

WHITE PAPER

## The ACL Audit Analytic Capability Model:

Navigating the journey from basic data analysis to continuous monitoring



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## INTRODUCTION

Today's business climate is driving an expansion of the role of internal audit to be more consultative and with a stronger focus on risk management. Not only is internal audit being asked to become more efficient and effective in performing its traditional assurance role, expectations are heightened to also assess the effectiveness of risk management processes – a challenge that is amplified by declining or, at best, flat budgets, increasing complexities around regulatory compliance and fewer staff.

The case for audit analytics has been made: In 2010, "the use of automated tools or techniques" by internal audit functions qualified as a top-five strategic priority according to research from The Institute of Internal Auditors (The IIA).<sup>1</sup> Today, a more practical focus is taking hold as organizations seek to successfully implement new audit technology.

For more than 20 years, ACL Services, Ltd. has worked closely with more than 14,700 customer organizations worldwide to develop market-leading audit analytics solutions. During this time, ACL has collected in-depth intelligence from customers who have enjoyed great benefits from using audit analytics, as well as valuable evidence from those who have not.

Based on this knowledge, ACL has developed the Audit Analytic Capability Model, a framework for assessing different levels of audit analytic techniques and associated benefits. The model illustrates five progressive levels through which an internal audit department should be looking to evolve its use of analytics, and outlines the fundamental building blocks, in terms of people, process and technology that must be in place to optimize benefits.

ACL developed the model to help organizations more clearly evaluate their use of audit analytics and to better understand, plan and communicate what needs to be done to achieve and increase benefits and success. This white paper will provide an introduction to the ACL Audit Analytic Capability Model and help organizations build a roadmap for increasing analytics testing throughout their internal audit function.

## ACL'S AUDIT ANALYTIC CAPABILITY MODEL

The traditional approach to audit has always been to take a historic or retrospective view of what has happened over a period of time. While this approach delivers necessary and proven hindsight for audit planning, today's environment demands a more proactive and comprehensive view for effective risk management and business assurance.

Richard Chambers, president of The Institute of Internal Auditors (The IIA) reaffirmed this point during his keynote presentation at the 2010 General Audit Management (GAM) conference. Mr. Chambers said that in order to increase its relevance and value, as well as secure a "seat at the table" with executive management, audit needs to understand what happened yesterday, provide insight into what is happening in the business today, and understand where the organizational risks may occur tomorrow. In short, audit

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<sup>1</sup> *Internal Auditing in 2010: Shifting Priorities for a Changing Environment*, The Institute of Internal Auditors

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*"The ACL Audit Analytic Capability Model provides clear guidance for organizations looking to improve their use of analytics. It's how to talk to the business about the value of audit."*

Theodore K. Walter, CPA  
Manager, Financial Audits at Scripps Health

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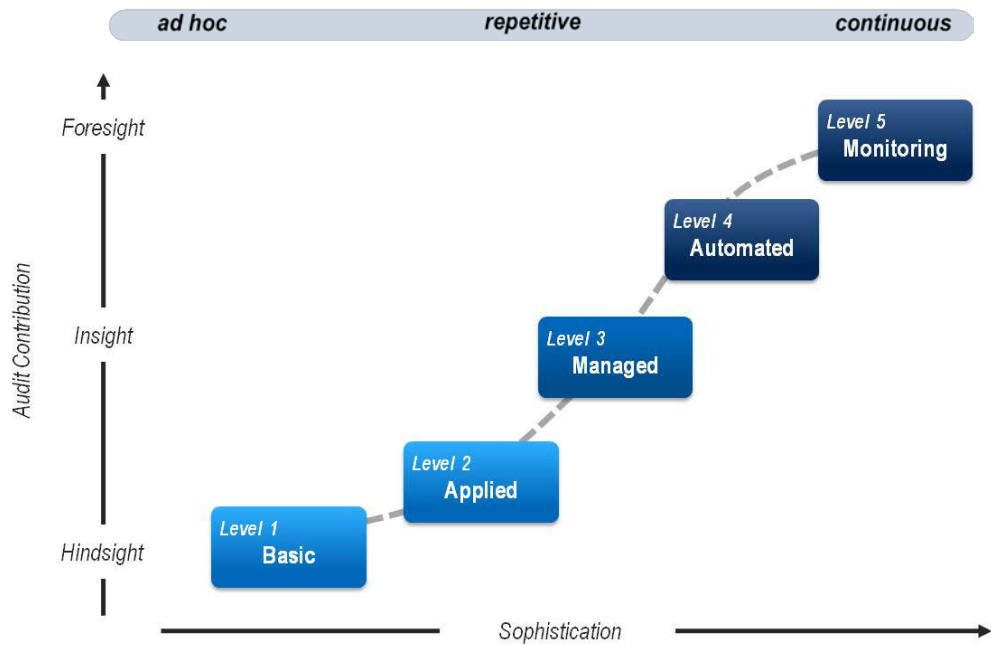
*“This enables internal audit to shift from a reactive to a proactive approach for identifying and managing risk, and delivers hindsight, insight and foresight for greater assurance and value to the business.”*

needs to provide a continuum of hindsight, insight and foresight. Together, these form an internal audit department’s “line of sight.”

