephen Levitt & CPS

- Teacher cheating, especially if done in an unsophisticated manner, is also likely to leave tell-tale signs in the form of:
 - blocks of identical answers,
 - unusual patterns of correlations across student answers within the classroom,
 - or unusual response patterns within a student's exam

for example, a student who answers a number of very difficult questions correctly while missing many simple questions

The results

Not Sorted

Classroom A

```
112a4a342cb214d0001acd24a3a12dadbc4a0000000  
d4a2341cacbddad3142a2344a2ac23421c00adb4b3cb  
1b2a34d4ac42d23b141acd24a3a12dadbc4a2134141  
dbaab3dcacb1dadbc42ac2cc31012dadbc4adb40000  
d12443d43232d32323c213c22d2c23234c332db4b300  
db2abad1acbdda212b1acd24a3a12dadbc400000000  
d4aab2124cbddadbc1a42cca3412dadbc423134bc1  
1b33b4d4a2b1dadbc3ca22c00000000000000000000  
d43a3a24acb1d32b412acd24a3a12dadbc422143bc0  
313a3ad1ac3d2a23431223c000012dadbc400000000  
db2a33dcacbd32d313c21142323c300000000000000  
d43ab4d1ac3dd43421240d24a3a12dadbc400000000  
db223a24acb11a3b24cacd12a241cdadbc4adb4b300  
db4abadcacb1dad3141ac212a3a1c3a144ba2db41b43  
1142340c2cbddadb4b1acd24a3a12dadbc43d133bc4  
214ab4dc4cbdd31b1b2213c4ad412dadbc4adb00000  
1423b4d4a23d24131413234123a243a2413a21441343  
3b3ab4d14c3d2ad4cbcac1c003a12dadbc4adb40000  
dba2ba21ac3d2ad3c4c4cd40a3a12dadbc400000000  
d122ba2cacbd1a13211a2d02a2412d0dbc4adb4b3c0  
144a3adc4cbddadbc2c2cc43a12dadbc4211ab343  
d43aba3cacbddadbc4ca42c2a3212dadbc42344b3cb
```

Sorted

Classroom A

(With cheating algorithm applied)

1. 112a4a342cb214d0001**acd24a3a12dadbc4**a0000000
2. 1b2a34d4ac42d23b141**acd24a3a12dadbc4**a2134141
3. db2abad1acbdda212b1**acd24a3a12dadbc4**00000000
4. d43a3a24acb1d32b412**acd24a3a12dadbc4**22143bc0
5. 1142340c2cbddadb4b1**acd24a3a12dadbc4**3d133bc4
6. d43ab4d1ac3dd43421240d24**a3a12dadbc4**00000000
7. dba2ba21ac3d2ad3c4c4cd40**a3a12dadbc4**00000000

Example: Guilford Mills

- Guilford Mills produces textiles used in automobiles and apparel.
- In 1996 Guilford bought Hofmann Laces
- SEC AAE - Release No. 1287 / July 24, 2000 File No. 3-10258



What the merger also allowed for

- False Journal entries
- Pre-closing
- Lack of proper documentation
- Round-dollar transactions
- SOD-Conflicts
- No integrated systems leaving room for errors and concealed transactions

Operating income from Guilford was overstated (before other adjustments) by

| | Dec '97 | Mar '98 | Jun '98 |
|--------------------------------|----------|----------|----------|
| Operating Income overstatement | 2.675,00 | 3.605,00 | 2.725,00 |
| | 18% | 20% | 15% |

What changed in data analysis

Data inquiries were

- reactive and relatively “low tech,”
- usually requiring a tip off or a catastrophe to prompt the inquiry.
- Usually required a “sampling approach” because of the sheer volume of data

But these days

- advanced visual data mining techniques
- targeted approaches,
- large-scale proactive pattern detection
- cost-effective reality for decision makers.

Substantive testing (and flitspalen)

- People who violate the rules and are not caught receive a positive reward for the violation, which causes them to underestimate the probability of being caught and, over time, increases their tendency to behave in this undesired way (see also Erev et al. 2003).
- According to this perspective, a person who expects that driving through a red light would involve a \$500 fine in 5% of the cases is more likely to drive through it than a person who has the same expected value but with certainty of being caught (i.e., a definite \$25 fine).
- More important, over time, the person in the probabilistic punishment setting is going to discount the probability of the punishment further (as long as he or she is not caught), which in turn will lead to an even greater tendency for violation. Eliminating the probabilistic component from all undesirable behaviors is impossible, but it is clear that there are some cases (e.g., driving through an intersection at a red light) in which this is possible and desirable.

