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The Expanding Purview Of Software Configuration Management

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with Liz Barnett, David Friedlander, and Lindsey Hogan

EXECUTIVE SUMMARY

Standalone software configuration management (SCM) is rapidly becoming a thing of the past. In response to the commoditization of version control tools and even base SCM tools, vendors have transformed their SCM tools into process-centric change management solutions. And in recent years, process-centric SCM solutions have come to serve as the infrastructure of development life-cycle management suites, managing changes to life-cycle artifacts like requirements, models, code, test scripts, and process documentation. Many vendors are still building out these capabilities, but a few are beginning to lay the groundwork for solutions that span both development and operations. Firms must determine what degree of SCM tool support they need and identify the SCM solution segment offering this level of support before they begin to short-list vendors or vendor offerings.

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NOTES & RESOURCES

Forrester interviewed 20 vendor companies, including: AccuRev, Aldon, Borland Software, CollabNet, Computer Associates International (CA), Cybermation, IBM, Microsoft, MKS, Serena Software, Telelogic, and VA Software. Forrester also spoke with 10 user companies and two experts.

Related Research Documents

- "For Simple Version Control, Subversion Beats CVS"
April 29, 2005, Quick Take
- "Update: Consider Scope Before Choosing Problem Tracking Systems"
September 30, 2003, IdeaByte
- "Market Overview 2003: Enterprise Software Configuration Management"
July 23, 2003, Market Overview

EMERGENT USER REQUIREMENTS

Software development occurs in increasingly complex business environments, and development itself is also growing ever more complex.¹ To get a handle on complexity, firms are striving to improve the efficiency of their change management processes — how they restrict, monitor, and measure change to software artifacts. This focus on change management, which is fueling the market for more sophisticated SCM solutions, is driven by:

- **Demand for visibility into IT.** IT budgets are increasing, but these aren't the heady days of the dot-com era.² Continuing dissatisfaction with custom development efforts has brought about a desire for greater IT transparency.³ To this end, development shops are clamoring for tools with better analytics and better reporting capabilities. And with an eye toward collecting project information in fewer places and thus getting a more unified view of development and maintenance projects, enterprises are working to consolidate their SCM tool infrastructures. Shops are standardizing on the same vendor's repository when they can and uniting repositories with a single change management system when they can't.
- **A mandate to drive down the cost of ongoing operations.** Corporate IT shops spend an average of 76% of their budgets on ongoing operations, leaving just 24% for new IT investments — an overhead rate that would be unacceptable in any other industry.⁴ To drive down the cost of systems maintenance and free up more money for new work, shops are turning to frameworks like the Information Technology Infrastructure Library (ITIL).⁵ Forrester clients who are exploring or implementing ITIL invariably voice a desire to better integrate their development organizations' software change and configuration management systems with their operational systems. Such integration stands to improve the automation of the interactions between development and operations, cutting down on the cost and errors associated with manual handoffs.
- **Changes in IT governance.** Supporting changes in corporate governance brought about by regulations like Sarbanes-Oxley is a priority for more than half of North American enterprises; for enterprises with more than 20,000 employees, it's the top priority.⁶ There are two kinds of compliance requirements: internal process improvement and governance frameworks like CMMI, Six Sigma, ISO, and COBIT and external regulatory requirements like Sarbanes-Oxley, 21 CFR Part 11, and Basel II. SCM tools can help shops work toward meeting both kinds of requirements by automating process enforcement, traceability, and auditing functions.
- **Geographic and organizational distribution.** Development distributed across locations requires fast, reliable, and secure remote access to development artifacts. SCM features that support this increasingly common model include replication, federation, and caching for transmission of changes and advanced merging and differencing capabilities for the resolution of change conflicts. In organizationally distributed development (i.e., outsourced development

or joint development), ensuring that the right people have the right kind of access to various artifacts is paramount. As a result, such development efforts require SCM solutions with strong support for authorization and authentication. And strong process support helps both kinds of distributed development efforts coordinate work across locations and organizations.