The ACL Audit Analytic Capability Model is an evolution of the continuum concept and illustrates five levels through which internal audit can expand the use of data analytics to increase benefits: Basic, Applied, Managed, Automated and Monitoring.

For most organizations, the sophistication of analysis capabilities correlates with the level of strategic value and contribution that internal audit can deliver to the business. As internal audit extends the use of analytics and process controls are established, it advances toward an automated and continuous model. This enables internal audit to shift from a reactive to a proactive approach for identifying and managing risk, and delivers hindsight, insight and foresight for greater assurance and value to the business. (See Figure 1.)

**Figure 1: ACL’s Audit Analytic Capability Model**



Data analysis by auditors plays an important role at each stage of the continuum. For example, analytics can be used to support specific audits and to test 100% of transactions from a fiscal year or previous quarter. This enables internal auditors to identify where control failures have occurred in the past, delivering essential hindsight for compliance, governance and risk management.

As audit expands the use of analytics as a centrally managed tool that is integrated into audit processes, data analysis provides more timely insight into risks and controls at a level that is simply not possible without technology. Testing procedures can be repeated to enable timely analysis of large data sets and to identify detailed instances of risk, fraud, error and abuse across multiple business process areas.

As organizations apply greater automation and continuous auditing and monitoring, audit analytics provide the ability to detect patterns or trends in audit and control issues that provide foresight on increasing or changing risks within business and financial control processes. For example, controls monitoring routines can be run on a daily basis. Regular analytic tests can reveal instances of specific transactions that are a threat, as well as opportunities for improving controls.

Improving internal audit's line of sight is enabled by a progression towards continuous auditing and monitoring. Many organizations understand the benefits of automated continuous auditing and monitoring and want to move there immediately. However, without the building blocks of the lower levels in place, in terms of people, process and technology, it is more difficult to achieve the intended benefits.

ACL's Audit Analytics Capability Model is intended to help organizations evaluate their use of analytics as they progress through the levels.

In the next section, we will explore the characteristics and benefits of each level. Additionally, we will look at some of the challenges that internal auditors face while using audit analytic technology, as well as the risks that organizations may face at each level. We will also provide tips on how to optimize people, processes and technology to reduce those risks and improve the effectiveness of audit analytics as organizations expand their use from data analysis toward continuous monitoring.

## LEVEL 1 – BASIC

Organizations performing at the Basic level use audit-specific data analysis technology to perform queries and analysis of large data sets; most often for specific audits. In this scenario, an auditor typically starts by using analytics to produce statistical overviews and classifications or summarizations of data. This allows the auditor to identify anomalies and to better understand the transactions and balances within a specific area. Obvious problems such as duplicates are easily identified with pre-built analytic tests. Transactions and master data can be compared between systems, providing indicators of errors and fraud.

### Characteristics

At the Basic level, the use of data analytics is typically ad hoc and undertaken by auditors who have received introductory training. There is usually little involvement from management. Often an auditor with technical interests selects the analytic software, which is then used by that individual or only a limited number of specialists within the broader audit team. As a result, the individual or a small team of data analysts often become skillful power users who are highly productive in terms of output.

### Benefits

With initial use of audit analytic software, auditors rapidly gain a better view of risk and control issues within a given audit area. Analysis is more in-depth than can typically be obtained by general-purpose software or by manual procedures alone. For example, audit analytics allow for the review of 100% of transactions or balances and the use of pre-built queries designed for audit purposes.

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*“With automated data analysis and daily audit reports, ACL technology has strengthened our internal controls and provided invaluable corporate oversight.”*

Paul O’Sullivan, Internal Auditor  
Fintrax Group

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As a result, auditors can quickly identify specific instances of fraud, error, and abuse, as well as inefficiencies and control weaknesses. In some cases, the time to analyze data can be cut down from days to minutes when compared to manual techniques.

For example, the Fintrax Group, a financial services company specializing in multicurrency payment conversions called Dynamic Currency Conversion (DCC) and VAT refund management for tourists, deployed audit analytics to drive efficiency into their transaction reconciliation processes and to provide better insight into the risks of fraud.

Using basic, pre-built scripts, Fintrax replaced cumbersome manual DCC file reconciliation processes that used to take approximately 4-5 staff hours per acquirer. The process now requires just one hour to complete.

## Challenges

The most common challenge for internal auditors just starting to implement analytics at the Basic level relates to data access. This includes understanding what data is required to support a specific test and getting a complete and controlled population of that data.