Relevance for the IT Auditor

- ISACA:
 - G3 USE OF COMPUTER-ASSISTED AUDIT TECHNIQUES (CAATs)
 - ITAF - 3670—Auditing With Computer-assisted Audit Techniques (CAATs)
- Fin Audit Environment:
 - SAS 94, SAS 99
 - SOX, etc.

Data analysis in regular business

- Cost Savings/Cost Recovery,
- Suspense account cleaning,
- Revenue Assurance/Revenue Leakage,
- Data Analysis for control testing (Sarbanes compliance),
- Data Quality Management and...
- Fraud Analysis

Typical Tests

- A/R
 - Customers who are employees
 - Duplicate accounts within the portfolio
 - Duplicate invoice numbers/etc.
- Human Resources
 - Match payroll with employee master
 - Payroll validity
 - Temp/Consultants validity
 - Timely assoc. disposition
 - Vacation/Overtime
- Sales
 - Excessive Returns
 - Low/Negative margins
 - Promotions Returns
- Vendors
 - Common vendor names
 - Duplicate Invoices / Payments
 - Duplicate or No Pos
 - Purchases fluctuation
 - Sequential Invoices
 - Vendors with same address
 - Purchases under review limit

What we did for massive client databases could only be described as an art we couldn't follow a standardized formula for this type of problem solving
Sunil Garga, CEO, ProfitLogic (Oracle)

Fraud is a issue on minds

- **PCAOB Auditing Standard 5 (11-14)**
- the risk that a company's internal control over financial reporting will fail to prevent or detect misstatement caused by fraud usually is higher than the risk of failure to prevent or detect error.
 - Unusual transactions,
 - Journal entries and adjustments made in the period-end financial reporting process;
 - Related party transactions;
 - Significant management estimates;

SAS-99 / RAC -240

- Evaluating Antifraud Processes and Controls
 - Identify and measure fraud risks
 - Management has primary responsibility for establishing and monitoring all aspects of the entity's fraud risk-assessment and prevention activities
 - Should consider the vulnerability of the entity to fraudulent activity
 - Risk assessment activities should be commensurate with the size of the entity and complexity of its operations
 - Mitigate fraud risks
 - It may be possible to reduce or eliminate certain fraud risks by making changes to the entity's activities and processes
 - Implement and monitor appropriate internal controls
 - Management should evaluate whether appropriate internal controls have been implemented in any areas management has identified as posing a higher risk of fraudulent activity

Evaluation SAS-99 PCAOB

- The auditor is to make various judgments about the nature, timing, and extent of tests to perform to address specifically identified risks of material misstatement due to fraud.
- PCAOB inspection teams have observed, however, that auditors often document their consideration of fraud ***merely by checking off items on standard audit programs and checklists.*** PCAOB standards require additional documentation evidencing the actual performance of certain of the procedures outlined in those programs and checklists.

Evaluation SAS-99 PCAOB

Specificly Journal Entry Testing

- On Journal Entries
 - PCAOB inspection teams identified certain audit engagements in which auditors performed tests of journal entries, but failed to demonstrate that they had appropriately assessed the completeness and integrity of the population of journal entries obtained from the issuer. The inspection teams also noted instances in which there was no evidence in the audit documentation, and no persuasive other evidence, that an appropriate examination and evaluation of journal entries was performed.

Who Blows the Whistle on Corp Fraud

Luigi Zingales

| Actors | Count | % of Total |
|----------------------------------|---------------------------|-----------------------|
| Total Internal Governance | 74 | 32,2% |
| External Governance | Count of Ext. Gov. | % of Ext. Gov. |
| Mandated Actors | | |
| Non-Financial Market Regulators | 25 | 16,0% |
| Auditors | 22 | 14,1% |
| SEC | 9 | 5,8% |
| Total | 56 | 35,9% |
| Market Actors | | |
| Employees | 30 | 19,2% |
| Media | 25 | 16,0% |
| Analysts | 23 | 14,7% |
| Strategic Players | 11 | 7,1% |
| Equity Holders | 5 | 3,2% |
| Professional Services Firms | 4 | 2,6% |
| Short Sellers | 2 | 1,3% |
| Total | 100 | 64,1% |
| | | 100,0% |
| | 156 | 67,8% |
| | 230 | |

