

MARKET SNAPSHOT™:
Software Production
Management

By Theresa Lanowitz, Lisa Dronzek | November 19, 2007



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SUMMARY

Software Production Management is a critical component in the creation and delivery of quality software and is a key ingredient in the ever evolving application lifecycle.

Highly optimized organizations are experiencing tremendous return on investment (ROI) by recognizing and treating Software Production Management as a critical component of the application lifecycle.

In this Market Snapshot, we will examine the organization and how it benefits from Software Production Management, use models and the state of technology in the Software Production Management market.



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EXECUTIVE SUMMARY

In August and September 2007, voke conducted an independent survey of organizations regarding Software Production Management and its reach in the market. The belief is that more mature organizations have better processes and therefore understand the benefits of build and release management that Software Production Management delivers.

By Software Production Management, we mean the automation, acceleration and analysis of the software build, test, and deploy process. The survey encompasses this emerging technology in the Application Lifecycle 2.0, its use, the state of the technology, and how it benefits organizations.

This Market Snapshot™ provides an in depth analysis and key findings of the Software Production Management market with respect to:

- Organizations using the technology
- Continuous integration
- Application lifecycle development automation

Respondents reported return on investment (ROI) metrics in three categories. These three justifiers can help others determine where they may be able to enhance productivity, quality, and a faster time to market through Software Production Management. The categories identified as ROI justifiers include:

- Monetary
- Headcount redirection to more strategic activities
- Productivity increases

Monetary savings of up to \$1 to \$2 million per year were identified by 40% of the survey participants. Respondents identified monetary savings through decreased wait time for builds, a faster time-to-market delivering competitive advantages and eliminating the creation and maintenance of internally developed tools to deliver Software Production Management solutions.

Headcount savings were identified as a major contributor to the purchase of Software Production Management tools. Management redirected headcount from tactical to strategic activities. All participants want to deliver more strategic value to their customers. Incorporating Software Production Management solutions gave organizations a way to move engineers from manual and error prone tasks to delivering more valuable business insight and more productivity with the same or fewer resources.

Productivity increases of as much as 10 – 15X were identified by 33% of the respondents. Increased demand is driven by increased complexity in the software under development, faster time-to-market based on competition and the demand for higher quality from customers. Organizations reported that staffing remained largely

static, however, the demands and expectations of their workloads increased significantly.

Managers, directors and C-level executives need to understand the crucial role Software Production Management plays in the application lifecycle and embrace the business value it delivers.

MARKET TRENDS

Over the past several years we have seen an increased emphasis on the importance of enterprise IT organizations aligning with the line of business. We forecast that service levels will continue to be challenged, and the trend dictates that the IT organization must go beyond alignment to become a strategic partner with the line of business. (See *Future Watch: Enterprise IT Management and Organization* October 23, 2006 at <http://www.vokestream.com>). A dynamic and strategic IT organization will be required to utilize application lifecycle tools and Software Production Management solutions to handle service levels that are expanding to encompass global partners, customers, vendors, and suppliers.

This required movement by IT organizations translates into modifying behavior to be more in line with the way independent software vendors (ISVs) and embedded systems software teams already function. ISVs and embedded systems groups focus on the complete application lifecycle. They are highly optimized organizations who view Software Production Management as an ongoing activity within the lifecycle. Most IT organizations view Software Production Management as a discrete part of the lifecycle. The goal for any organization creating and delivering software is to take a lifecycle approach with Software Production Management woven into the many lifecycle phases.

The survey results presented here tell us that the application lifecycle is evolving from where it was even a year ago. There is more emphasis being placed on customer satisfaction, a greater need to deliver more value with less headcount, and increasing demand on the commercial tools market from organizations that see diminished value and greater cost in building their own. As this evolution continues, components that drive efficiency and quality are becoming more crucial. Results show that within the past year, organizations have broadened their use of commercial tools, and that these tools, especially in the build and release process, gave organizations an advantage.

Software Production Management is a practice that must be embraced universally: in the ISV community, the embedded market, and the enterprise IT organization.

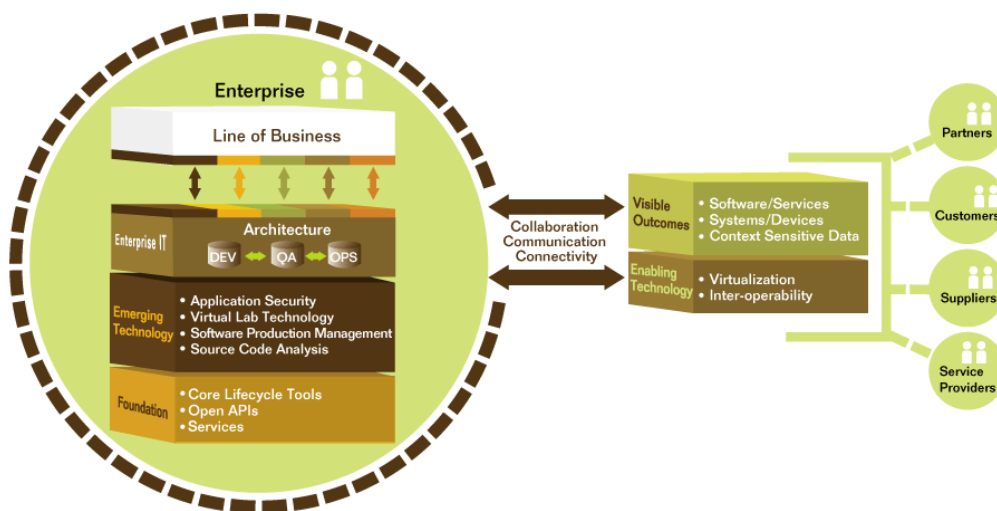
THE APPLICATION LIFECYCLE 2.0

In the past several years the application lifecycle produced well-defined roles, increased emphasis on process, consolidated with larger tools vendors delivering more integrated solutions, and provided opportunities for service organizations to deliver best practices and guidance for how to work in an application lifecycle environment. While increased emphasis on process has been of benefit, the application lifecycle has also produced linear organizations with silos of expertise and activity that lack the collaboration and communication that a strategic organization requires in an increasingly complex and global environment.