## Organizational Risks

Just as data access issues may challenge the internal auditor at this level, obtaining data can become a significant risk and resource constraint to the organization if the process is not planned and managed effectively.

Because audit-specific software can handle massive amounts of data, security is paramount. For example, an organization would not want an entire payroll or payment run to wind up on a laptop or network server with inadequate security.

There is also risk that an auditor may jump to conclusions based on analysis that has not been thoroughly understood. At this level, there are often minimal review and quality assurance procedures to ensure the validity of work performed and to ensure the work is focused. Formal, certified training is critical in this situation.

## How to Optimize

By focusing on improvements in the areas of people, process and technology, organizations can overcome these challenges and risks and increase the effectiveness of audit analytics at the Basic level:

### People

- Train your team. Although audit-specific data analysis is not difficult to use at a Basic level, training is important and beneficial.
- Unless the IT department is mandated to support internal audit, it is often a good idea to have a strong technical resource available that can help deal with arranging access to data.

### Process

- Start with a simple plan. Identify where to use data analysis, the audit objectives that are supported, the period to be covered and the timeframe in which the work will be performed.
- Work with the IT department to identify and gain access to appropriate data.

- Ensure that the data obtained is actually the desired data and is complete.
- Determine the nature of reports and documentation of procedures performed.

### Technology

- Select audit-specific software that is not only effective at the introductory level but that can also support continuous auditing and monitoring for future growth.
- Ensure hardware systems can support large volume data storage and processing.
- Leverage your audit software's built-in capabilities to ensure adequate logging of audit activities.

## LEVEL 2 – APPLIED

The second level builds upon the first, but is distinct in that the analytics are far more comprehensive, are fully integrated into the audit process and begin to transform how audit is performed.

At this level, audit planning and program design takes analytics into account, effectively creating an "analytic-enabled audit program" in which, wherever beneficial and practical, an audit step or objective is achieved with the help of a specific analytic test. A full suite of repeatable tests is built to support an entire audit area.

### Characteristics

Given the broad scope in which analytics are used today, most audit organizations perform at the Applied level. However, within this level there is a broad range of skills and applications, with some organizations far more advanced than others.

People and process issues become increasingly important at this level. Audit management needs to provide direction and support, and a specialist is often assigned the role of data analyst to oversee the development of analytic projects and procedures. Review and quality assurance procedures are put in place to confirm the quality and validity of audit analytics that are performed.

The use of analytics is progressive within this level. After starting with "low-hanging fruit," usage grows over time as additional tests are added to support a broader set of audit objectives. Consideration is given to how analytics can best be applied on every new audit.

Additionally, training becomes in-depth and technical, with a focus on data access and integration and efficient script design for repeatability. For the audit manager, training in how to effectively oversee and leverage the audit analytic process becomes invaluable for integrating the benefits of analytics throughout the audit function.

### Benefits

At this stage, analytics begin to fundamentally transform the audit process, providing substantial improvements in efficiency and greater levels of assurance. Manual auditing, sampling and testing procedures are reduced to those situations requiring physical verification. As a result, many tasks are performed in a fraction of the time, freeing up time for auditors to focus on areas of new and evolving risk.

For example, the Oklahoma City auditors used analytics to audit state sales tax revenues and to identify missing payments, inconsistent application of statutes and fees, and improper vendor reporting. In one project, the audit team uncovered US \$45 million in lost municipal revenues and this discovery led to changes in the way all cities within the state collect sales tax payouts.

Audit analysis and assessment can also be performed remotely. For example, in the case of a payroll audit of a business with many locations, an analysis can be performed of all payroll transactions across the enterprise. This analysis may look for unusual pay rates, amounts of overtime and bonuses. If one area is shown to have a high instance of anomalies and all other regions adhere to a norm, then audit procedures can focus on that one location, thereby reducing travel and audit costs.

## Challenges

There are a range of challenges that the internal audit team may face as it adopts widespread implementation of audit analytics and integration into the audit process.

For instance, internal auditors must recognize that there is a big difference between the occasional use of an analytic tool and making analytics a core part of the audit process. Analytic programs need to be owned, processes changed, roles changed and people trained, all of which takes time, effort and resources. The payback can be considerable, but cannot be achieved without up-front investment.

In addition, many of the same data access challenges associated with the Basic level also exist at the Applied level. However, as organizations evolve their use of data analytics and implement repeatable tests, these issues need to be integrated into formal test design and development processes, with appropriate quality assurance (QA) procedures. Attention must also be given to documentation standards so tests can be maintained and understood by others.

## Organizational Risks

At this level, the greatest risks to an organization are often a result of the decentralized and distributed environment that evolves from the expanded number of end users and increasing audit analytic content.

