



Driving Your Business Forward with Application Life-cycle Management (ALM)

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Executive Summary

Business and technology executives, including CTOs, CIOs, and IT managers, are being asked to do more with less. Maintenance of legacy systems and current technology support consume vast amounts of a typical enterprise* software budget (Forrester research suggests as much as 67%).[†] This leaves precious few resources to develop new standards-based, adaptive applications that meet the core needs of the business. Managing complexity, aligning IT with the business, and enabling agility are top priorities for CIOs who are under pressure to do more for the business with fixed or diminishing budgets.

So how can you measure the real value of IT and how can you ensure that it helps you effectively run your business? Your core business and your IT departments must coalesce and your software initiatives must deliver measurable business benefits. To help achieve this, a common life-cycle management solution is needed to help you track, balance, and communicate the systems that are being created to effectively run your business.

Application Life-cycle Management (ALM) provides such a solution by addressing the overall alignment and synchronization of business goals and IT investment priorities. It relies on automation, integration, and a coordinated approach to optimize the software development process. Acquiring tools to support ALM, such as Microsoft® Visual Studio® Team System (VSTS), is straightforward. Introducing and driving an ALM strategy within your organization, and understanding the necessary changes required within your business, is more difficult. This white paper introduces ALM, the business benefits that you can achieve with an ALM strategy, and it explains how you can get started.

The tangible business benefits you can realize with ALM include:

- Increased return-on-investment from your IT initiatives.
- Increased accountability.
- Improved compliance with regulations.
- Quicker time-to-market.

These benefits help you to more effectively utilize IT to drive your business forward and achieve its stated goals.

* "Enterprise" in this context refers to a company of 1,000 or more employees.

[†] Source: "The State of Application Development in Enterprises and SMBs," Forrester Research, February 2007.

Introduction

Creating and supporting software that effectively aligns with business objectives has unique challenges. Conventional management skills adapted from other industries do not consider the peculiarities of software, and generally cannot direct the workflow well enough. Unless they are very well managed, software projects are at a high risk of failure. They can easily drift off target, fall behind schedule, exceed budget, fail to deliver adequate quality levels, or simply fail to deliver any tangible business benefit. Miscommunication and misunderstanding between the business sponsors, users, and IT experts often contribute to the failures.

With most engineering disciplines, there are “previous examples” to follow. For example, when you build a road or a bridge you can study hundreds of other similar examples. By building a new one, just like an existing one, you de-risk the whole process. Software engineering and building IT systems in general is quite different. If a system already exists like the one you want to build, economics dictate that you go out and buy it or license it commercially. In other words, you would never build it yourself.

As a result of this, you need to view software development in a completely different business context. Virtually all of your software development projects are concerned with building products and solutions that don't already exist—so the risk is immediately higher. This business reality is the key factor that makes software development so difficult and risky, which makes attention to process essential.

Key Business Issues

Business and technical decision makers generally face a number of common issues with their IT and software initiatives. Figure 1 highlights these issues.



Figure 1: Key business issues faced by development organizations

The predominant four issues common to most development organizations today are:

- **Lack of visibility into project status.** This is a primary project management issue that can also include the inability to enforce responsibility, accountability, sign-offs, and checkpoints. The inability to enforce stakeholder involvement, to perform accurate estimation, and to adjust project schedules accordingly are also symptomatic of project management issues.
- **Ineffective team communication.** Coordinating efforts across functional, geographic, and organizational boundaries is a particularly challenging communication issue.

- **Balancing business demands with project risk.** Poorly defined and changing requirements, scope creep, unreliable estimates, unclear business objectives, and complex and rapidly evolving technology compound this issue and increase risk.
- **Unpredictable delivery times and quality.** Balancing quality of service requirements, functional requirements, budget, and schedule is a tough challenge. Eleventh-hour bugs found during testing and in production are all too frequent occurrences.