While the traditional application lifecycle was linear, The Application Lifecycle 2.0 meets the demand for more strategic activities and more predictable results with a process that is dynamic and fluid, and that focuses on:

- Communication, collaboration, and connectivity
- The concept of the extended organization – the internal organizations (line of business, application development, quality assurance, operations), as well as the external (customers, suppliers, service providers, partners)
- Context-sensitive information that can be disseminated to provide visibility throughout the application lifecycle
- Best practices that can be refined, repeated and shared with other organizations
- Bridging software systems, embedded systems, device software
- Bridging the traditional IT application with those embedded systems
- Emerging technologies such as Software Production Management and virtualization

○ The Application Lifecycle 2.0



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METHODOLOGY AND OBJECTIVES

☉ SURVEY METHODOLOGY

voke conducted an independent survey of the Software Production Management market. The details of the survey include:

- Conducted from August 17 – September 20, 2007
- Surveyed a representative sample of unique individuals in the Software Production Management market:
 - Fortune 500 companies
 - Enterprise IT organizations
 - Independent Software Vendors (ISV's)
 - Embedded Systems companies
- Interviewed a variety of titles – all above practitioner level and responsible for Software Production Management
- Asked a combination of multiple choice and open-ended queries
- All participants and employers are confidential

☉ SURVEY OBJECTIVES

The primary objectives of the survey were:

- Identify the state of the Software Production Management market based on three primary areas:
 - Organization – the demographics: the roles, management of software production, skill sets
 - Use model – how the technology is being used, in what organizations the use of Software Production Management predominates
 - Technology – how mature is it, how ready is the market to accept the technology
- Validate the market readiness of organizations to accept automated Software Production Management tools
- Identify common themes and use case scenarios for Software Production Management solutions
- Identify and quantify resource savings achieved through the use of Software Production Management solutions

☉ HOW TO USE THIS REPORT

This report is targeted to:

- **Development and Quality Assurance (QA) managers and directors** investigating or evaluating Software Production Management tools and automation. These development and QA managers and directors may be part of:
 - Enterprise IT
 - Independent Software Vendors (ISV)

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- Embedded systems software organizations
- **Build managers** as part of the development or QA organization focused on increasing productivity and quality while reducing build time
- **CIOs** seeking an independent evaluation on the ROI of Software Production Management technology
- **Vendors** in the application lifecycle market to understand the need for emerging technologies to work with foundational application lifecycle tools and services
- **Financial analysts** with a need to gain insight into the current state of the market and how it will impact future opportunities
- **Venture capitalists** exploring market opportunities

In the emerging market of Software Production Management, it is imperative that constituents communicate and collaborate to exceed customer expectations through the software build, test, and deploy process.

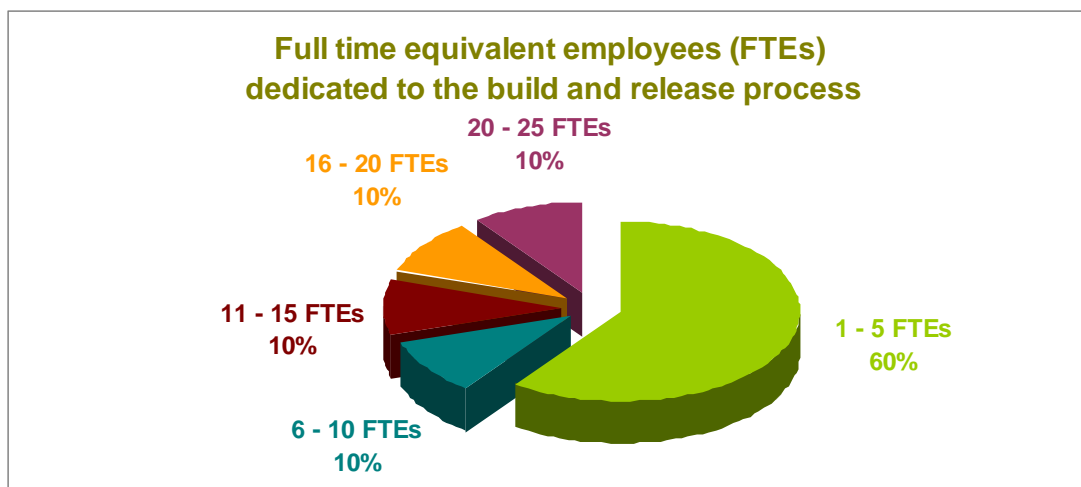
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STATE OF THE MARKET: ORGANIZATIONS

We looked at the structure of organizations, their processes, motivations for addressing Software Production Management, and challenges.