As the data environment shifts to a more distributed and decentralized one, the risk of inefficient duplication of effort across different locations increases. Data and tests tend to proliferate across individual laptops, desktops and network servers, making it difficult to manage and keep track of current and correct versions, as well as any subsequent results.

Security issues also increase as data and results proliferate across a range of laptop and desktop computers. Critical data on internal auditors' computers may not be subject to the usual enterprise security standards. Particularly sensitive data, such as credit card and social security numbers, is often not encrypted or masked and may be visible to onlookers.

Complex processing of large volumes of data can consume all the processing power of laptops, desktop and network servers for considerable periods of time.

Lastly, there is a good chance that knowledge rests in the heads of a few key individuals whose possible departures could cause a loss of investment and progress.

## How to Optimize

To overcome these challenges and risks and to maximize the effectiveness of audit analytics at the Applied level, organizations should consider the following:

### People

- Assign overall responsibility for the success of an audit analytics program to someone with technical skills. However, internal audit management should remain closely involved in reviewing objectives and progress.
- Develop and train specialists in data access and test development.
- Keep in mind the need to merge technical and audit expertise when determining audit leadership roles. Few auditors are able to successfully combine capabilities in technical data analysis with in-depth understanding of audit and control processes and objectives.
- Ensure management review of test logic and results. Too often, analytics are left to specialists to design with minimal review at a management level.

### Process

- Define and broadly communicate goals and objectives for using analytics and establish a realistic estimate of resource and investment requirements.
- Develop a comprehensive audit analytics program plan that can evolve to meet the needs of subsequent Audit Analytic Capability Model stages. Start with key audit objectives and determine which can be achieved most efficiently and effectively through the use of data analysis.
- Develop procedures for quality control of analytics development and use, such as independent review to ensure that test logic is correct.

### Technology

- If data access challenges exist, consider specialized data connectors, for example, to SAP or other core business systems.

## LEVEL 3 – MANAGED

The Managed level is a logical evolution from the comprehensive use of audit analytic tests as a core part of the audit process. The objective at this level is to achieve team-based data analysis in which data and processing is centralized, secure, controlled and efficient.

Audit organizations operating at the Managed level must have the people, processes and technology in place to effectively manage the content and activities. Functioning proficiently at the Managed level is also a crucial building block for getting to the next levels in the model.

### Characteristics

The Managed level typically involves the development of many analytic tests that process large volumes of different data sets and generate results that often involve confidential information. In most cases, many people are involved in this process and information is spread across various computers in multiple and often geographically diverse locations.

Audit organizations performing at this level typically have a well-structured and centrally-managed server environment to store and maintain the large data sets and content of the audit analytics processes (e.g., tests, results, audit procedure documentation and related materials).

Complex processing of large data volumes is typically performed on high-powered servers. Access to and use of content is subject to planned processes and is controlled and secure. Procedures, standards and documentation for audit analytics are even more formal than at the Applied level.

Most significantly, at this level it is more practical and common for non-technical auditors to efficiently access and use the results of tests.

## Benefits

There are numerous benefits to moving to the Managed level of audit analytics. Team efficiency is greatly improved as it becomes easier and more efficient to share audit analytics content amongst the entire audit team, not just analytic specialists.

At this level, audit analytic work is easily repeatable and sustainable. There is less dependence upon any one individual and therefore less risk of existing work becoming unusable because a team member has left.

A centrally-managed repository also supports processes that make it easier to maintain the quality and integrity of analytic work. Access and changes to tests can be controlled more efficiently and enterprise-level data security standards can be easily maintained. A centralized analytics system is based on a server, which means that processing performance typically improves and less time is spent accessing large data sets and waiting for large and complex analytics to complete.

Establishment of a server-based repository can be an opportunity to improve effective relationships with IT by adhering to more typical standards for storing and processing data, an approach that usually gains the support of IT.

Additionally, it is far easier for management to obtain an overview of all work being performed and to review tests and results since all necessary information resides in one location.

## Challenges

For the chief audit executive (CAE) and audit team, moving to a managed analytics model requires preparation. Establishing a managed and centralized environment for audit analytics is as much about process and people as it is about technology. This means that implementation needs planning, preparation and resource allocations. The time and other resources

### Case study: Efficient, secure and rapid analysis

Take-Two Interactive Software is a global developer of video games with an eight-member internal audit team split geographically between New York City and the UK. The company is using AuditExchange, ACL's managed audit analytics platform to gain streamlined access to corporate data, conduct targeted queries and perform analysis on a variety of critical business activities.

With AuditExchange, the team has direct, independent access to the company's production databases and can securely pull, query, sort and analyze data with great flexibility. They do not have to wait for IT assistance, so even urgent requests from management and internal investigations can be tackled immediately. They also have a streamlined way to sample data and can easily stratify segments, target select areas, and also test full data populations.