Zingales' about Sox

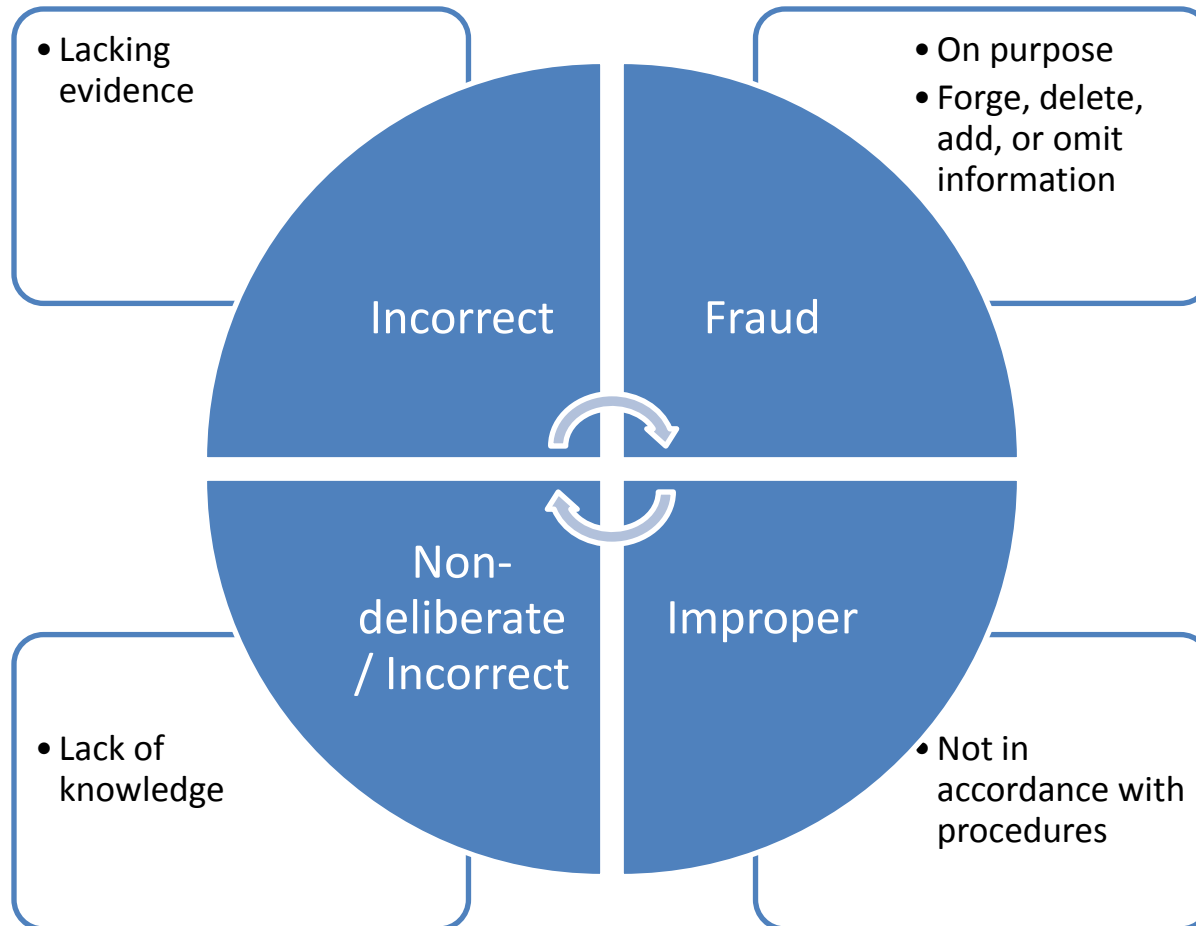
| | Pre-Sox | | Post-Sox | |
|---------------------------------|---------|--------|----------|--------|
| | Count | Freq % | Count | Freq % |
| Mandated Actors | | | | |
| Non-Financial Market Regulators | 17 | 15,3% | 8 | 17,8% |
| Auditors | 8 | 7,2% | 13 | 28,9% |
| SEC | 5 | 4,5% | 4 | 8,9% |
| | 30 | 27,0% | 25 | 55,6% |
| Market Actors | | | | |
| Analysts | 16 | 14,4% | 5 | 11,1% |
| Short Sellers | 10 | 9,0% | 0 | 0,0% |
| Market Actors | | | | |
| Strategic Players | 8 | 7,2% | 2 | 4,4% |
| External Equity Holders | 4 | 3,6% | 1 | 2,2% |
| Employees | 23 | 20,7% | 7 | 15,6% |
| Media | 17 | 15,3% | 4 | 8,9% |
| Insurance, Plaintiff Law Firms | 3 | 2,7% | 1 | 2,2% |
| | 81 | 73,0% | 20 | 44,4% |
| | 111 | | 45 | |

Why no universal application

- Management Sponsorship
- Problem set / interpretation, Metrics
- Technology
- People, Process, Culture
- Something else?