⊙ STRUCTURE

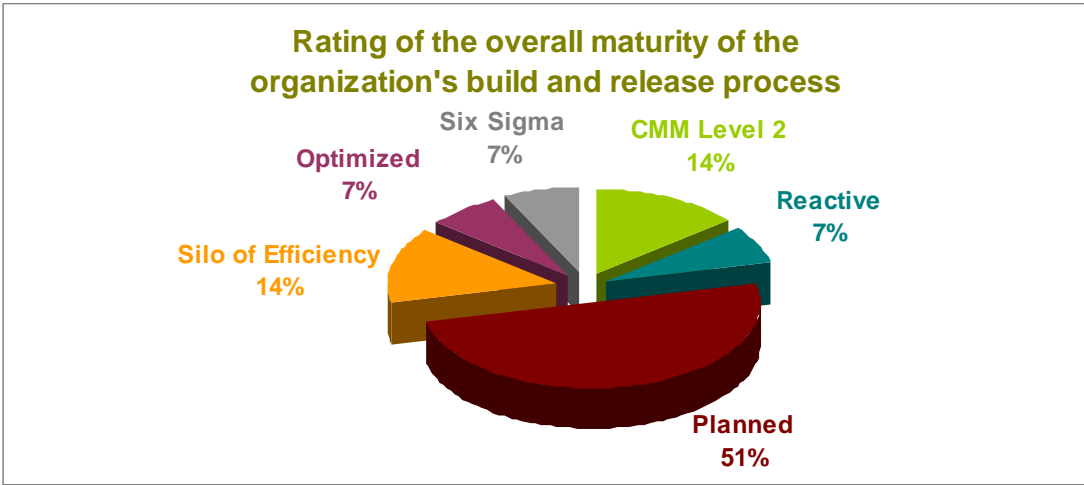
We asked organizations how many full-time equivalent employees (FTEs) they had dedicated to the build and release process, whether the staff was in a single location or distributed, and whether builds were managed onshore or offshore. The dedicated build and release staffing numbers appear below.



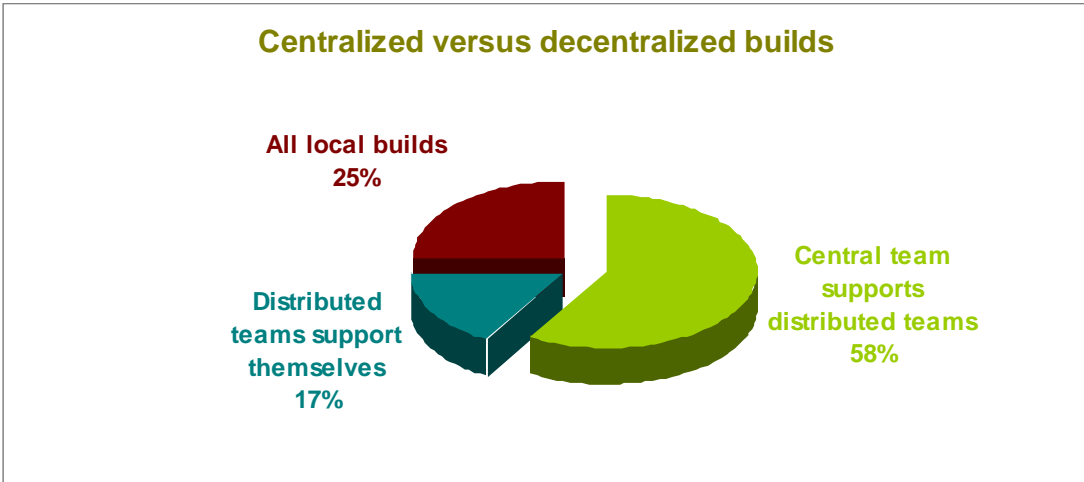
As for the distribution of the work, 55% reported that build and release personnel were in a single location, and 45% said that staffing was distributed. 73% reported that builds were managed onshore, and 27% reported offshore management of the process.

⊙ PROCESS

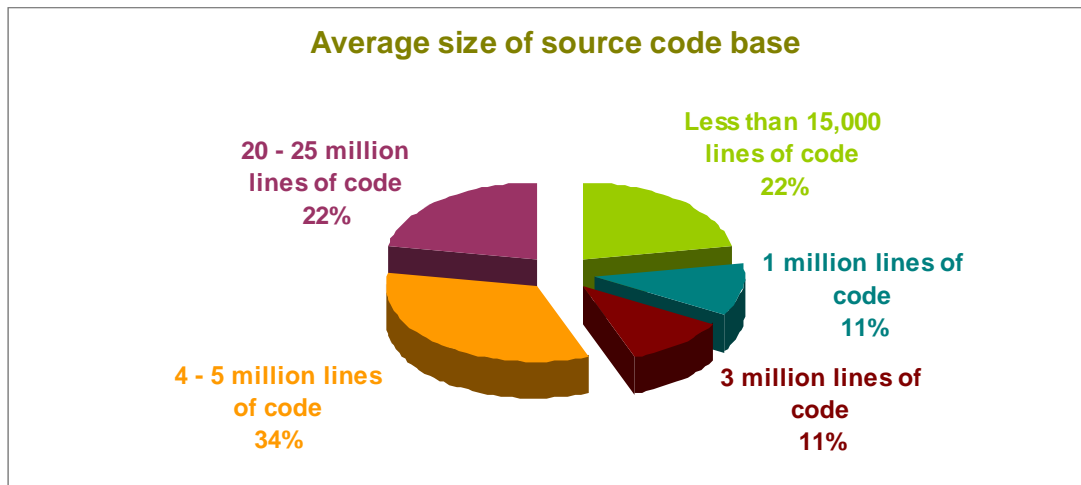
We asked organizations to rate the overall maturity of their build and release process, and the majority reported that the process had structure with respect to planning, but that their processes were not fully optimized.



