



# Software Asset Management: A view from two perspectives from the audit world

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# Agenda

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Contract risk and compliance

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Definition, trends and current state in Software Asset Management (SAM)

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Vendor audits of software license compliance

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Internal audits of SAM processes

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Risk implications

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A case for multi-method approach to SAM

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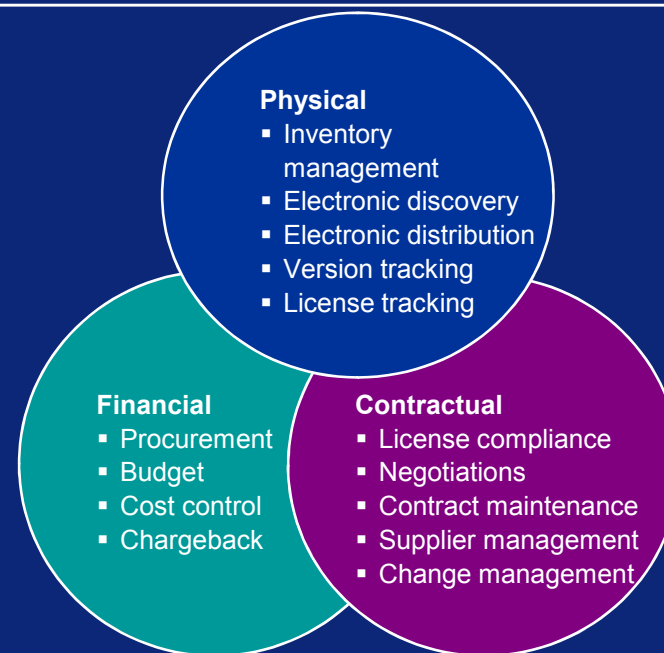
# Contract risk and compliance (CRC)

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- Assists clients in understanding, analyzing, and mitigating risks of doing business with others
  - Understand and analyze internal and external risks of doing business with third parties
  - Analyze whether business relationships are in compliance with expectations, contractual obligations, and business protocols (monetary and nonmonetary)
  - Consider clients' own internal controls over compliance with contracts, and processes to monitor and analyze performance of their extended business relationships
  - Understand opportunities to strengthen the strategic relationship with extended business relationships
- CRC engagements include such reviews as:
  - Software license compliance reviews on behalf of vendors
  - Software inspection management reviews to facilitate clients' compliance
  - Pre-contract readiness assessments of IT outsource service providers
  - Post-contract compliance assessments of IT outsource service providers
  - Contract manufacturer vendor reviews
  - Royalty analyses
  - Advertising and media vendor reviews, including interactive advertising

# Software Asset Management: Defined

<p><b>Software Asset Management</b></p>	<p>ITIL describes Software Asset Management (SAM) as “<i>all of the infrastructure and processes necessary for the effective management, control, and protection of the software assets within an organization, throughout all stages of their lifecycle.</i>”</p> <p>SAM Goal: A single, integrated view of all software that directly matches on a one-to-one basis with purchasing and licensing records</p>
<p><b>Related Portfolios</b></p>	<p>There are several IT management portfolios that SAM affects, including:</p> <ul style="list-style-type: none"> <li>▪ Contract</li> <li>▪ License</li> <li>▪ Financial</li> <li>▪ Procurement</li> <li>▪ Vendor</li> <li>▪ Human Resources</li> </ul>
<p><b>Software Asset Tracking vs. Management</b></p>	<p>Although Asset Tracking and Asset Management are often used synonymously, there is a subtle difference between the two:</p> <ul style="list-style-type: none"> <li>▪ <b>Asset Tracking:</b> Deals with the physical characteristics of software in support of planning, deployment, operation, support, and service; installation/use data.</li> <li>▪ <b>Asset Management:</b> Deals with the fiscal (financial and/or contract) details of software as required for financial management, risk management, contract management, and vendor management; ownership data. Asset tracking is a prerequisite.</li> </ul>