The team stores approved scripts in a central audit repository, which makes it easy to share analysis routines between auditors working in the US and Europe. Auditors can quickly access existing scripts and customize them for the ERP system. This prevents auditors from starting at square one each time they want to perform a specific data test.

required to properly plan and implement can be significant, but typically deliver quick return on investment when ongoing growth and scalability can be supported with minimal extra effort or re-work.

## Organizational Risks

Other than implementation challenges, there are few immediate risks to an organization that has evolved to a managed environment for analytics. The issue is more one of senior executive expectations for moving to continuous procedures. At this point, the audit department has typically built a suite of tests and implemented procedures to maximize benefits from analytics in support of a cyclical audit process. The tendency can be to assume that everything is in place to start continuous auditing.

Although the basic building blocks for continuous auditing may be in place, effective continuous auditing requires additional planning and implementation support, particularly from a people and process perspective.

## How to Optimize

The following are a few areas an organization should consider for improving the effectiveness of audit analytics at the Managed level.

### People

- Implementation of the Managed level of audit analytics is as important and integral a component of the overall audit process as at Level 2. It requires overall leadership and direction by audit management.
- Designate a repository administrator. The role of repository administrator is an important one. The individual does not have to be a technical specialist, but does need to understand the audit organization and processes and how to establish effective content security procedures.

### Process

- Structure the audit analytics repository so that content can be used and controlled efficiently. For example, categorize data by audit area, location and period.
- Carefully consider account access, security and control requirements. Limit access to sensitive payroll and payments data, and prevent changes to tests except by authorized individuals.
- Determine which data is to be maintained in the repository, as well as the timing of data refreshes. Encrypt or mask sensitive data.
- Confirm the completeness and validity of repository data, for example by reconciliation to control data or to general ledger balances.
- Standardize localization and structure of documentation for data, tests and procedures.

### Technology

- Ensure software is designed to manage and control audit analytics content and support efficient access to and refresh of data.
- Ensure server hardware is in place to support the central server managed analytics platform.

## LEVEL 4 - AUTOMATED

Once a comprehensive suite of tests is developed and well managed, audit is ready to move ahead with automation.

At Level 4, much is already in place from a technology perspective to begin continuous auditing. However, to be effective, continuous auditing involves some fundamental changes in audit processes.

A traditional cyclical audit has a clearly defined time frame – a beginning and an end in which an audit report is produced. A continuous audit is different in that the processes for running tests, reviewing and reporting on results are ongoing. Roles and responsibilities for performing continuous auditing are different than for a traditional cyclic approach.

### Characteristics

The Automated level builds upon the previous levels as the foundation for continuous auditing and monitoring. Comprehensive suites of tests have been developed, tested and are available in a central, controlled environment. Data access for analysis and tests is secure but easily accessible by stakeholders. All that remains from a technology perspective is to schedule tests to run regularly against appropriate period data.

However, continuous audit requires more than technology issues to be addressed. It usually requires a significant shift in audit processes. Most internal audit departments commence continuous auditing in one area and then expand to additional areas over time as appropriate procedures are established. Automated analytics make it possible to perform concurrent, ongoing auditing of multiple areas.

### Benefits

Shifting from a historic assurance process to one that is current meets the increasing expectations from audit committees and management for internal audit to provide insight and assurance that is timely and subsequently of far higher value.

Once a high level of audit automation has been achieved, the ability to track current status of audit, risk and control issues leads to a more efficient and effective audit process overall. Auditors can keep track of changes in risk profiles and focus efforts as needed.

For business process areas that show little or no significant issues, continuous auditing procedures can save considerable expense and effort. Audit resources can be assigned to areas of more significant risks, such as in new business areas and in areas where analytic procedures are of limited value.

This approach allows senior audit management to provide more thorough and higher value reporting to the audit committee and business management. For example, instead of reporting on the results of two audits performed in the past quarter, the CAE can report the results of ongoing and concurrent auditing that has taken place over four key business process areas, and report on special areas of current risk and concern.

Lastly, continuous auditing can also be used to demonstrate to business process management the value of audit analytic techniques – opening the discussion for management to assume responsibility for continuous monitoring.

By way of an example, the Hawaiian Airlines Corporate Audit Group used ACL's AuditExchange to create several automated analytics specific to the airline industry. To ensure buy-in from senior management, they identified manual processes in other departments that could be automated. As a result, they reduced the time required to complete those processes by approximately 99%. Employees are saving hundreds of hours of manual labor with automated routines. The team can also follow trends with targeted analytics and promote more effective internal controls.

## Challenges

A successful move from traditional audit processes is difficult to achieve unless it is led and supported by senior audit management who not only understand the benefits and objectives, but also the investment and effort required.