There are many different areas and factors that can contribute to these core issues and discovering and addressing the underlying issues is not trivial. Additional demands include having to balance new project requirements with the financial burden of maintaining existing applications and the need to meet ever more stringent compliance requirements.

What is ALM?

So what is ALM and how can it help address these issues? ALM describes methods to manage software development and IT initiatives by automating the process from end to end, and integrating the information from the various steps. Integration provides consistency and accuracy and also introduces opportunities for automation.

Forrester defines ALM solutions as:

Integrated tool sets that support and unite the following life-cycle activities: requirements management, design and modeling, development, software configuration management (SCM), and testing.[‡]

The three core pillars of ALM are:

- **Traceability of relationships between artifacts.** This is traditionally a labor-intensive, manual process, where the effort varies with the number and size of projects, the varying size and scope, and the number of artifact interdependencies. Compliance requirements make traceability a necessity.
- **Automation of high-level processes.** Development organizations commonly use paper-based approval processes to control handoffs between functional areas. ALM solutions improve efficiency by automating these handoffs and by providing central storage for all associated documentation. Automated and executable process models are used by ALM solutions to ensure process adherence.
- **Reporting to increase visibility.** Most managers have limited visibility into the progress of development projects. What visibility they have is typically gleaned from subjective testimonials, and not objective data. The lack of proper reporting also hinders opportunities for process improvement. The ALM reporting functions benefit from integration and automation to provide real-time status information and deep analysis of all activities.

[‡] Source: Forrester Web site.

Providing traceability, automation, and accurate progress tracking has traditionally been very difficult to achieve, in part due to disparate tools that do not integrate well together. ALM has been a convergence point for makers of visualization tools, modeling tools, compilers, integrated development environments, source code managers, project management systems, configuration management systems, and problem tracking systems.

A key characteristic of ALM is that all the project stakeholders (from the business and IT functions) share the same pool of up-to-date information. This includes business sponsors, users, project managers, architects, developers, testers, and system administrators. The typical activities supported by ALM include requirements gathering, solutions modeling, visual design, coding, testing, deployment, and issue tracking. ALM tools link together the artifacts that result from these activities.

Microsoft and ALM

Microsoft Visual Studio Team System (VSTS) provides an integrated set of tooling, process, and guidance to support ALM. The Team Foundation Server (TFS) component provides a centralized repository for all project artifacts such as project work items, workflow settings and status, requirements and design documents, source code with versioning, branching and merging, and test and build results. Reports are driven from a centralized data warehouse. All artifacts are linked to each other where necessary, to achieve high degrees of integration.

The result is full traceability across the project life-cycle from requirements to implementation. Functionality is concentrated in the Visual Studio editions used by team members and in Windows® SharePoint® project sites accessible to business users, managers, and developers alike, subject to access control. Support for Microsoft Office Excel® and Microsoft Project provide more integration.

VSTS uses project templates that contain guidelines with best practices to help you achieve process consistency and regulatory compliance. VSTS provides two templates based on Microsoft Solutions Framework (MSF), one for an agile style of development and the other based on Capability Maturity Model Integration (CMMI) for process improvement. You can also customize templates to support your own specific processes.

For more information about Visual Studio Team System and Visual Studio Team Foundation Server, see <http://msdn2.microsoft.com/en-us/teamsystem/bb400737.aspx>.

Business Benefits of ALM

The introduction of ALM within your organization can result in the following business benefits:

- Increased collaboration between business and IT—better alignment of the business with IT.
- Increased accountability, enabling stricter compliance to governance initiatives.
- Improved project management, including better estimation, better tracking, and better reporting through a single, unified view of the project. The improved integration stems from the use of tools that work together rather than disparate tools, poor integration, and duplicated data.
- Quality improvements, so the final application meets the requirements of your customers, and meets quality of service requirements.
- Shorter development cycles and improved productivity through shared best practice, process learning, and improvement.
- Increased ability of the IT department to rapidly build and adapt applications to support dynamically changing business requirements.