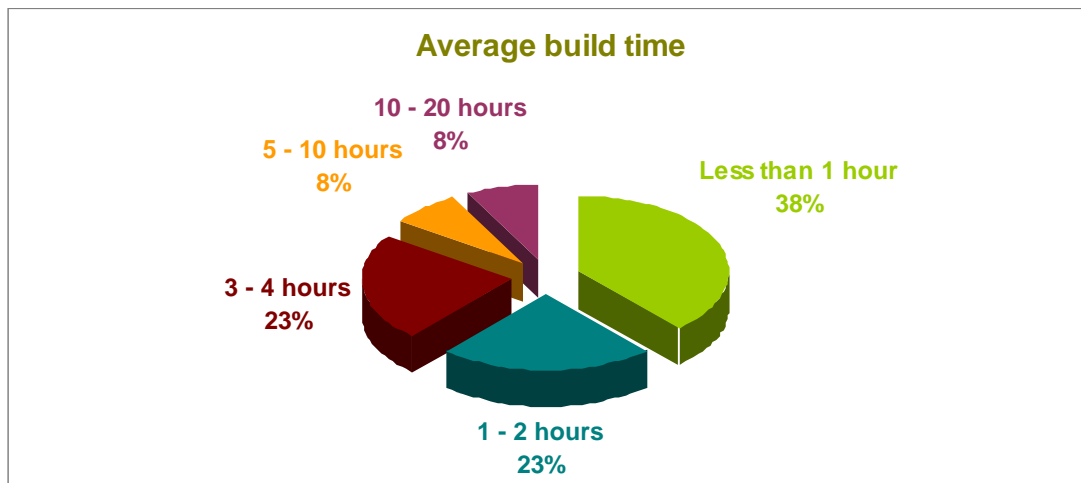
In terms of the build process, results reflect today's distributed teams with the build process managed, in the majority of cases, by a central team supporting distributed teams. Only 25% of builds are run locally.



While the size of the source code base remains relatively large across all organizations surveyed, the length of time of the average build has decreased significantly. Because of Software Production Management capabilities, organizations are able to increase the number of platforms to build for, increase their test matrices and systematically break apart portions of an otherwise large code base to build what is specifically needed. This ability to manipulate the code base to deliver more builds in less time and with more purpose is a productivity booster for organizations.



Survey respondents also cited a more efficient use of time as one of the by-products of having faster builds. Engineers are able to have the build they need more quickly and more frequently. This translates to the work being done in a more methodical fashion rather than building and returning to work at a later time.



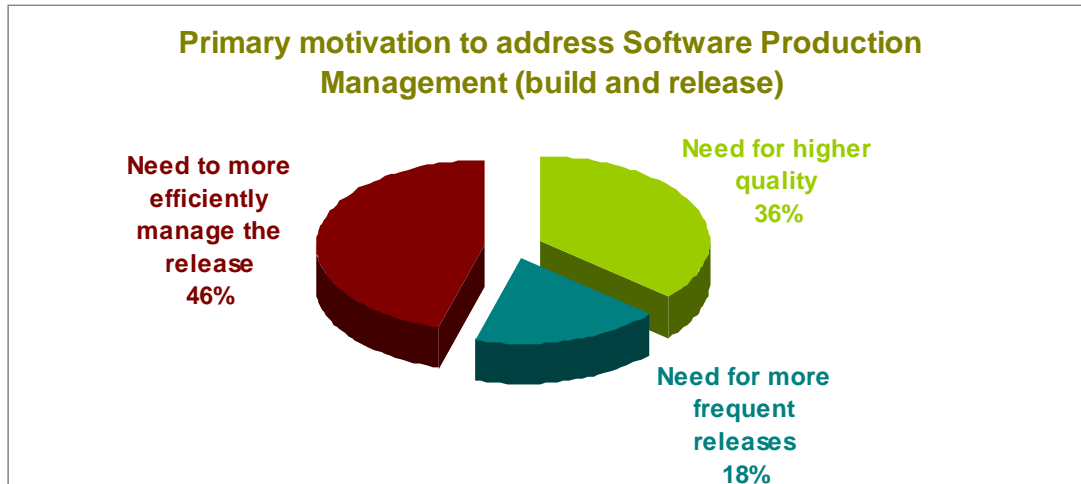
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Respondents were asked to identify their primary motivations for addressing build management. Most felt the need to manage releases efficiently. Also identified were the need for higher quality and the need for more frequent releases. While 64% of respondents reported that they are using a combination of in-house and commercial solutions, 36% reported purchasing commercial solutions. Those using commercial tools reported that internally developed tools were too costly to build

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and maintain, and commercially available tools gave them the flexibility, higher quality, and efficiency they needed in release management.