# Trends in software licensing and issues

## Chronology

Pre-1990s	1990s	2001-2002	2003-Current
<ul style="list-style-type: none"> <li>Site and multi-CPU licenses, independent of machine number and/or capacity</li> <li>Optional maintenance, at 10%-15% of license fee; all inclusive</li> <li>Additional fees based on actual expanded use</li> <li>Bundled function</li> <li>Minimal enforcement of license restrictions</li> </ul>	<ul style="list-style-type: none"> <li>Vendors continue to charge for full capacity</li> <li>Optional maintenance, at 10%-15% of license fee; coverage options and limits</li> <li>Cost penalties for not staying current</li> <li>Platform specific license models</li> <li>License enforcement</li> </ul>	<ul style="list-style-type: none"> <li>Business metric based pricing models</li> <li>Mandatory maintenance, at 15%-20% of license</li> <li>Enterprise-wide licensing</li> <li>Multiplatform licensing</li> <li>Concurrent usage models withdrawn</li> <li>Compliance audits</li> </ul>	<ul style="list-style-type: none"> <li>Rental/periodic/term licenses dominate</li> <li>Mandatory maintenance, at 15%-30% of license</li> <li>Negotiated usage licensing models (utility-based)</li> <li>Open source licensing</li> <li>Functionality unbundled</li> <li>New version functionality as separate product</li> <li>IT Virtualization</li> </ul>

## Software Industry Trends

- IT Virtualization
- Mergers/acquisitions
- Re-engineering of license agreements
- Vendors exploiting increasingly restrictive contract terms to increase revenue
- Compliance audits
- Convergence of license models - cross platform
- Electronic licensing and software distribution

*“When you know for a fact that if all the software disappeared, all the planes would stop flying, all the streetlights would go off, all the plants would stop producing – and you can still say with a straight face that software isn’t an asset - then you must acknowledge an enormous gap between reality and practice.”*

**Harvard Business Review**, January/February 1990

# Licensing methods

Organizations today have a wide variety of options for licensing software, with subscription-based licensing methods gaining momentum, as software customers demand increased flexibility and better alignment with value, and as software vendors look for opportunities to enhance the predictability of revenues.

Licensing Methods	Perpetual Licensing	Per Machine	Licenses are assigned to a particular machine / workstation / server
		Per Processor Core	License costs are determined based on the number of processor cores contained within the machine that runs the software product
		Per User	Licenses are assigned to specific users
		Concurrent User	License costs are derived based on how many users access the software concurrently
		Metric Based	Business usage / financial metrics are the determinants of license costs
	Subscription Licensing	Fixed Fee Subscription	The customer “rents” the software and pays a recurring fixed fee (usually on an annual basis) to use it
		On Demand Subscription	The organization uses the software product as required, and then pays licensing fees based on how much it used the product during a particular period

# Cost continues to be a central driver for SAM

Certain factors contributing to the total cost of ownership of a software asset arise throughout its lifecycle.

Acquisition	Software License Fees	Fees based on licensing model followed and usage forecasts
	Administrative Overhead	Overhead for contract negotiation, procurement, and delivery of assets
Operational	Upgrade/Maintenance	Identifying software that requires maintenance/ upgrades. Costly maintenance of “shelfware”
	Software Support	Support fees for software on a per-user or volume basis. Help desk costs
	Administrative Overhead	IT training costs. Tracking software usage and licensing compliance

# The view from two audit perspectives

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- **Scope of License Compliance Reviews**
  - Internal or external (i.e., vendor) driven process to validate and reconcile deployed software products with entitlement
  - External inspections may result in potential adverse financial impact in the case of over-deployment in excess of licensed entitlement
  - Internal inspection are proactive to minimize impact of an external inspection, and may also result in opportunities to reduce costs due to unused or underused products
    - Part of due diligence in outsourcing arrangements
- **Scope of Internal Audits**
  - Internal process driven by control objectives and testing of control activities, including:
    - Software is acquired consistent with established policy and procedure
    - Software is accurately tracked throughout its life cycle from procurement through disposal
    - Processes are established to load and use software in accordance with the applicable licensing agreements
    - A regular review process is in-place and used to periodically verify compliance with license and maintenance requirements



# Vendor compliance reviews

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- Over deployment
  - Manual error prone “spreadsheet” approach to SAM
  - Incomplete installation of automated tools
    - Outdated or missing signature files or knowledge modules
    - Not installed on all machines
  - Failure to understand licensing rules
    - Misinterpretation of contract provisions
    - Product co-requirements
  - Failure to recognize and understand new terms and conditions
    - Sometimes found in Announcement Letters
  - Failure to track configuration changes impacting licenses
  - Failure to accurately collect and report usage information
  - Failure to perform periodic self-audits (reconcile entitlement and deployment)