- **More complicated architectures and processes.** N-tier application architectures are now a fact of life; an app with a Web tier written in Java, a Unix tier written in C, and a mainframe back end involving COBOL is no longer a rarity. Support for cross-platform development is therefore increasingly important. This has historically been an area of particular weakness for SCM vendors, although the past few years have seen progress on this front. Also affecting users' SCM requirements is their increasing adoption of iterative, incremental development processes and their tendency to build more frequently.⁷

CURRENT SOLUTION SEGMENTS

Today's SCM market comprises four primary segments: version control, SCM, process-centric SCM, and SCM as part of application life-cycle management (ALM) (see Figure 1-1). Each segment includes the functionality of the inner segments as well as its own distinct functionality. Each solution segment therefore has more total functionality than the cumulative capabilities of the previous segments. But the outer segments have not rendered the inner segments obsolete: Different development shops — and even different projects within a single shop — require different levels of SCM support, creating a continuing need for solutions in each segment.

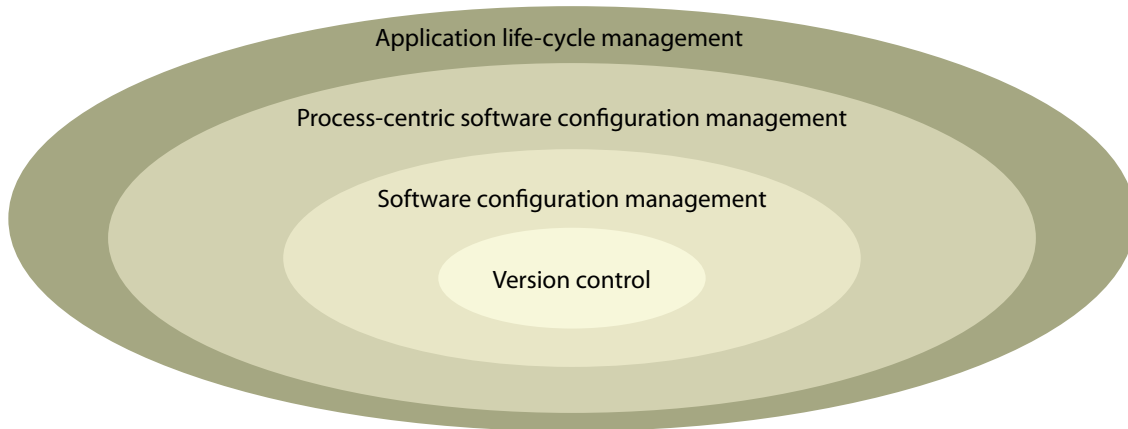
Version Control

The most basic version control tools include support for versioning of text and binary files via storage of deltas, elementary merging and differencing, some branching and branch labeling, reserved and unreserved checkouts, and standard and arbitrary file metadata. Version control tools have command line and desktop client interfaces, though most integrate with leading IDEs, and some offer Web interfaces. Fuller-featured version control tools offer support for more file types, directory versioning, atomic commits, unlimited branching, file compression, fast remote access, and basic security.

Most appropriate for: Version control tools are most likely to meet the needs of smaller, co-located teams — typically those with fewer than five developers — that don't perform significant parallel development, aren't working on highly dependent code bases, and are developing single-tier applications. As team size and team distribution increase, so does the need for more SCM tool support.⁸ While larger, more distributed development teams are in greater need of higher-end features, smaller, co-located teams can benefit from these features as well.⁹ But some smaller, co-located teams can and do get by with just version control tools, particularly when they're integrated with lightweight tools in other life-cycle categories.¹⁰

Figure 1 The SCM Market Currently Comprises Four Solution Segments

1-1 Today's SCM market comprises four primary solution segments



! Each solution segment includes all the capabilities associated with inner segments. Total solution segment functionality therefore increases from segment to segment.