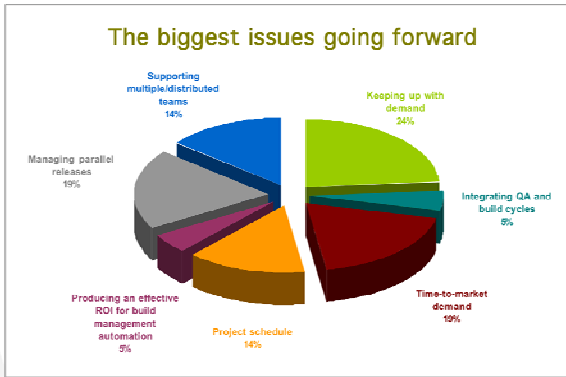
The key motivators for purchasing all or part of a Software Production Management solution were:

- The build and test cycle was too long (32%)
- The commercial solution was finally able to meet their needs (20%)
- Demands from the line of business (16%)
- The in-house tools were too expensive to build and maintain (12%)
- Difficulty supporting distributed teams (8%)
- Initiatives from management (8%)
- Adoption of more agile development techniques (4%)

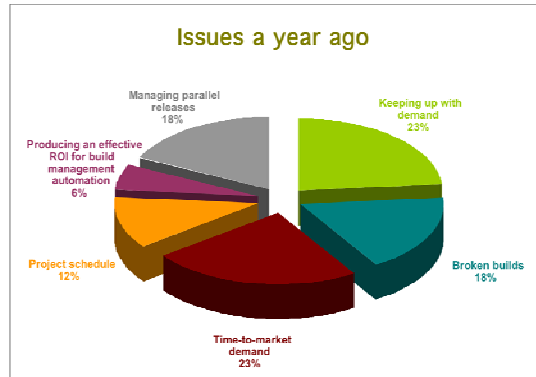
◎ BIGGEST ISSUES

We asked respondents: what were the biggest issues they faced going forward with Software Production Management. Respondents report that Software Production Management tools are making broken builds a thing of the past. Looking back to a year to 18 months ago, 18% of respondents were dealing with the issue of broken builds. Anecdotally, one respondent reported a decrease from 60% to 0% in broken builds. Cumulatively, as well as individually, broken builds are no longer an issue among those using tools from commercial providers. The demands for timely and high quality releases, and the management of parallel releases are, along with supporting distributed teams and integrating QA and build cycles emerging as new challenges.

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- New challenges:**
- Supporting multiple/distributed teams
 - Integrating QA and Build cycles



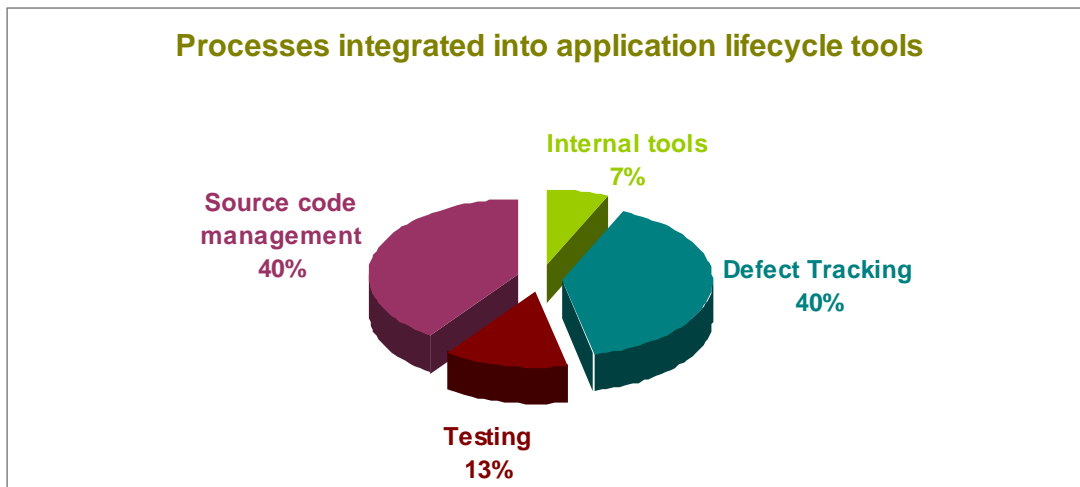
- Software production management benefits:**
- Eliminated broken builds -18%

STATE OF THE MARKET: USE MODELS

How exactly are organizations managing their Software Production Management tools resources? We found that for the most part resources were either dynamic and shared on an as needed basis (38%), or in a central data center (39%), with 15% in isolated groups or departmental clusters, and 8% isolated to a dedicated box in an office.

The build and release process was integrated into the other application lifecycle tools used by the organizations reasonably well, with respondents reporting 73% integration, versus 9% separation of tools, and 18% partially integrated.

We wanted to know which particular processes were integrated into other application lifecycle tools, and the results indicate that source code management and defect tracking, followed by testing were the processes most integrated with other application lifecycle tools.



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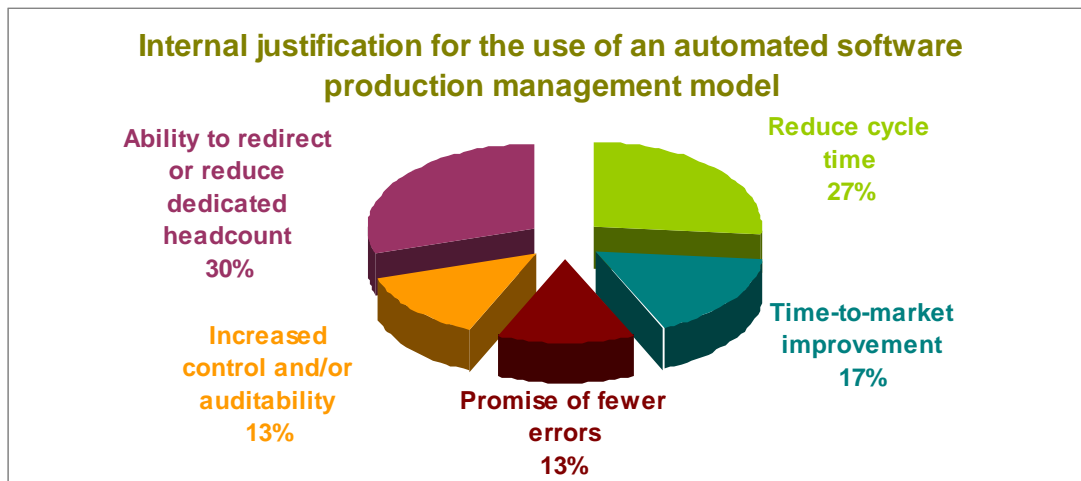
We also asked respondents about changes in the levels of integration in the past year. We found that there is an enormous increase in the amount of structure around the build and release process (82%).