Problem set / interpretation, Metrics

What is an irregularity?



Technology

- Heavily dependent upon computer systems?
- Difficulties accessing their information systems?
- Need to rapidly analyze financial information?
- Information systems at multiple locations
- Multiple information systems?
- Concerns regarding the integrity of financial information?

People, Process, Culture

- Filmpje

Doelstelling

- Het creëren van een modus waarin Computer Aided Audit Techniques ingezet kunnen worden rekening houdende met 3 aspecten:
 - Effectiviteit
 - Relevantie
 - Context

Coso Guidance on Monitoring

- Monitoring is most likely to achieve its purpose through the mutually dependant characteristics of effectiveness and efficiency. Over time, ineffective monitoring leads to control breakdowns, which reduce the efficiency of the entire internal control system. Likewise, inefficient monitoring may limit an organization's ability to focus finite resources in the areas of greatest risk, thus reducing its effectiveness.
- Three primary elements of monitoring influence its effectiveness and efficiency:
 1. The control environment in which monitoring operates;
 2. The organization's ability to prioritize effective monitoring procedures and devote monitoring resources commensurate with the underlying level of risk; and
 3. The organization's communication structure and its ability to report results of monitoring, including control weaknesses, to the right people in a timely manner.

7 Practical Steps

- Understand Your Requirements
- Understand Your Technology Environment
- Develop a Data Analytics Strategy
- Define Your Audit Analytics Architecture
- Plan Your Technology Rollout
- Assign Roles and Responsibilities within Your Audit Team
- Implement a Training Program

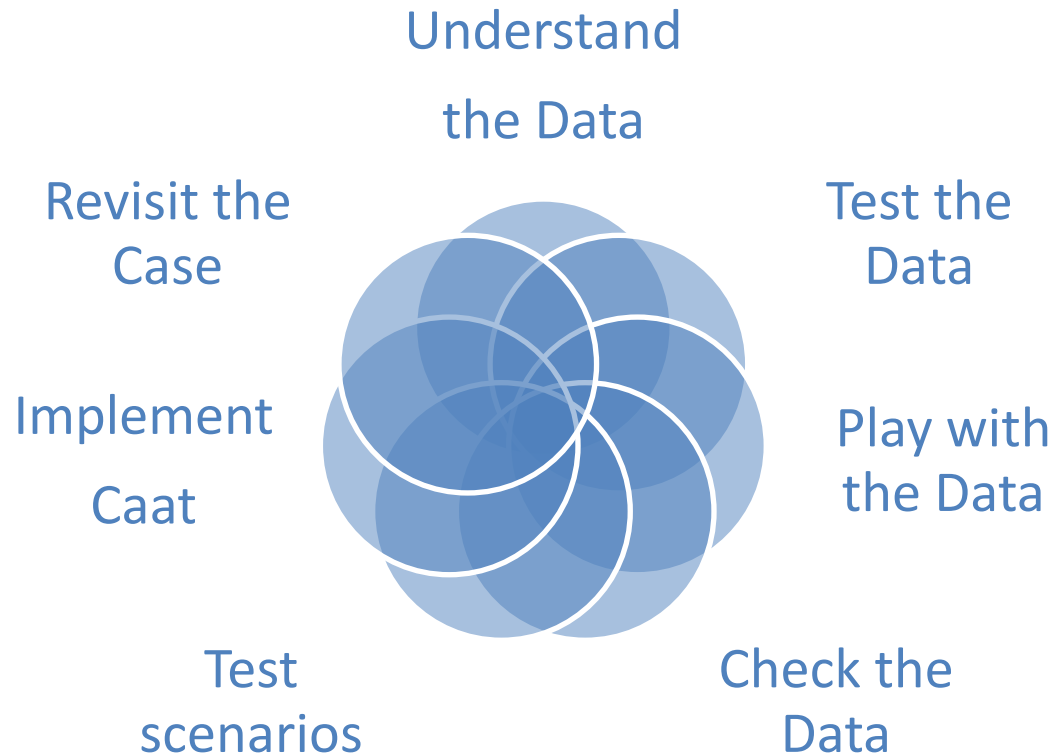
The Circle of Caats

"Many people think accounting is a science, where one number, namely earnings per share, is the number, and it's such a precise number that it couldn't be two pennies higher or two pennies lower. I come from a school that says it really is much more of an art."