1-2 Each SCM solution segment has distinguishing features and constituent tools

Segment	Core capabilities	Tools
Version control	<ul style="list-style-type: none"> • Versioning of binary and text files • Elementary merging and differencing • Branching and branch labeling • Reserved and unreserved checkouts • Command line and desktop client interfaces 	<ul style="list-style-type: none"> • CVS • Microsoft Visual SourceSafe • Perforce • Subversion
Software configuration management	<ul style="list-style-type: none"> • Management of groups of assets (configurations) • Advanced merging and differencing • File transparency • Automated workspace management • Rule-based workflows, pre- and post-event triggers • Build and release management 	<ul style="list-style-type: none"> • Borland StarTeam Standard • IBM Rational ClearCase • MKS Source Integrity • Serena ChangeMan Professional
Process-centric SCM	<ul style="list-style-type: none"> • Process templates, design, and implementation • Issue management and requirements management • Task-based change sets and task management • User-, group-, and process-based access control • Project analytics, querying, and reporting 	<ul style="list-style-type: none"> • Borland StarTeam Enterprise • CA AllFusion Change Management Suite • MKS Integrity Suite • Serena ChangeMan Dimensions and RTM
Application life-cycle management	<p>Tight integration with tools in these categories:</p> <ul style="list-style-type: none"> • Design • Development • Testing 	<ul style="list-style-type: none"> • Borland StarTeam Enterprise Advantage • IBM Rational ClearCase Change Management Solution • Microsoft Visual Studio 2005 Team Foundation Server • Telelogic SYNERGY

Source: Forrester Research, Inc.

Sample tools: Concurrent Versions System (CVS), Microsoft Visual SourceSafe, Perforce, and Subversion (see Figure 1-2).

Software Configuration Management

In addition to all the functionality of version control tools, SCM tools offer the ability to label and manage groups of assets (i.e., configurations), advanced merging and differencing, file transparency, and automated workspace management. Some SCM tools include basic rules-based workflows — for example, “event A must precede event B” — and pre- and post-event triggers. And most SCM tools also offer some degree of support for build and release management, although the proliferation of independent build tool vendors is evidence of a growing demand for improved build automation.

Most appropriate for: It’s common for shops to find that their development efforts are too complex for version control tools to suffice. Factors that drive development shops to move beyond version control include parallel development, distributed development, frequent builds, frequent releases, and simultaneous work on multiple releases. But why adopt an SCM tool instead of a process-centric SCM solution or an SCM solution that’s part of a larger ALM suite? SCM tools appeal to shops that can’t rely on just version control tools but are leery of more process-centric solutions. They represent an appealing middle ground for these shops — particularly when there’s the option to augment SCM tools with process and life-cycle support later on. As a result, this segment is populated primarily by base versions of more sophisticated offerings.

Sample tools: Borland StarTeam Standard, IBM Rational ClearCase, MKS Source Integrity, and Serena ChangeMan Professional.¹¹

Process-Centric Software Configuration Management

Process-centric SCM solutions unite configuration management and change management capabilities in a single system. While SCM tools support basic rules and pre- and post-event triggers, process-centric SCM solutions offer customizable process templates, graphical process design tools, and the ability to implement different processes for different projects. Task orientation — as opposed to artifact orientation — is another core capability of process-centric SCM solutions. In a task-oriented solution, requirements and defects are defined as change requests, these change requests are broken down into tasks and assigned to users, and user activities are managed in terms of these tasks rather than as modifications of individual artifacts. Process-centric SCM solutions support more informed project management both through management at the activity level and with stronger analytics, reporting, charting, and querying capabilities.

Most appropriate for: The shops most likely to require a process-centric SCM solution have relatively extensive processes, an emphasis on process adherence, and challenges around process enforcement. The more formal the process, the more benefit there is in using tools with support for process automation. After evaluating the importance of process adherence, shops should weigh the risks of

non-adherence with the costs of enforcement. If process enforcement really is vital, then they should compare the respective costs of manual and automated enforcement. Distributed development organizations typically benefit more from process-centric SCM solutions, as it's difficult to coordinate work across multiple locations without tool support. The experience level of users is another factor worth considering, as users invariably get better at following processes as they grow more familiar with them, making process support less essential.

Sample tools: Borland StarTeam Enterprise, CA AllFusion Change Management Suite, MKS Integrity Suite, and Serena ChangeMan Dimensions and RTM.