# Vendor compliance reviews: Outsourcer

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- Over deployment
  - Lack due diligence to reconcile deployed with entitled prior to assuming outsourcer role
  - Failure to properly execute license provisions in the event of outsourcing to transfer licenses where provided
  - Failure of the service provider to properly use software in an outsource environment
    - Support multiple customers with software licensed to support a single customer

# Financial management – issues and risks

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- Issue:
  - Incomplete and/or inaccurate corporate financial reports due to absence of data on:
    - Deployed and entitled software
    - Financial commitments in software contract terms and conditions
- Risk:
  - Inability to:
    - Meet financial goals
    - Prepare accurate corporate financial reports (i.e., income statements, balance sheets, etc.)
    - Prepare financial management reports (i.e., forecasts, budget to actual expenses, charge-back calculations, etc.)
    - Provide financial management and control over planned and active projects involving software

# Asset management – issues and risks

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- Issue:
  - Inaccurate or incomplete reconciliation of data in the IT asset management system and the financial systems
- Risk:
  - Inadequate management of software assets due to:
    - Missing, incomplete and/or inadequate audit trails and systems interfaces between the software asset management system and the financial system
    - Inadequate and error-prone manual or automated reconciliation processes

# Asset and security management – issues and risks

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- Issue:
  - Inadequate tracking, monitoring, and control of software downloads from both authorized internal portals and unauthorized external sources.
- Risk:
  - Lack of control over what software is introduced and used to meet business functions:
    - Download from internal portal: Inability to track and control software for purposes of license compliance, charge-back, change control, maintenance, etc.
    - Download from external sources: Potential introduction of nonstandard/ unsupported software, as well as software with malicious code, and violation of license agreements

# Software life cycle management – Issues and risks

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- Issue:

- Absence of a linkage between a specific piece of software on a specific server/host or workstation to its associated asset record, purchase order, and vendor contract
  - Inability to track and manage software throughout its life starting with acquisition

- Risk:

- Potentially inaccurate and incomplete data regarding the disposition and location of software assets leading to:
  - Inability to create an accurate Configuration Management Database (CMDB) or to rely on the accuracy of the existing CMDB
  - Adverse impact effective management of key IT functions, including software refresh, software reuse, patch management, etc.
  - Inability to maintain accurate inventory of available product and preclude over purchase of products

# Contract management – issues and risks

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- Issue:
  - Inadequate or missing processes to capture software contract terms and conditions in standard manner to facilitate compliance self-assessments.
- Risk:
  - Manual processes to reconcile contract terms with actual practices may be error prone leading to legal and financial consequences
  - Barrier to standard contract language and business rules to facilitate contract negotiations, as well as subsequent compliance
  - Inability to easily determine the impact of changes to terms and conditions or product pricing

# Software usage – issues and risks

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- Issue:
  - Absence of complete and accurate usage data about deployed software
- Risk:
  - Potential payment for under utilized or unused software
  - Financial or legal exposure due to compliance with usage metrics
  - Inaccurate chargeback for software usage
  - Potential missed opportunities to identify alternative and cheaper alternatives for software products having limited use



# Software order and fulfillment – issues and risks

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- Issue:
  - Inadequate standards and controls around the process to order, approve, and fulfill requests for software
- Risk:
  - Inability to acquire and deploy software in an effective and efficient manner to meet business needs
  - Introduction of products that do not meet technical requirements
  - Lack of, or inadequately controlled, authorization process and spending limits for software

# Business risks

Organizations without a comprehensive SAM solution are exposed to significant business risk that detrimentally impacts organizational performance.

	Description	Business Impact
<b>Under-licensing</b>	<ul style="list-style-type: none"><li>More licenses are deployed than purchased</li><li>License validity cannot be demonstrated because proof of purchase or proof of license is unavailable</li></ul>	<ul style="list-style-type: none"><li>Financial losses due to license replacement costs and penalties</li><li>Damaged reputation that leads to fewer customers and fewer sales</li></ul>
<b>Unauthorized Software</b>	<ul style="list-style-type: none"><li>Compatibility issues can exist between business applications and unauthorized software</li><li>Unauthorized software is deployed without proper license(s).</li></ul>	<ul style="list-style-type: none"><li>Unexpected operational disruptions resulting from failure of business applications</li><li>Financial losses and damaged reputation due to license replacement costs, penalties, and adverse operational impact</li></ul>
<b>Outdated Software</b>	<ul style="list-style-type: none"><li>Outdated applications with serious security flaws act as an attack vector for hackers and viruses</li></ul>	<ul style="list-style-type: none"><li>Operational failures that cause interruptions and reduce productivity</li><li>Breaches that lead to loss of confidential data or data protected under law (SOX, HIPAA)</li></ul>