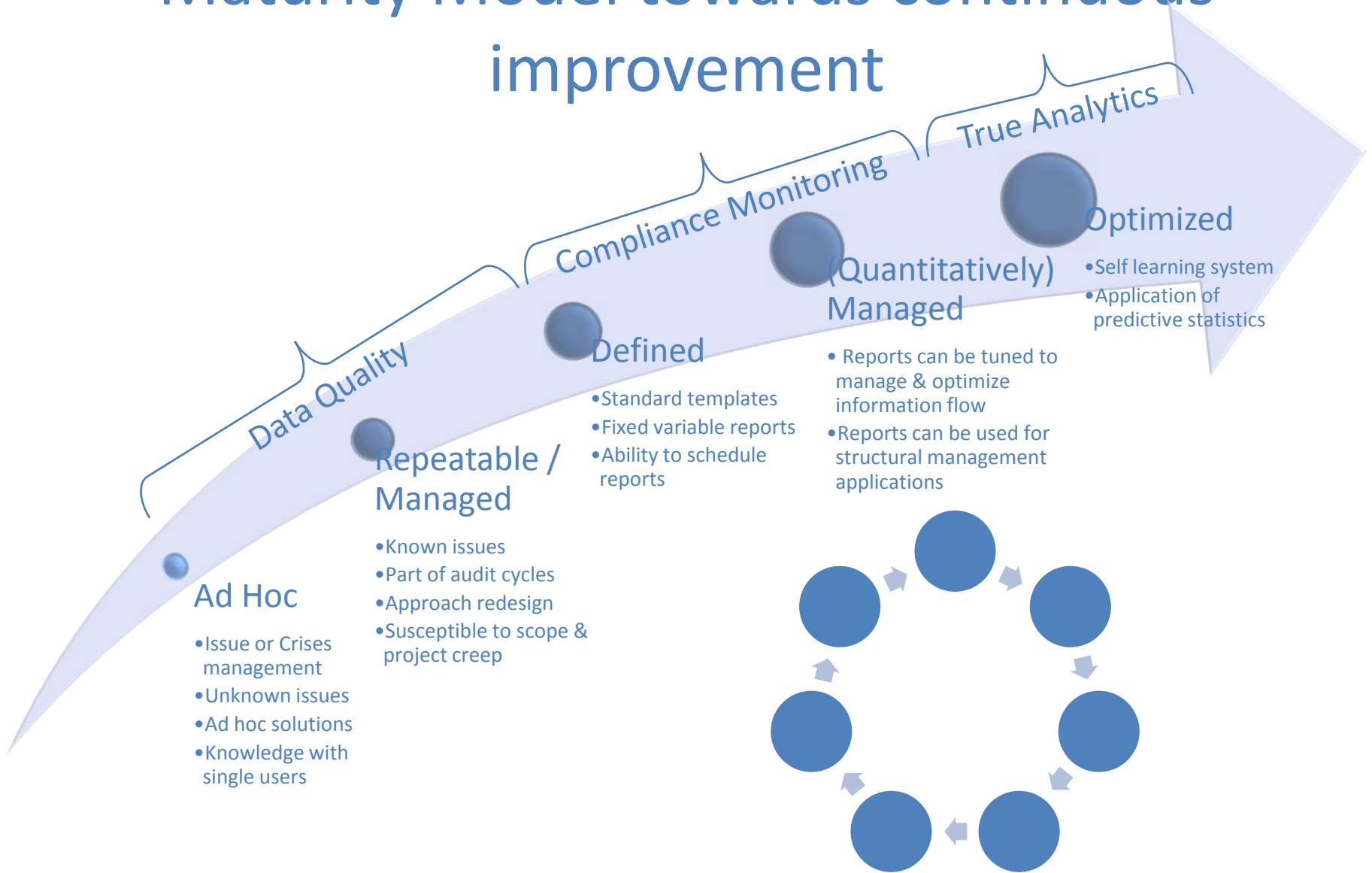
Joseph Berardino,

Arthur Andersen's former chief executive

in his congressional testimony on the Enron collapse



Maturity Model towards continuous improvement



Thank you for your attention

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