Application Life-Cycle Management

The discipline of ALM encompasses the management of processes, from inception to implementation and back again. SCM tools are the foundation of larger ALM suites; they are responsible for storing, versioning, and tracking relationships between all life-cycle assets — including requirements, models, source code, test plans, test scripts, and build files — and managing the processes by which these artifacts are changed. As part of ALM suites, SCM tools integrate tightly with modeling, development, and testing and test management suite modules, enabling frictionless traceability, process automation, and reporting across these life-cycle activities. Many process-centric SCM tools integrate with tools in other life-cycle categories, but the strength of the integration does not approach that found in ALM suites.¹²

Most appropriate for: The primary reason for development shops to use SCM tools that are part of ALM suites is to achieve better life-cycle tool integration. Firms typically adopt tools that are part of an ALM suite because they experience inefficiencies using less compatible tools. For example, their SCM tool may include requirements management capabilities that don't integrate bidirectionally with a third-party test management tool. Firms also adopt ALM suites to facilitate reporting across projects and throughout the life cycle, since the modules of the suite typically use a common metadata model. Like process-centric SCM solutions, ALM suites are most often used on an enterprisewide basis, as the benefits of using an ALM suite increase in proportion with the extent of their adoption.

Sample tools: Borland StarTeam Enterprise Advantage, IBM Rational ClearCase Change Management Solution, Microsoft Visual Studio 2005 Team Foundation Server, and Telelogic SYNERGY.

SCM Solutions Experience Segment Creep

As vendors attempt to move up the stack, developing their point tools into broader solutions, version control tools become SCM tools; SCM tools become process-centric; and process-centric SCM tools become part of ALM suites. At this point, all of the major SCM vendors offer process-centric SCM solutions. Interest in process-centric SCM systems and for tool suites that integrate SCM with

other life-cycle management capabilities — both in development and in operations — is increasing. But the market for standalone SCM tools won't disappear any time soon, especially as long as it's possible to purchase simpler SCM solutions and later on add on process support capabilities. At this point, standalone SCM capabilities matter as much as the extent to which SCM tools can support change management and process automation from inception to deployment and even into production. To avoid comparing apples with oranges, firms should determine what degree of SCM support they require, match up required features with an SCM solution segment, and then draw up a shortlist of offerings in that segment.

TOP CHALLENGES FOR SCM VENDORS

In a rapidly changing marketplace, there's no rest for the weary; even the leading SCM vendors have their work cut out for them. To satisfy user demands, vendors will have to deliver:

- **Standardization and unification across platforms.** Vendors will continue to improve the range of their platform support, sometimes by building these capabilities themselves but more often through partnerships and acquisitions. Vendors that offer disparate tools for disparate platforms will continue working to unite them with common change management systems and by enabling access to central or federated repositories from interfaces running on a wider range of platforms. The result of these efforts will be a single solution for managing change — not just a single vendor's tools, but rather a single solution from a single vendor — across all platforms.
- **More and better process support.** Lack of support for process design and implementation is one of the major pains development shops experience with version control and basic SCM tools. As a result, the capabilities that higher-end solutions offer in these areas is of particular importance. In the near future, vendors will take steps to make it easier for users to define and implement multiple processes, notably by introducing or improving existent process modeling capabilities. Vendors will also include more process templates with their SCM solutions, including some for firms facing particular internal and external compliance requirements.
- **Support for more of the development life cycle.** The most pressing concern SCM vendors face today is how to build a comprehensive, tightly integrated suite with tools that support every part of the development life cycle, including modeling, development, and testing. Vendors that offer SCM solutions but lack tools in various life-cycle categories will have to work overtime at building integrations with third-party tools — either via proprietary integrations with partner vendors or via open integration frameworks.¹³
- **A bridge to operations.** As user companies continue to clamor for better unification of development and operations, vendors that don't already offer solutions for operations will face the same challenges that SCM vendors without tools in various life-cycle categories have grappled with for years, only to an even greater extent. Many SCM vendors have limited

expertise in life-cycle disciplines like testing, but these vendors have even less expertise in operational disciplines like asset discovery. The challenge for these vendors is twofold: They must better understand how development and operations can be better integrated and they must identify a means of integration.