There can certainly be technical challenges in moving to continuous automated audit – from both audit and technology perspectives – but the more significant challenges are usually encountered when allocating sufficient resources to support the change in approach, as well as recognizing that change of this type requires ongoing review and involvement from management.

## Organizational Risks

Effective continuous auditing can provide clear benefits in terms of audit productivity and effectiveness. However, the greatest risk to an organization is that findings are not shared with management or are not responded to in a way that adds value to the business through improved controls and business performance.

## How to Optimize

Below are a few areas an organization should consider when looking to improve the effectiveness of audit analytics at the Automated level:

### People

- Designate a continuous auditing program manager who is responsible for leading and coordinating efforts across people, process and technology.
- Modify work processes so that an individual auditor's continuous auditing responsibilities fit in with other audit roles.

### Process

- Develop a prioritization plan for the business areas that require continuous auditing. For example, should continuous auditing be first applied to "low-hanging fruit" in common business process areas such as purchase-to-pay, procurement cards or T&E expense? Or to complex areas of greater risk?
- Determine the appropriate frequency of tests for each audit activity. This often aligns with the timing of the relevant business process cycle. E.g., weekly or bi-weekly for payroll; daily, weekly or monthly for purchasing and payments.
- Assign responsibility of reviewing the results of continuous audit tests. Define the actions to be taken on continuous audit results.
- Create procedures for modifying tests when results indicate changes are required.
- Ensure source data validity and completeness. This is particularly important as the timely availability of the correct data is critical for continuous auditing.

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*"Many companies start slowly, using off-the-shelf software to monitor select high-risk areas such as corporate credit-card purchases or accounts-receivable transactions. Others are integrating the monitoring into existing enterprise systems, for use by both operations and audit. The U.S. arm of Siemens Financial Services, which provides financing for health-care, energy, and industrial companies, has started running programs every night to monitor "everything that determines the value of a financial asset," namely, information on borrowers' riskiness, says Matthias Grossmann, CFO of the business unit. The decision to move to continuous monitoring was an easy one, he says, because the company was able to address the task with technology it already owned."*

Quoted in "The 24/7 Audit"  
CFO Magazine

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- Determine procedures to be undertaken in the event that a test fails to run as planned.

### Technology

- Keep in mind that technology issues most often relate to getting the appropriate data on an automated basis. When issues exist, start with confirming that the right data is available.

## LEVEL 5 – MONITORING

With all of the building blocks of the preceding levels in place, an organization is well positioned to increase the benefits of audit analytics by expanding it to other business areas. If audit is regularly producing reports on control problems and potential instances of error, fraud or compliance failures, then it usually makes sense to involve business process owners more directly and notify the appropriate individuals immediately of exceptions as they occur, so that they may respond appropriately.

Internal audit is often in the best position to demonstrate to business process management the practical value of audit analytics to detect policy breaches, control problems and improve operational performance. By encouraging and supporting the implementation of continuous monitoring, the benefits of audit analytic techniques become obvious to a wider audience and start to be applied within the business. It is not unusual to hear a business process owner comment that they had been looking for some form of exception reporting system that provides greater insight into operational performance, and are surprised when audit can provide or demonstrate such capabilities.

Continuous monitoring can also become an important component within an organization's risk management processes, helping to provide the business with a clearer picture of risks, issues and trends.

In general, the view of the internal audit profession is that responsibility for continuous monitoring should be passed to business management. This enables audit to assess independently the impact of continuous monitoring activities. Through this approach, the desired outcome can be a combination of continuous auditing performed by audit, and continuous monitoring performed by management. Together these provide continuous assurance over transactional integrity and the effectiveness of controls.

### Characteristics

The highest level of audit analytics occurs when the results of regularly repeated (continuous) testing of transactions and controls are provided directly to management for response. Continuous monitoring is a natural progression from continuous auditing, involving many similar processes and technologies. While most auditors agree that continuous monitoring is the responsibility of management, audit is in a position to recommend and guide management involvement and responsibility for ongoing testing of controls and transactions within their business process areas.

Other than "ownership" of the processes, the main characteristic difference between Level 4 (continuous auditing) and Level 5 (continuous monitoring) are the workflow processes by which the business area is notified of exceptions and responds to them, as well as the use of dashboards for overall reporting of continuous monitoring results, status and trends.

*“AuditExchange will fundamentally transform how we manage spending and evaluate compliance. Reporting that was previously non-existent will now provide senior leadership with a clear picture of our control environment.”*

Hal Laughlin, IT Audit Manager  
Dun & Bradstreet

At this level, the results of widespread testing can be accumulated and reported to show trends of risk areas and changing risks where, for example, a pattern of an increasing number of a certain type of exceptions becomes obvious.

