Offshore development is a competitive imperative, yet there are many inherent risks. Web-based software development environments can strengthen IT governance, protect intellectual property, improve communication, and streamline sharing of project assets. This paper discusses the factors spurring adoption of collaborative development environments, weighs various options, and outlines the benefits for offshore projects.
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Improving Governance of Offshore Development

Introduction

Facing increased competition, escalating pressure to reduce IT costs, and the need to deliver quality projects on tighter timelines, organizations are realizing that contracting to offshore software development firms or establishing an offshore development center is inevitable. According to Gartner, spending on IT delivered via globally sourced resources (near shore and offshore) will surpass $50 billion by 2007.

The trend toward globally sourced development is poised to continue, especially considering its potential cost benefits as a complement to existing development teams and its ability to maximize onshore and offshore developer productivity. However, there are many potential pitfalls. Lack of IT governance and intellectual property (IP) protection, communication lags and productivity losses due to time, distance, cultural differences, and difficulties in sharing software assets can hinder achievement of overall project goals. To realize the full potential of offshore initiatives, enterprises must carefully reconsider their development processes, as well as the infrastructure used to develop and manage projects. They must also align their overall business objectives with their offshore development strategies and implement governance to ensure measurable project success.

Organizations can better manage offshore process, reduce risks, work more effectively with multiple vendors, and eliminate hidden costs by unifying groups involved in offshore development projects on a single collaborative software development platform. This paper discusses the factors spurring organizations to adopt collaborative development environments (CDEs) as they implement global sourcing strategies, weighs various options, and outlines the benefits of a collaborative development approach.

Challenges of Offshore Development

The Need for Strong Governance

By 2007, spending on IT delivered via globally sourced resources (near-shore and offshore) will surpass $50 billion. But despite its popularity, successful offshore development is still difficult. Global sourcing has forced the development of new governance models to manage outsourcing deals. Multi-level management structures, with clear lines of communication, vendor interfaces at each level and well-documented roles are critical to offshore deal success. From cultural issues to unrealistic service level expectations to high transitional costs and expensive ongoing relationship management, the hurdles involved with offshore development can be daunting for both offshore outsourcing and offshore development centers.

According to Forrester Research, company leaders intending to outsource components of their IT infrastructure often envision double-digit cost savings and improved service quality. But experienced executives know that many deals fail to meet their original objectives — and sometimes even fail outright, causing a costly and visible outsourcing casualty. To avoid failure, clients should insist on collaborative program management with outsourcers, including a defined tool, process, and capability framework to manage the complexity of transition and

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ongoing management\textsuperscript{2}.

From activities such as creating clear transition plans to finding a strong project leader to managing offshore workers, organizations must work hard to fully capitalize on the potential benefits of offshore development. By integrating a process framework and measuring results, IT managers can gain the dual benefits of improved service and lower operating costs through access to offshore resources. This is much more easily accomplished when companies implement a collaborative environment for communication, accountability, and reinforcement of policies and business processes.

\textbf{Escalating Costs}

Offshore development allows organizations to build project teams at a dramatically reduced cost. It also allows organizations to maximize resources by using onshore development teams for the most strategic projects. In a June 2006 survey, SIIA reports that the key drivers of offshoring include increased productivity, growth strategy, and cost advantage\textsuperscript{3}.

However, desired productivity benefits are often not realized. Language and cultural barriers can result in miscommunications or assumptions made by either side that are incompatible with project goals. Project hand-offs across time zones can be difficult, especially when teams must share project artifacts and source code over networks with development tools not architected for global web access.

\textbf{Project Delays}

Use of global development resources can enable organizations to speed project completion and accelerate time-to-market. By taking advantage of different time zones, organizations can essentially develop IT projects around the clock. However, to succeed at this new development model, organizations must effectively coordinate project transitions and collaborate as full project team members. Above all, communication must include clear presentation of milestones, timelines, and accountability for all individuals involved and there must be an infrastructure in place to track achievements against milestones.

\textbf{Need for Focus on Core Competencies}

Working with offshore development teams can enable organizations to focus more closely on their core competencies by blending the specialized expertise of on-site and offshore teams. This can ease the difficult task of finding resources with appropriate skill sets and increase innovation and project quality. It can also help organizations deal effectively with the peaks and valleys of software demands and improve focus on strategic initiatives. An offshore team can bring fresh ideas and perspective to new assignments, along with the successful methods and solutions used on previous projects. Successful contribution of core skills can only occur when all project teams have clear tasks and full accountability.

\textbf{Lack of Security}

According to Gartner: “Outsourcing looms large as a strategic initiative that will shape your enterprise for years to come. In a fast-changing marketplace, the options grow, the providers

\textsuperscript{2} Forrester Research, “Outsourcing Success Requires Collaborative Program Management”, November 2005

Improving Governance of Offshore Development

Security is of utmost concern when outsourcing development offshore, because distance and different laws and government philosophies can create more risk. Especially when revealing source code and sensitive project information to offshore project teams, organizations must safeguard their intellectual property (IP) by tracking code contributions and ownership.