SCM'S NEXT FRONTIER: INTEGRATION WITH OPERATIONS

In addition to improving their SCM tools' integration with development life-cycle tools, vendors are also working to unite their SCM systems with operational tools. The end goal? A single change management solution for both development and operations. If development assistance is required for resolution of a problem with a production application, it's imperative that development has access to the necessary information as soon as possible. A change management system for all of IT can effectively feed this information into the development organization's queue for speedy assignment and resolution.

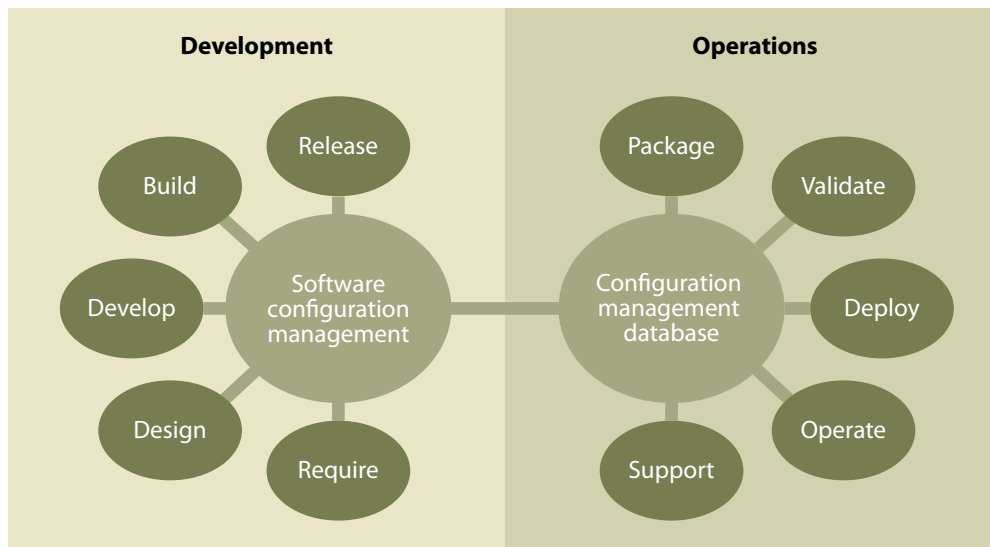
But the integration of development and operations will be no easy task. Not only are development and operations siloed, but sub-silos exist within each of these two silos. Even a well-integrated development shop is likely to find it challenging to integrate its change management solution with equivalents on the operations side, since most shops have no single such solution for operations. Rather, changes are made by multiple actors and recorded in multiple systems — if at all. At present, development shops must either integrate with multiple systems or else content themselves with a partial view of operations. A configuration management database (CMDB) — a repository for information about the elements used to provide and manage IT services — could ultimately serve as a single point of integration for all of these changes, but CMDBs are still a young technology (see Figure 2).¹⁴ For the time being, the integration of development's SCM solutions with operations systems will take three forms:

- **Better deployment capabilities.** Better automation of the deployment process becomes increasingly important as development shops deliver new functionality on a more frequent basis. Integrating SCM solutions with deployment solutions enables increased automation of the deployment process and tighter correlation of development assets with production assets, which enables faster recovery in the event of production problems. SCM solutions must move beyond release management — the identification of a release's constituent files — and do a better job of supporting the actual deployment of applications. Borland, IBM, MKS, and Serena all presently offer some degree of support for deployment, but IBM's offering is the most sophisticated.
- **Integration of change and configuration management systems.** Operational configuration management involves identifying, recording, tracking, and reporting key IT components or assets; these assets, called configuration items (CIs), are stored in CMDBs. Operational change management ensures that changes to CIs are carried out in a planned and authorized manner.¹⁵ Change and configuration management for development and for operations therefore parallel

each other, but at this point in time they are relatively disconnected. Ultimately, all changes made to applications in production should be stored in a database that can be easily accessed by both development and operations. Both CA's management database (MDB) and IBM's federated change and configuration management database (CCMDB), which Tivoli is bringing to market at the end of the year, could serve as such databases. Other SCM vendors must work to integrate with third-party CMDB offerings.