According to our respondents, the drivers of this change are:

- Greater and more frequent demands for builds and releases (33%)
- Process improvement: (33%)
- Time to market demands (17%)
- Continuous builds and integration (11%)
- Reduction in force (6%)

⊙ USE JUSTIFICATION

We asked how organizations were justifying the use of the automated software production model. What were the benefits and what was the case made with management for investing in this technology. We found that organizations really wanted to direct their headcount to more strategic activities, and that emerged as the largest factor in justifying the use of this technology. Reducing build time, improving time-to-market, and increasing quality through reduction of errors were also key factors. Fewer defects and more frequent builds translate to faster time-to-market with higher quality.



Software Production Management delivers more flexibility in how and when builds occur as well as delivering flexibility in managing large source code bases.

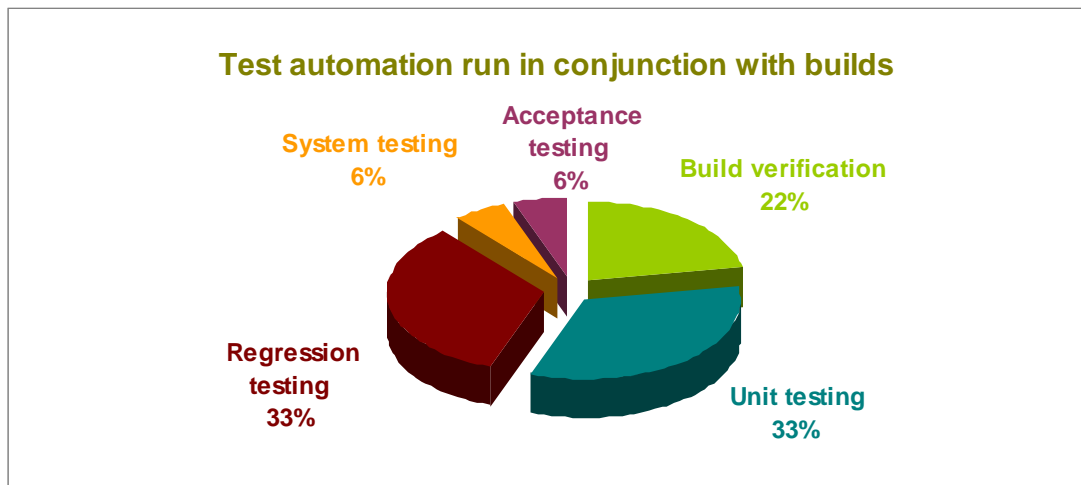
STATE OF THE MARKET: TECHNOLOGY

Here we looked at whether organizations were using a suite of tools. We also queried respondents about automated testing, and asked them what best practices were most important to them.

Ⓞ APPLICATION DEVELOPMENT LIFECYCLE AUTOMATION

Fewer than half of respondents were using a suite of tools for their application development lifecycle and of those that were, 36% were still using internally developed tools, and the remaining 64% were using commercial tools.

We asked about the inclusion of automated testing in the build process and found that 64% of respondents do include automated tests in conjunction with their automated builds.



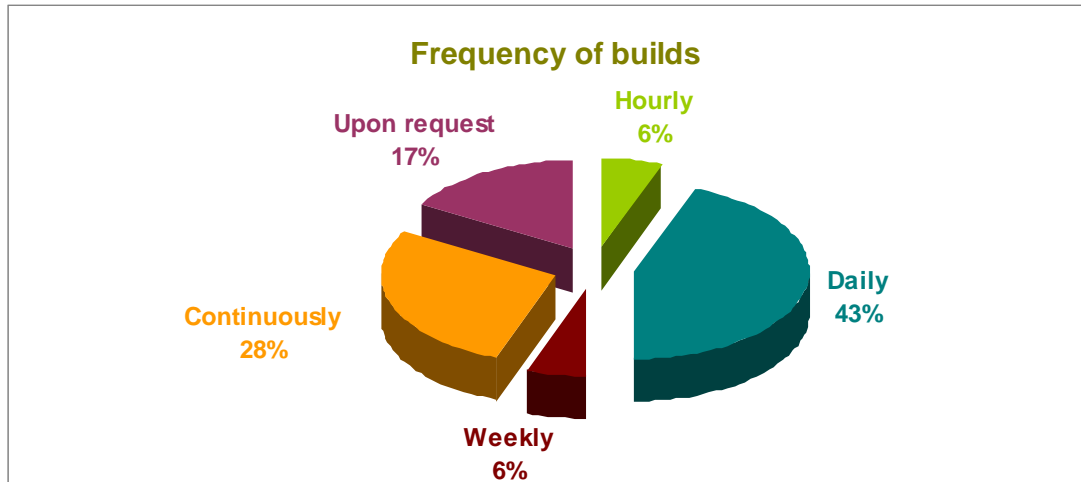
Highly optimized organizations automate both their build and test environments. This high degree of automation is a best practice that enables organizations to deliver more thorough testing in a variety of areas. Ultimately, automated builds and tests provide a way for development and QA organizations to meet customer expectations and demands on schedule, budget and quality. Communication and collaboration with stakeholders is a primary benefit of complete automation.