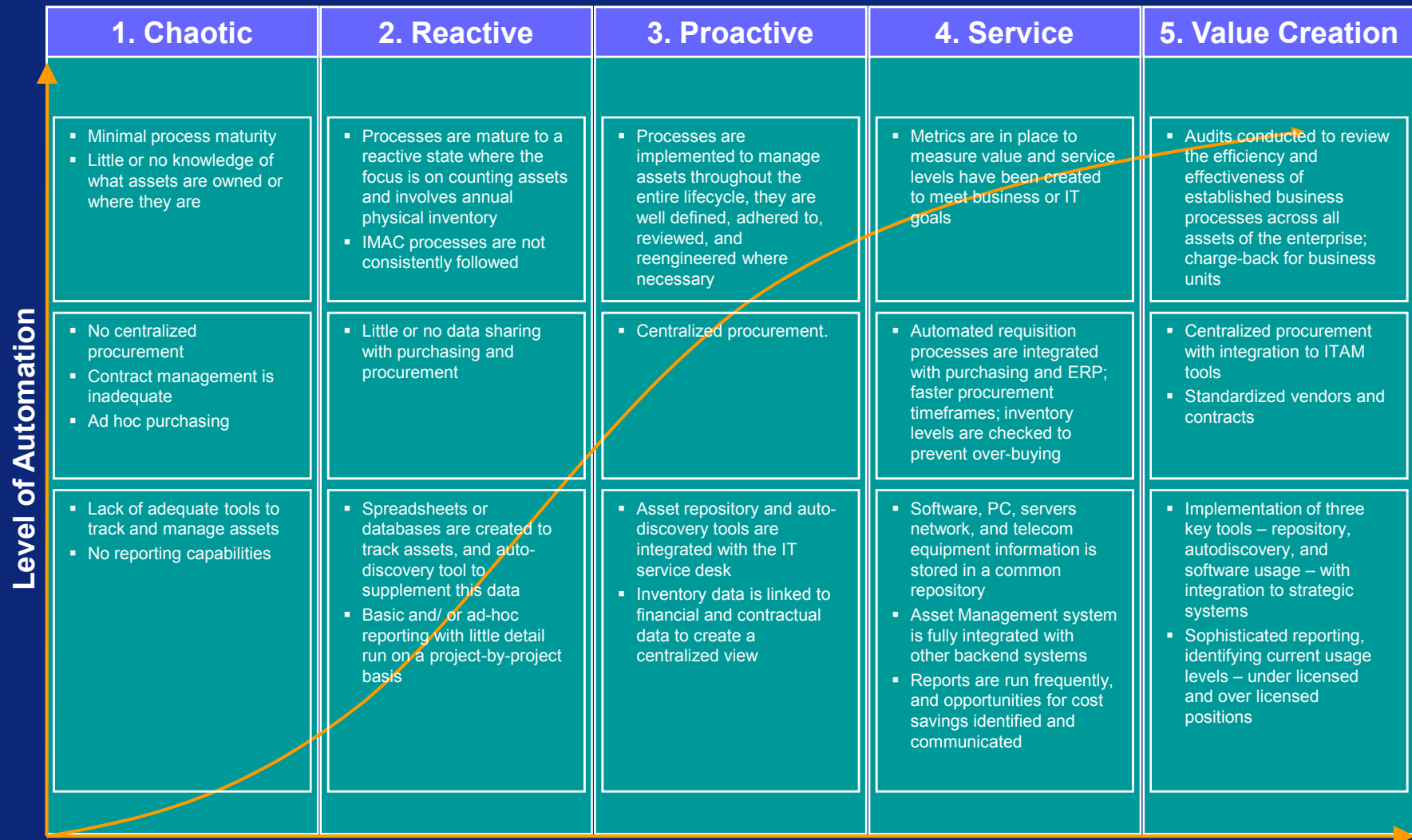
# Software asset life cycle: challenges, opportunities, and risk