- **Integration with service desk applications.** It's not unheard of for companies to use a change management solution as a service desk application — or vice versa. But it is far preferable to use a specialized solution for each task and to integrate the two solutions. IT shops that tie their service desk applications into their development organizations' change management systems can speed the resolution of end user complaints and thereby improve end user satisfaction. This kind of integration creates a single, seamless business process for the communication of problems encountered with applications in production, from initial submission to assignment to resolution and change implementation. Of the leading SCM vendors, CA has made the most progress in this area, integrating its AllFusion change and configuration management products with its Unicenter ServicePlus Service Desk.

Figure 2 SCM's Next Frontier: Integration With Operations



Source: Forrester Research, Inc.

At present, there are no solutions on the market that fully integrate development and production — in part because there are so many potential integration points, since operations is itself still relatively fragmented. The task at hand for SCM vendors is thus not to build offerings for operations but rather to integrate with existing offerings. For example, MKS and Serena offer deployment solutions that integrate with their SCM offerings. But enterprise IT shops are much more likely to rely on the distribution capabilities of management solutions from vendors like BMC Software, CA, Hewlett-Packard, IBM, or Microsoft than on deployment modules from development life-cycle tool vendors.¹⁶ Vendors like CA, IBM, and Microsoft are therefore at an advantage, as they have strong SCM solutions as well as extensive offerings for operations, and all three have made headway on bridging the gap between development and operations. However, CA's recent shift in focus away from development life-cycle tools limits the scope of any total IT solution it may ultimately offer.¹⁷

RECOMMENDATIONS

DIFFERENT KINDS OF DEVELOPMENT REQUIRE DIFFERENT LEVELS OF SCM TOOL SUPPORT

Team size is the factor most commonly cited as an important consideration for firms selecting an SCM solution. But although team size does matter, it's not the only thing to take into account. Other attributes of the development organization matter, too. And the kind of work the development organization is performing is just as important as the size of its teams. For example:

- **Shops striving for service orientation or higher reuse levels require at least SCM tools.** Version control tools are appropriate only for use by individual teams; work that spans multiple teams requires better tool support. This kind of work is necessary in development shops moving toward a service-oriented architecture and shops working to improve their reuse of existing development assets. These shops require tools that support the management of groups of assets, like SCM tools, process-centric SCM solutions, and SCM solutions that are part of ALM suites.
- **Shops with frequent release or concurrent releases need at least SCM tools.** Simultaneous work on multiple releases requires basic capabilities like unlimited branching and advanced merging and differencing, both of which are core capabilities of SCM tools. But task orientation, a hallmark of process-centric SCM, also facilitates release management, as it enables the identification of releases by change request. Whether or not they want or need process support, the task orientation of process-centric SCM solutions can nonetheless aid shops that release frequently.
- **Distributed development organizations benefit from features in each SCM solution segment.** There are offerings in each of the four SCM solution segments that support distributed development in different ways. For example, some SCM tools enable remote access to assets via replication and federation. And because it's harder to manage change across locations and organizations, distributed development organizations benefit more from process-centric SCM systems than do collocated organizations.

- **Shops with compliance requirements can achieve efficiencies with process-centric SCM.**

Both internal and external compliance requirements involve process definition, implementation, enforcement, and verification, all of which process-centric SCM solutions either aid or automate. It's certainly possible to perform these tasks manually, and for smaller efforts it's often cost-effective to do so. But for larger efforts, the benefits of automation — and thus process-centric SCM — are often significant.

WHAT IT MEANS

MARKET CONSOLIDATION WILL CONTINUE

During the past decade, vendors have acquired tools in various life-cycle categories; these acquisitions have enabled the creation of ALM suites. Opportunity for further market consolidation of this sort remains, as there are still strong independent vendors with offerings in just a few life-cycle categories. For example, AccuRev, Aldon, MKS, Perforce, and Serena play almost exclusively in the SCM space. Solutions that these vendors offer for operations may meet the needs of smaller shops with less complex infrastructures, but most enterprises will prefer to use operations tools from vendors that are better established in the operations domain.