Minimizing risk also means that organizations must be able to securely involve different parties within the application development lifecycle at the appropriate point in the process. For successful collaborative offshore development to occur, organizations must understand the host country's legal climate, and also develop a thorough understanding of their security needs. Companies should also write specific offshore requirements into service-level agreements for vulnerability assessments and audits. Companies are also wise to work with offshore development resources within a highly secure environment ensuring that developers and other project members have the proper permissions and authentication to participate appropriately, while securing company assets.

To help minimize risk and ensure continuity should an offshore outsourcing relationship fail, contracting companies often ask that source code be put in escrow. While this can help in terms of emergency access to source code, the reality is that the source code is only one component of a larger body of critical assets for any given project. In isolation, it does not capture the ongoing communication and other project artifacts such as documentation, source history, specifications, and other IP, providing context to the source code. Many organizations are looking for ways to track the complete set of project artifacts in order to further minimize risk.

Long Feedback Loops

Software has traditionally been developed using a serial process—concept, requirements, design, code, build, and test—causing long feedback loops that are incompatible with today's shrinking time-to-market and time-to-profit windows. Delays in development are magnified when offshore teams are involved because of time lags in general project communication and in reporting source code changes and bugs. To reduce time-to-market and increase customer satisfaction, organizations are looking for ways to move from a serial development process with long feedback loops to a process where more aspects of development can occur simultaneously and feedback can be disseminated rapidly.

The Shortcomings of Traditional Software Development Tools

According to Forrester Research, the need for offshore governance grows in proportion to an organization's level of global sourcing. In the most advanced phase, companies focus on upgrading IT processes and methodologies. Many companies are realizing that traditional software development tools do not enable them to realize substantial productivity gains across onsite and offshore development teams.

Many of the issues associated with inefficient collaboration across global development teams can be traced to the lack of a common development environment or to the use of traditional, single-function Software Configuration Management (SCM) tools. Global software teams often work in isolation because the tools at their disposal do not encompass other team participants or provide a comprehensive environment for collaboration.

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4 The Gartner Group: “Gartner Outsourcing and IT Services Summit”, April 2005
5 Forrester Research Inc., “Users’ Offshore Evolution and its Governance Impact”
Most traditional SCM and issue tracking applications do not easily scale to enable global reach across WANs. While network latency is not an issue with SCM systems located on the same physical local area network (LAN), times for simple development operations can be slow when the same tools are used over a WAN. To compensate for this speed deficit, multiple servers, expensive software, and personnel to manage administration are needed.

SCM tools also lack a comprehensive framework for interaction across offshore development teams. Software development, project communication, and knowledge management artifacts are typically archived in many different locations, out of the context of project history. Without a central location for project information, it can be difficult for teams to not only reuse code and audit project progress, but also collaborate efficiently—a process that is far more complex than simply passing source code between developers.

Most SCM tools lack a broad project focus. They do not have project communication capabilities such as e-mail or agents for automated communication to immediately alert teams to source code changes. They also are deficient in knowledge management features such as the ability to manage files and search knowledge archives for project information related to the code. Role-based security capabilities are also not traditionally found in SCM tools.

Advantages of Collaborative Development Environments

According to Gartner, the combined forces of globalization and global sourcing will drive organizations to decouple and standardize their business processes as IT utilities to achieve greater agility and an additional cost saving of between 25 percent and 60 percent. Organizations that do not establish offshore development teams and processes may forego a significant competitive advantage. In contrast, enterprises that are able to successfully develop offshore will have the opportunity to generate additional revenues by developing new products and internal IT systems faster and adding value to existing products.

Organizations must make wise tool, platform, process, and project management decisions to promote more effective collaboration across globally dispersed teams. The ideal collaborative software development environment effectively addresses the business and technical risks associated with offshore development through:

- Increased visibility and control of IP
- Faster time-to-market and time-to-profit
- Lower up-front and ongoing costs
- Skill optimization
- Increased security

**Increased visibility and control of IP**

Internet-based collaborative development environments allow easy and comprehensive tracking of assets and knowledge associated with multiple projects to help preserve intellectual property. This not only protects an organization’s intellectual property, but also facilitates software reuse and helps leverage experience gained on previous projects.

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An Internet-based collaborative development environment effectively spans multiple global locations and provides visibility into activity and status of multiple projects simultaneously, thereby increasing control. By using a collaborative development environment for outsourced offshore projects, the contracting company maintains constant access to its IP, protects IP from unnecessary access in the case of offshore outsourcing, and archives all of the documentation, communication, and history associated with the source code.

The ideal web-based CDE also promotes improved communication and coordination across project teams. Web-based collaborative development platforms offer one-to-many mailing lists and e-mail agents to help automate and streamline communication with all project participants. An archive of all project communication gives teams visibility into project status and issues and helps ensure accountability, with an auditable set of interactions. This increase in accountability, combined with an environment that fosters collaboration, contributes to organizations completing projects within planned timelines and budget constraints.