Ⓞ BEST PRACTICES: CONTINUOUS INTEGRATION

Survey participants were asked how frequently they were running builds, as well as whether their releases were continuously integrated. Highly optimized IT, ISV, and embedded software organizations are investing in Software Production Management solutions. They are working in an environment where frequent builds and continuous

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integration are delivering benefits in defect identification and quality. 67% of the respondents are continuously integrating releases.



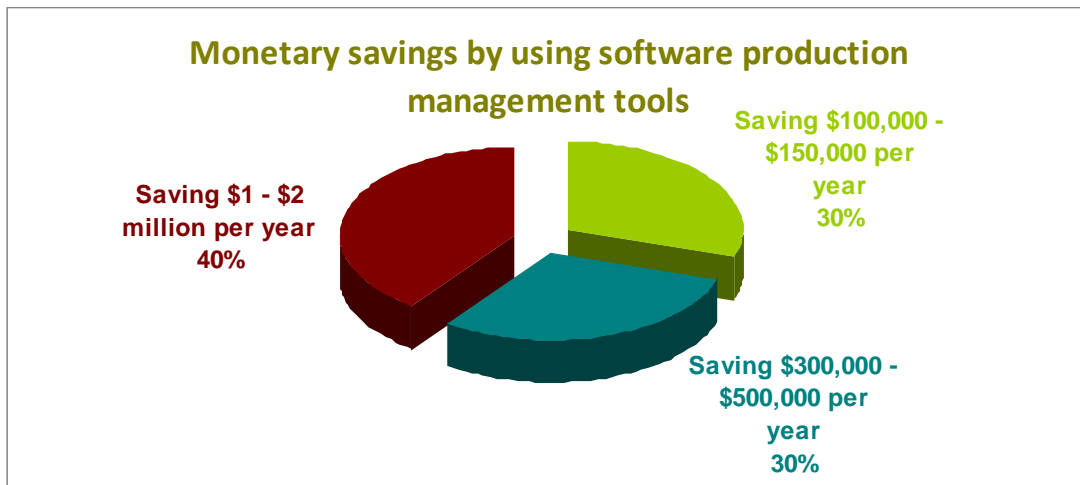
Software integration is a complex and crucial aspect of delivering complete solutions. Continuous integration identifies design flaws and architectural and API defects as they occur. Without continuous integration these often egregious defects are not discovered or addressed until just prior to release. At that point, these serious defects are often not addressable until the following release.

Survey respondents leveraging continuous integration as a best practice benefit from an overall better understanding and more mature adoption of the application lifecycle. Moving to a best practice of continuous integration delivers higher quality, more reliability and a faster time to market.

STATE OF THE MARKET: ROI

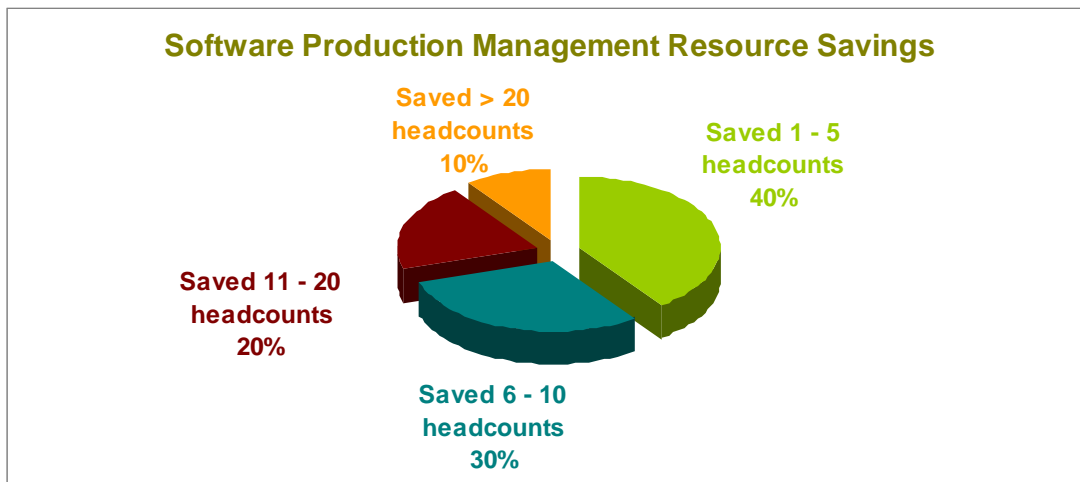
Return on investment is a major factor in a purchasing decision for Software Production Management tools. In this part of the Software Production Management survey, we discussed and asked survey questions about the impact the use of tools was having on the organization's headcount and productivity, and how those impacts were translated into monetary savings.

Respondents cited varied but impressive impacts from using Software Production Management tools, with annual savings of from \$100K to over \$2M per year.