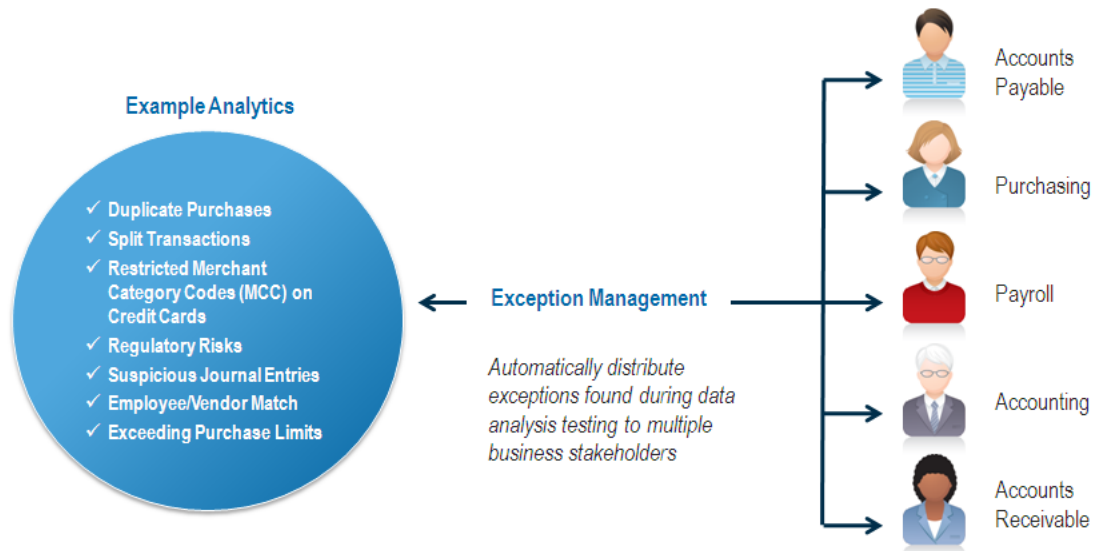
### Benefits

The greatest benefits from the use of analytics for auditing and control testing occur when the business process area has taken over responsibility for continuous transaction monitoring and can address flagged issues as they happen. If fully implemented at this level, audit can step back and review and assess the results of the continuous monitoring process. Audit can assess management response and remediation activities in order to determine what, or whether, additional audit procedures are required. This improves audit productivity since audit can focus on areas that are not subject to these techniques.

With continuous monitoring, organizations benefit from improved effectiveness of controls and require fewer control procedures since all transactions are monitored automatically. They experience a reduction in fraud, error, inefficiency and abuse – directly improving the bottom line and business performance, and reducing associated risks.

Continuous monitoring helps make the business more aware of the benefits of auditing techniques, thus creating an “audit-aware business.” It can also foster a closer working relationship between audit and business management regarding the impacts of risks and controls in which audit becomes more aware of business issues – the “business-aware audit team.”

Figure 2: How Continuous Monitoring Works



### Challenges

While an increasing number of organizations understand the benefits of continuous monitoring, there are various challenges in implementing and maintaining successful processes. This is usually because all of the required building blocks of processes, roles and technologies were not properly established, or because management does not fully understand or accept their critical role and responsibilities.

One of the most common issues is that management has different criteria for an exception. It may be that management is not concerned about control weaknesses that matter to audit and are more interested in performance-based issues. This is an opportunity for management and audit to work together to blend respective objectives into a combined process, leading to an improved, common understanding of organizational needs and opportunities.

False positives are also common. If continuous monitoring produces mass numbers of false or insignificant positives on an ongoing basis, the process will usually grind to a halt.

## Organizational Risks

As with any system implementation process, there are risks that the project will not achieve the desired outcomes. For example, the continuous monitoring processes may not reveal any significant instances of control failures, even though from an audit perspective it may be that a lack of exceptions indicates there is assurance that controls are working effectively. As a result, business owners may fail to see the value of the process and dismiss or terminate the audit program – a risk that could have a long-term negative impact.

## How to Optimize

The following are areas an organization should consider when looking to improve the effectiveness of audit analytics at the Continuous Monitoring level:

### People

- Assign overall responsibility for the ongoing success of the continuous monitoring processes to an appropriate individual. This is a new business process, not simply a project.
- Allocate resources to the review and follow-up of exceptions according to the nature and severity of the exceptions identified.

### Process

- Establish ownership and the respective roles of audit and business process management. In principle, internal audit should be independent of the continuous monitoring process and pass all responsibility over to business management. In practice, audit is often the area that understands and has the capabilities to implement continuous monitoring, so it is possible to have a hybrid approach in which, for example, audit runs the testing processes and provides management with access to the resulting exceptions and reports that are produced. Management must then respond to the exceptions and resolve them where appropriate, usually by fixing problem transactions and improving relevant processes and controls.
- Once the continuous monitoring processes and results are assessed, the auditor needs to decide the impact on audit procedures. If, for example, continuous monitoring of the Purchase-to-Pay process indicates control problems only within one specific region, audit programs can be limited to those appropriate for the single area.
- The issue of false positives can be a significant one, especially if too many false positive exceptions are produced. Ideally, sufficient reiterative testing is performed to eventually eliminate false positives. Tests are modified to take account of specific transactions that fail a standard test but are not of actual control concern.
- False negatives also need to be considered. Continuous monitoring tests should be validated to ensure that specific control failures and problem transactions are correctly identified.