The next wave of acquisitions, however, will unite development life-cycle tool vendors with operations tool vendors, enabling the creation of integrated management solutions for the entire IT shop. Partnerships between development-oriented vendors and operations-oriented vendors are less likely to achieve this same end. The integration of development and operations systems won't be easy work, and conflicting corporate interests could easily derail such efforts. Even companies that offer solutions for development and operations will find it difficult to coordinate the efforts of their own internal business units.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

AccuRev	Microsoft
Aldon	MKS
BitMover	Perforce
Borland Software	PricewaterhouseCoopers
CM Crossroads	Quest Software
CollabNet	Seapine Software
Computer Associates International	Serena Software
Cybermation	Spectrum Software
IBM	Telelogic
Intland Software	VA Software
McCabe Software	Visible Systems

ENDNOTES

- ¹ Enterprise application developers face greater complexity than ever in meeting business requirements. Platforms, architectures, and technologies have all grown more demanding, as have the underlying business requirements. See the December 7, 2004, Trends “How Developers Can Conquer Complexity.”
- ² In a survey of 1,383 technology decision-makers at North American and European enterprises, we found that despite a cautious outlook for their businesses, companies are planning to open their wallets for IT in 2005. On average, North American enterprises expect to increase their IT spend by 3.9% in 2005, up from 1.7% when surveyed this time last year. See the December 15, 2004, Data Overview “2005 Enterprise IT Outlook.”
- ³ A fall 2004 Forrester survey of 692 technology decision-makers — those who hold the IT purse strings — indicated that nearly one-third are dissatisfied with the time it takes their development shops to deliver custom applications, and the same proportion is disappointed by the quality of the apps that are ultimately delivered. One-fifth of respondents were unhappy on both counts. See the April 11, 2005, Trends “Corporate Software Development Fails To Satisfy On Speed Or Quality.”
- ⁴ Demand across all of the technology areas we asked about will increase next year as companies shift more of their IT budget dollars away from ongoing operations and into new IT investments. In 2003, roughly one in five IT dollars went to new investments. In 2005, that will grow to almost one in four. See the December 15, 2004, Data Overview “2005 Enterprise IT Outlook.”
- ⁵ The Information Technology Infrastructure Library (ITIL) is a set of standard IT terminologies — such as a high-level definition of a change request — that the United Kingdom Central Computer and

Telecommunications Agency developed in the late 1980s and early 1990s to address the IT service support and delivery issues faced by IT infrastructure organizations. ITIL standards were designed to establish guidelines and a common language for operational processes, such as change management, problem resolution, service delivery, and resolution of customer inquiries. See the September 21, 2004, Best Practices “Implementing ITIL.” For more information, see www.ogc.gov.uk/index.asp?id=2261.

- ⁶ Twenty-seven percent of decision-makers at 868 North American enterprises indicated that supporting changes to corporate governance — like Sarbanes-Oxley compliance — is a critical priority, with the same percentage calling it a priority. But among the largest enterprises — those with 20,000 or more employees — support for changes to corporate governance will be the top priority. Thirty-eight percent of these enterprises named this a critical initiative. See the December 15, 2004, Data Overview “2005 Enterprise IT Outlook.”
- ⁷ Many organizations are moving toward smaller development team sizes and more frequent deliveries of working code. Forrester and *Application Development Trends* magazine surveyed 398 IT firms and found that 17% of firms deliver code at least every month, with another 25% delivering code in increments of one to three months. See the November 24, 2004, Trends “Teams Begin Adopting Agile Processes.”
- ⁸ Absolute team size isn't the only factor to consider, though. When it comes to SCM requirements, 20 teams of five might as well be a single team of 100 if those 20 teams need to coordinate their efforts for example, to work toward goals of better asset reuse or service orientation. Such teams will usually find version control tools insufficient for their needs.
- ⁹ Microsoft initially announced that its new SCM solution, Visual Studio 2005 Team Foundation Server, would not be included with an MSDN subscription. The additional server license price that Microsoft quoted — \$2,799 — put the product out of the reach of smaller shops. Smaller shops complained, indicating that they too wanted to take advantage of advanced SCM functionality. Microsoft ultimately relented, announcing that a five-user version of Team Foundation Server would be included with client editions of Team System. A blog on this subject by Rick LaPlante, the general manager for Visual Studio Team System is available at <http://blogs.msdn.com/rickla/archive/2005/05/12/416994.aspx>.
- ¹⁰ To achieve tight software development life-cycle tool integration, firms can either adopt comprehensive, integrated tool suites or they can select and integrate a set of lightweight tools. Lightweight tools are single-purpose point tools that have open interfaces to enable easy integration with other tools. A number of factors — most notably, the strength and popularity of integration frameworks like Eclipse — have increased the appeal of the lightweight approach. Enterprise IT shops, tool vendors like CollabNet, Inland Software, and VA Software, and systems integrators like ThoughtWorks, have demonstrated the soundness of this approach. See the April 21, 2005, Trends “Lightweight Tool Sets Represent An Alternative To Integrated Tool Suites.”
- ¹¹ Rational ClearCase has the task orientation of a process-centric SCM solution, and it is most often used in conjunction with Rational ClearQuest. But these two tools combined equal the Rational Change Management Solution, which falls into the application life-cycle SCM solution segment. Similarly, MKS Source Integrity is most commonly used in conjunction with Integrity Manager; the two combined tools represent a process-centric SCM solution.

