

Data Mining and Continuous Auditing



Data Mining - What is the purpose?

Why do we want to do data mining and continuous auditing?



Data Mining – What is it?

Data mining is collecting facts
to see trends



Data Mining – Who does it?

Scientists and Researchers

Financial Analysts

Auditors

Management



Data mining - is not new!

**Auditing has always been involved
in data mining**

Audit testing is data mining



Data Mining - What is new for auditors?

The tools and methodology



Data Mining – Why is it evolving?

More data is being collected electronically

More data is being consolidated

Tools are improving for analyzing data and identifying trends



Data Mining – Why is it evolving? (cont'd)

Audit staff are becoming better trained at using the tools

Management wants better and more specific recommendations for Improvement to controls



IIA on Continuous Auditing

It is a new and evolving audit methodology that has relevance and application potential for technology-rich, contemporary enterprises of various types, from business to government to not-for-profit. The information technology used by these enterprises enables them to receive, process, and report large sums of data on a continuing basis, thus fueling the need for continuous monitoring and auditing. At the same time, advances in information technology have resulted in the development of data warehousing and data mining techniques that enable continuous auditing.



Continuous auditing - What is it?

A form of data mining



Data Mining and Continuous Auditing

Who should do it?

Per the IIA, while Continuous Auditing applies equally to internal and external auditing, its development has almost exclusively been in the internal audit field. One reason for this development is that, in comparison to the periodic nature of external auditing, internal auditing, by design, lends itself more naturally to the concept of continuous monitoring and control.



Continuous Auditing - Why do it?

Real-time reporting requires real-time assurance of reliability

Need for continual corrective measures for improving business processes



Data Mining and Continuous Auditing

How much does it cost?

Data mining and Continuous Auditing
can require a significant investment



Data Mining and Continuous Auditing

Who should do it?

Does the data mining result in a management tool or mechanism for evaluating control and risk?

Answer defines if it is Auditor's or Management's responsibility



Continuous Auditing

What drives frequency?

Does more current data/info affect current year audit plan?

Does more frequent automated testing reduce work performed in individual audits?



Continuous Auditing

What drives frequency? (cont'd)

Do we need to provide management with more frequent assessments of controls in a particular area?



Continuous Auditing - How frequent?

Yearly

Monthly

Weekly

Real Time



Things to do when approaching a possible data mining project

Evaluate need and benefit to the audit
process

Evaluate if it can be performed

Evaluate cost and time it will take to
complete



Approaching a possible data mining project (cont'd)

Define expected deliverables

Define result validation process



Cost/Benefit Analysis

Define objectives for data mining/
continuous auditing

Define expected benefits

Define how it fits into overall
audit objectives



Cost/Benefit Analysis (cont'd)

Define frequency will need to perform to accomplish objectives

Estimate cost to perform

Estimate time to develop vs. when need information



Cost/Benefit Analysis (cont'd)

Evaluate if other alternatives are cheaper and/or faster

Evaluate if already being done by another group which could be leveraged



Deliverables

Define what data is needed and where it is located

Determine how data can be captured

Determine what you intend to do with the data



Deliverables (cont'd)

Determine how frequently you want to run the program(s)

Determine how to validate the integrity of the data and program



Deliverables (cont'd)

Determine documentation strategy regarding what the program does and where the data came from

Determine what is good enough or who will determine what is good enough



Program Specs

Fields needed

Selection criteria

Period selecting from

Type of records needed



Program Specs (cont'd)

Data merging criteria if pulling data from multiple sources and/or tables

How to deal with many-to-many relationships between tables

How to deal with one/some-to-none relationships between tables



Program Specs (cont'd)

Data sorting criteria

Data summarization criteria

Process for testing analyzing results



Program Specs (cont'd)

Process for selecting data for manual testing

Total population

Random sample

Judgments selection

Largest or smallest items

Most or least frequent items



Program Specs (cont'd)

Process for identifying and capturing exceptions to expected results

Tools/reports that will validate at least initial data selection is complete and accurate



Things that can assist in the development of specs:

Documented policies/standards

Data dictionaries

Lists of exception logic built into the system generating or housing the data



Some areas commonly mined:

Payroll

Purchasing

Employee Expenses

Purchasing Card Activity



Some areas commonly mined (cont'd)

Benefits

Financial Aid

System Access Rights



Examples of Payroll mining objectives:

More than 3 employees with the same bank account

More than 3 employees with the same address

Employees with the same TIN



Examples of Payroll mining objectives (cont'd)

Employees with extremely high pay rates or net pay

Employees with large numbers of pay rate changes in a single year



Examples of Payroll mining objectives (cont'd)

Employees with normal hours,
overtime hours and on-call hours
which exceed total hours in a period

Employees with large amount of
overtime on a regular basis



What are the Data Mining objectives you believe produce high ROI for auditors?

What is the optimum Continuous Auditing frequency for these Data Mining objectives?