The net result of these benefits is increased synchronization between IT and your business to deliver improved business value to your customers and to provide an additional competitive advantage.

Getting Started with ALM

Introducing an ALM strategy takes time. Your focus should be on practices, and practice improvement, and not simply tools. You should aim to implement ALM iteratively, for example, by phasing in new practices over time. When drawing up your implementation plan, you should also make sure that it is aligned with your key business drivers.

A key requirement when getting started is to first understand your organization's current strengths and weaknesses when it comes to application development and IT delivery. If you know the current strengths and weaknesses, and where your organization is today, you can determine how it needs to adapt in order to realize the true benefits of an ALM approach.

The primary objective for ALM is to turn your IT function from a basic cost center that delivers brittle, unconnected applications and platforms to a strategic asset capable of delivering a service oriented application platform that supports your core business functions, helps deliver new services to drive your business forward, is able to rapidly adapt as your business evolves, and to keep your business ahead of the competition.

Assess Your Organization

To help identify where your organization is today, and to subsequently help you measure progress as you implement process change, you can use the online ALM assessment engine at <http://www.microsoft.com/almassessment>. For additional support in assessing the current strengths and weaknesses of your organization's IT function, and how it needs to adapt and phase in an ALM approach, you can also contact a partner for an on-site assessment.

The process recommended for ALM optimization is as follows:

1. **Take the online assessment.** This generates a baseline report designed to identify where you are today and help you to identify key areas for improvement.
2. **Engage a partner for an on-site assessment.** This is a deep discovery process that reveals best practices and identifies gaps and opportunities for improvement.
3. **Prioritize areas for improvement.** The output of the assessment helps you to identify root causes of problems and to identify and prioritize areas for improvement.
4. **Develop a solution road map.** This outlines an iterative approach to implement improvement.

The online assessment takes only a few minutes per team member and the resulting reports present detailed comparisons between the aggregated data from a set of responses, and industry averages from businesses similar to yours. This will help you to provide a baseline and identify where you are now. The on-site assessment will uncover root causes of identified problem areas, with the final output being a road map that lays out all the recommended process changes in a prioritized, logical sequence.

Evaluate Options and Phase in New Practices

With an ordered set of improvement goals, you can evaluate options and identify appropriate projects through which you can phase in new practices. The productivity gains associated with those projects will encourage further adoption of ALM throughout your organization. By archiving and comparing reports over time, you can measure progress. Monitoring and reporting will confirm the effectiveness of your changes and promote more process evolution. For more information about the potential ROI gains, see the case studies here: <http://www.microsoft.com/casestudies/search.aspx?Keywords=ROI&ProTaxID=2671>.

You should introduce new practices and ALM techniques incrementally. Start with a few small projects. Entrust them to a team that appreciates the value of comprehensive and efficient methodologies. Review the results by performing a new ALM assessment. Continue to fine-tune your methods and practices based on your experience.

Conclusion

The “just develop it” attitude to IT systems development is failing to deliver sufficient business benefit and return on investment. IT and business need to be more closely aligned. Your core business and your IT department must coalesce and your software initiatives must deliver measurable business benefits.

ALM can help your company fulfill its promise to your customers to deliver the right products with the right service-level guarantees. By ensuring that your business and your IT function have a joint process to set goals, metrics, and priorities, ALM enables your IT department to more closely align with the needs of your business and enables you to make smart, strategic decisions on the use of IT. By integrating business and IT investments, ALM can help you drive your business forward.

To get started with ALM, start by assessing where your organization and its IT function is today, identify the main problem areas, prioritize areas for improvement, and then adopt an incremental approach to phase in new processes on a project-by-project basis. To help you start by quickly identifying key areas for improvement, complete the online assessment here: <http://www.microsoft.com/alassessment>.

For More Information

For more information about ALM and how to approach ALM see the following resources:

- <http://www.microsoft.com/appplat>
- <https://www.microsoft.com/alassessment>

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052-6399