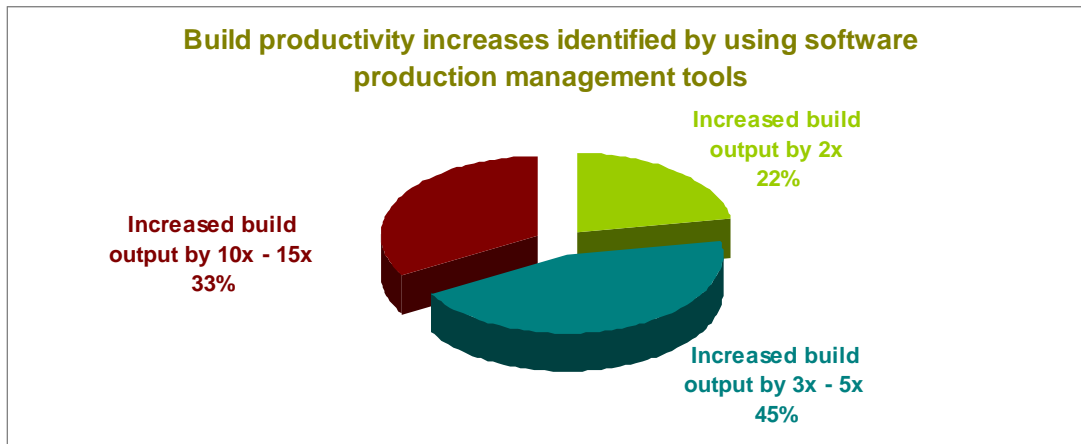


In both monetary and headcount terms, the survey found that using Software Production Management tools produced significant benefits. The survey asked about the impact on headcount.

Organizations found that there was a significant positive impact on headcount by reduction through natural attrition or by not having to request additional headcount to deliver more build capacity,



Productivity increased significantly with increased build output by factors of two to fifteen times, all the while increasing quality.



The ROI in Software Production Management proved to deliver substantial productivity increases while providing significant monetary and headcount savings.

Software Production Management is often overlooked or is an area of minimal investment. These survey findings show that Software Production Management solutions deliver significant savings and impact to the overall project budget.

Ongoing market forces such as increasing application complexity, demand for faster time-to-market, and increased quality expectations will drive lifecycle efficiencies to be made. Software Production Management is a significant component of the evolving application lifecycle 2.0 and will continue to deliver savings.

Implementing best practices around Software Production Management is an activity for every organization to undertake.

MARKET FORCES

While Software Production Management is a necessary part of the overall application lifecycle, its importance is often overlooked as well as misunderstood. Both vendors and customers need to understand the strengths, weaknesses, opportunities and threats (SWOT) in the marketplace. The following SWOT chart is representative of the needs of the evolving and maturing market.

SWOTs

Market SWOT	
<p>Strengths</p> <ul style="list-style-type: none"> ▪ Application lifecycle broadly accepted ▪ Emerging technology underscores the necessity to deliver more advanced solutions and embrace the application lifecycle 2.0 ▪ Strong and compelling ROI ▪ Increased productivity ▪ Monetary savings ▪ Resource reallocation to more strategic efforts 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Benefits of Software Production Management not fully articulated to senior management ▪ Internally developed tools ▪ Productivity of distributed teams ▪ Broken builds
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Demonstrate cost savings of commercial tools vs. home-grown ▪ Provide best practices around Software Production Management ▪ Partner with other emerging technology vendors or core application lifecycle providers to deliver an integrated solution ▪ Deliver open solutions to integrate with home-grown tools 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Not a well-known phase of the application lifecycle, consequently little attention is given to it ▪ False assumptions about Software Production Management in the market <ul style="list-style-type: none"> ○ Home-grown tools will suffice ○ Problem is already solved ○ Productivity is not impacted – engineers can multi-task while waiting for builds

For customers of Software Production Management solutions, the benefits are about increasing productivity. The effective use of Software Production Management solutions yields the following benefits:

- Enhanced productivity and efficiency of distributed teams
- Increased number of target platforms for builds
- More structure around build and release processes
- Reduced or static staff size while increasing output
- Repurpose saved resources to more strategic activities
- Faster time-to-market
- Increased size of the test matrix
- Increased frequency of builds
- Decreased duration of builds
- Effective management of parallel releases

Customers of Software Production Management solutions are still lacking industry-wide best practices to make their processes more concise. There must also be a concerted effort on the part of Software Production Management vendors to integrate with other emerging technologies and core application lifecycle tools. A more

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integrated suite of tools will demand more process and visibility around the entire application lifecycle.

NET/NET

Every organization, regardless of size, can realize benefits from the use of Software Production Management solutions. Effective build and release management has a positive impact on quality and resource savings for enterprise IT organizations, ISVs, and embedded software companies.

The Application Lifecycle 2.0 is evolving to include more sophisticated offerings and looking at emerging technologies like Software Production Management to help facilitate the communication, collaboration, and connectivity that organizations must have with the line of business, their customers, their vendors, their suppliers, and all of their partners.

⊙ RECOMMENDATIONS

Software production management is an often overlooked component to the application lifecycle. When managed effectively, best practices in the software production management phase of the application lifecycle can yield significant resource savings.

- To make your own organization more efficient, thoroughly understand how the application lifecycle is being utilized. Once the maturity level of the organization and its use of the application lifecycle have been determined, assess the roles, responsibilities and process used in the application lifecycle.
- Determine how your organization is handling the build, test and deploy functionality. Investigate tool usage and implement a commercial solution if one is not in use. Commercial tools are evolving and are far more robust than an internally created solution and will deliver more consistency and functionality.
- Ultimately, the goal for any organization is to deliver a highly satisfactory product to their customer and respond more quickly in an increasingly complex environment. To achieve these goals, organizations must be focused on the strategic business outcomes not tactical execution. Use Software Production Management solutions to deliver greater value to customers and enable your team to be more strategic in their activities throughout the application lifecycle.

Adopt commercial solutions for Software Production Management. If you are not looking at solutions from a commercial provider now, start your evaluation. The ROI from using a commercial solution is significant in monetary savings, resources savings, and increased productivity.

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