	1. Procure	2. Deploy	3. Manage & Support	4. Patch & Upgrade	5. Retire
Description	<ul style="list-style-type: none"> <li>Determine business need</li> <li>Identify software required and check installs</li> <li>Procure software</li> </ul>	<ul style="list-style-type: none"> <li>Test the software to avoid conflicts</li> <li>Centralized deployment</li> </ul>	<ul style="list-style-type: none"> <li>Track ongoing support and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Patch software as required</li> <li>Determine if current version is no longer supported</li> </ul>	<ul style="list-style-type: none"> <li>Determine if software is obsolete</li> <li>Re-harvest and reallocate licenses</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>Lack of standardized contractual terms and licensing models</li> <li>Integrity issues between inventory levels &amp; purchasing</li> </ul>	<ul style="list-style-type: none"> <li>Identifying software usage and environment</li> </ul>	<ul style="list-style-type: none"> <li>Lack of central repository</li> </ul>	<ul style="list-style-type: none"> <li>Lack of unified view of software installs to drive upgrades</li> </ul>	<ul style="list-style-type: none"> <li>Inability to transfer/ re-harvest unused licenses</li> <li>Inability to collect and estimate software usage</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>Standardize contractual terms</li> <li>Vendor management</li> <li>Master Catalog of software assets</li> </ul>	<ul style="list-style-type: none"> <li>Track software installs and reconcile against procurement</li> <li>Maintain a central repository of software</li> </ul>	<ul style="list-style-type: none"> <li>Determine over-licensed position</li> <li>Identify 'shelf-ware'</li> </ul>	<ul style="list-style-type: none"> <li>Centralized software upgrades based on unified view of software installs</li> <li>Optimize maintenance spend</li> </ul>	<ul style="list-style-type: none"> <li>Re-harvest / transfer unused licenses within and between businesses</li> </ul>
Risks	<ul style="list-style-type: none"> <li>Inefficient contract negotiation terms</li> <li>Litigation risks for software noncompliance</li> </ul>	<ul style="list-style-type: none"> <li>Risk of under-licensing – deploying more software than we have licenses for</li> </ul>	<ul style="list-style-type: none"> <li>Paying maintenance fees for unused/ over-licensed products</li> </ul>	<ul style="list-style-type: none"> <li>Unsupported software</li> <li>Security holes in unpatched software</li> </ul>	<ul style="list-style-type: none"> <li>Unused licenses</li> </ul>

# Common implementation challenges

		Challenge	Remediation
Process	Data Quality	Inconsistent data or data with missing key elements	Implement automatic tools to flag inconsistent data and manual cleaning processes to correct data inaccuracies
	Product Identifiers	Lack of a company-wide unique identifier, which can identify products across vendors	Create new unique identifier which works independently of individual vendors and accounts for all classes of software assets
	Product Catalog	Lack of a centralized list of technology products which both Purchasing and IT can use	Build and maintain common catalog of standard technology products which Purchasing can use for new orders and IT can use for asset tracking
Technology	Software Discovery	Discovery tools cannot automatically detect software running on all existing platforms and under all licensing models	Augment existing discovery tools or replace them with off-the-shelf / custom-built solutions that satisfy requirements
	System Integration	Systems for order placement, purchasing, HR, and inventory may not have facilities to allow easy integration with each other	Upgrade software, build custom interfaces using flat files or other methods
People	Org Resistance	Organizational barriers and silos centered around specific departments or functions	Create buy-in and implement programs that foster cross-departmental communication
	Change Management	New processes and systems are not understood and/or utilized	Implement change management program and provide comprehensive training in new processes and systems

# Asset management maturity model



# How to move up the maturity curve

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- **SAM Risk Assessment:** Identify high-risk areas associated with software products and processes for software procurement, discovery, contracts, inventory, deployment, and software disposal
  - Current software management policies, procedures, processes, and resources benchmark against ISO/IEC 19770-1 SAM processes to identify existing gaps in control effectiveness.
  - Produce a SAM Risk Scorecard that identifies risk areas, benchmarking results, a summary and assessment of SAM controls, and recommendations for remediation
- **Software License Baseline:** Establishes a software inventory baseline used to analyze and reconcile inventory of specified product or group of products against entitlements and terms and conditions of applicable contracts
  - Provides clear point-in-time look at your company's software license commitments by vendor, location, IT environment, and operating system, indicating potential over- or under-deployment with recommendations for addressing these risks
- **Full SAM Service:** A thorough assessment of key processes, including software requests, IT procurement, and cataloging and tracking of purchases, as well as the organization's software deployment procedures, deployment tracking, reconciliation of deployment to purchases, verification procedures, and license agreement management
  - Identification of area of potential improvement and development of a plan for implementing process and organizational enhancements, including the potential use of automated tools to facilitate SAM

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