- ¹² The integrations most SCM tools offer with third-party tools in other life-cycle categories rarely rise above the level of automated import/export — and sometimes in just one direction. In contrast, in ALM suites one module can drive other modules through a series of steps. For example, the modeling tool might ask the test management tool to find and display test cases associated with the model currently being edited. The next level of integration involves the automation of larger development processes. For example, a tool set might check all code that passes a suite of unit tests that cover a certain percentage of the code base, then run the build, run system-level tests, and format the results for the project lead.
- ¹³ Eclipse is the ultimate open integration framework. A number of life-cycle tool vendors recently introduced a proposal for an Eclipse project to use “a Service Oriented Architecture and process-centric orchestration to create an integration framework that loosely-couples ALM services.” Vendors backing this proposed project include Cognizant, Niku, Segue, Serena, and UBS. For more information, see <http://www.eclipse.org/proposals/eclipse-almiff/index.html>.
- ¹⁴ Forrester believes that the only sensible way to implement CMDB architectures is to use a federated approach, enabling companies to construct different views of the data for different purposes while at the same time storing and updating the data in local data stores. Early innovators have already brought federated CMDB products to market, with impressive results. Forrester believes that the remaining issues around large-scale deployments will be resolved within the next 12 months. See the March 16, 2005, Quick Take “Centralized CMDBs: Don’t Buy Into The Hype.”
- ¹⁵ The first wave of service-level management and business services management implementations is now being followed by a large number of change and configuration management initiatives. What was once considered a boring topic for lower-level IT operations staff is now on the agenda of CIOs of \$1 billion-plus companies. This is primarily driven by business executives demanding end-to-end service delivery from IT operations. Forrester believes that change and configuration management will continue to gain momentum through 2006. See the November 8, 2004, Market Overview “Change And Configuration Management.”
- ¹⁶ The deployment of servers and applications, as well as their maintenance, poses multiple problems in a tier N distributed environment. Application dependencies, server configurations, and compatibility between versions can drain resources and delay critical application deployments, especially in large-scale operations. There are multiple products on the market aimed at resolving and automating deployment issues. Most of these products will show a high return on investments in large and complex infrastructures requiring multiple and frequent interventions. For smaller organizations, however, they may be overkill. See the July 24, 2002, IdeaByte “Automating Application Deployment.”
- ¹⁷ CA’s recent reorganization, driven by new CEO John Swainson, sends a clear message: CA has relinquished its long-held ambition to be a significant force in the development and life-cycle management markets. Only two development and life-cycle management product groups — the ERwin Data Modeler and its supporting tools and CA’s Harvest Change Manager and Endeavor Change Manager products for software configuration management — are in business units designated as strategic by CA. See the May 24, 2005, Trends “Computer Associates De-emphasizes Its Life-Cycle Management Tools Business.”

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