- Processes need to be established for response to continuous monitoring results – usually to the specific exceptions that are identified. This means addressing problem transactions and, where necessary, improving the defective control procedure. Workflow and escalation procedures are usually needed in the event that an exception is not addressed within a certain timeframe.

### Technology

- The technology requirements for continuous monitoring are very similar to those for continuous auditing, although usually with the addition of capabilities to support the management and reporting of exceptions and the workflow around their state of resolution.
- Graphical overviews (dashboards) of the status of continuous monitoring and results over a given timeframe are usually a valuable way of quickly assessing overall risk patterns and highlighting trends that need specific response. They can also be used to quantify findings and remediation efforts, which can serve to rapidly establish the value of continuous monitoring processes.

## CONCLUSION

This document provides an introduction to the ACL Audit Analytic Capability Model. Each organization will encounter unique challenges in optimizing the benefits at the different levels along with typical people, process and technology issues to address.

When continuous auditing is combined with continuous monitoring, it is possible to achieve a level of continuous assurance over the effectiveness of controls and the integrity of transactions in business process areas in a way that is not possible without these techniques. However, it is possible for organizations to function optimally at level 1 for the use of analytics in some audit or business process areas and at level 5 in others.

At a high level, the Audit Analytic Capability Model provides internal audit with a means of assessing the current level of use of audit analytics and identifying the desired level of use, together with a basic understanding of some of the issues to address. This model can be used as a roadmap to communicate plans, and to make the business case to management for building an audit analytics strategy for the organization.

Overall, the model supports audit in making the business more aware of the benefits of auditing techniques, as well as helping audit become more aware of what is happening within the business. The result is an increase in the value that audit contributes to the organization of which they are an integral and important part.

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*“As internal audit grows more sophisticated in its work and data analysis capabilities, it can move from primarily providing information about the past, or hindsight, to providing information about the present, or insight, and, even more valuable, by providing foresight – information that helps the business better anticipate and respond to future events.*”

*By working through the five analytic capability levels in the model, internal audit can enhance the hindsight it needs to provide, with the addition of more valuable insight and foresight, including information that sharpens senior management’s view and understanding of organizational risk.*

*The ACL Audit Analytic Capability Model is certainly not a rigid requirement; it’s a road map. And, yes, a small number of companies may be able to successfully achieve continuous auditing and monitoring much more quickly than their competitors. However, most organizations – particularly those that seek to achieve comprehensive analytic capabilities – really need to take this one step at a time. There are always exceptions. A company might achieve the final two levels simultaneously, for example.*

*Our intention is to be as practical and realistic to help companies succeed. It would be a shame if some companies lost confidence in the value of continuous auditing technology because they tried it and the effort did not work out the way they wanted it to.”*

John Verver, CA, CISA, CMC  
Vice President of Services & Product Strategy, ACL Services, Ltd.

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By working through these levels, internal audit functions can increase the odds of a successful and immediately valuable adoption of analytical capabilities.

When it comes to internal auditing technology, the time for discussion has largely passed. Forward-looking internal audit departments are embracing action in the form of carefully planned and executed implementations that help their organizations harness the value of richer insights and greater foresight each step of the way.

ACL has drawn upon its two decades of experience working with thousands of Auditors worldwide and developed detailed materials and methodologies to support the assessment process, as well as the processes and procedures for optimizing performance at each level within the model.

For a free assessment of your organization's audit analytic capabilities, call **1-888-669-4225** or visit: [www.acl.com/Steps](http://www.acl.com/Steps)



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## COMPANY OVERVIEW

ACL Services Ltd. is the leading global provider of business assurance technology for audit and compliance professionals. Combining market-leading audit analytics software with centralized content management and exception reporting, ACL technology provides a complete end-to-end business assurance platform that is flexible and scalable to meet the needs of any organization.

Since 1987, ACL technology has helped organizations reduce risk, detect fraud, enhance profitability, and improve business performance. ACL delivers its solutions to 14,700 organizations in over 150 countries through a global network of ACL offices and channel partners. Our customers include 98 percent of Fortune 100 companies, 89 percent of the Fortune 500 and over two-thirds of the Global 500, as well as hundreds of national, state and local governments, and the Big Four public accounting firms. Visit us online at [www.acl.com](http://www.acl.com).