CDEs can also help organizations overcome cultural and communication barriers associated with offshore development. By providing each user with a role-based view into the development environment that clarifies individual tasks and responsibilities, an organization can reduce ambiguity. A CDE facilitates more precise and explicit communication and eliminates confusion and misunderstandings associated with remote communication.

**Faster time-to-market and time-to-profit**

Collaborative development environments are available around the clock—across multiple time zones—and work on any type of computer, enabling cost-effective support of small and large offshore teams. The right collaborative environment can contribute to faster time to project completion by coordinating project transitions between development centers, streamlining linear development by allowing more portions of the development process to be handled simultaneously, and allowing faster resolution of project issues. CDEs can also increase productivity through enhanced communications such as immediate notification of source code changes. This facilitates code reuse and substantially reduces costs, errors, and rework.

**Lower up-front and ongoing costs**

Using Web-based environments for collaborative offshore development, organizations can include multiple offshore development teams as an extension of onshore staff, while avoiding the hidden costs and risks. Organizations can extend project success out to offshore development partners by working with a standard, project-based infrastructure.

Traditional LAN-based tools require significant training and administration, while web-based solutions offer cost predictability. Web-based solutions can be rapidly deployed—either under a traditional software license, a managed device in a customer’s data center, or as a managed service—without cost overrun. There is no penalty for deploying to offshore developer groups or multiple locations, and no additional cost to transfer resources or licenses. The right web-based CDE also lowers ongoing maintenance and training costs by decreasing the hardware and software required for an effective offshore environment. And, with a central repository and standard set of tools, offshore developers can quickly become proficient at using the new system.

**Skill optimization**

In addition to reducing the up-front and ongoing cost of software tools, organizations can achieve cost and skill optimization by tapping global resources, thereby making the wisest possible resource decisions. The proper infrastructure for global development allows offshore teams to augment the efforts of onsite developers or take on other projects that maximize their skills. It can also enable full participation from a broader skill base with specialized product knowledge, in many cases at lower blended cost. Organizations can securely tap into intellectual capital from globally distributed in-house teams, offshore vendors, and co-development with offshore partners.
no matter where they are located.

Increased security
Web-based collaborative software development environments can offer a high level of security, an important prerequisite for addressing the intellectual property protection challenges of any offshore development. The ideal environment proactively addresses security challenges with preventive strategies, capabilities to secure all layers of the environment, and a rigorous focus on continuous improvement of security processes. At the physical layer, the systems containing the collaborative environment should be housed behind a company firewall or at a collocation facility with an exterior radius structure that meets EMF Level 3 standards. The environment should also provide additional security protection at all levels of the security stack, including network infrastructure security, server and storage security, operating system and database protection, multiple levels of enterprise password authentication, fine grained project roles and permissions, as well as multiple Internet and Web-based security encryption layers.

The Value of Collaboration for Offshore Development
Organizations implementing Web-based collaborative software development environments can fully capitalize on the benefits of offshore development teams—while avoiding many of the risks of global development. Customers using the CollabNet environment for global development, for example, have achieved substantial return on investment (ROI). One major financial services firm using the CollabNet environment increased developer headcount by 33 percent while reducing overhead costs by 20 percent by effectively involving remote developers fully in the development process. A key factor in effective co-development was the ability to share code across time zones. A full source code repository checkout went from eight hours down to six minutes, enabling co-development that was previously prohibitively time-intensive. The ability to communicate processes and expectations clearly and collaborate more efficiently has also contributed to the company’s ROI.

Organizations that effectively harness offshore development can gain a substantial competitive advantage and improve quality and innovation. At the same time, projects can be developed faster through code reuse and improved communication tools for increased efficiency.

Code reuse is one of the biggest advantages of using CollabNet. The environment provides a repository for reusable code that project teams can both contribute to and draw from. The ability for CollabNet to archive binary files, source code, documentation, patches, bug fixes, features, discussion forums, and more, creates a structured repository for all project information, facilitating reuse of code and knowledge across onshore and offshore teams.

The CollabNet environment’s secure, role-based permissions ensure that intellectual property is not compromised, which is critical to successful offshore development. Client-side certificates and IP address blocking both provide additional security levels for the development environment, even when access is distributed across global teams. CollabNet offers the highest levels of security, including preventive strategies, the ability to secure all layers of the environment, and continuous improvement of security processes. Security is provided in the CollabNet environment on multiple layers, including the physical, network, host, and application layers. The overall type of network, and the customer’s security requirements, dictate the nature and depth of security measures taken in each layer. CollabNet provides consulting services to help customers clarify their security needs and help identify appropriate products and practices to be implemented.

Conclusion
Offshore development can help organizations reduce IT costs, accelerate product innovation, and accelerate project schedules. However, due to time, distance, cultural barriers, and other difficulties in collaboration such as sharing project artifacts, productivity losses can undermine the success of a global development strategy.
Whether an organization is dabbling in offshore development or is fully exploiting its benefits with major offshore investments, deployment of a Web-based collaborative software development environment can help mitigate the risks and enable optimization of remote development resources. By heightening IT governance, securing IP, enabling full participation of global project teams, and streamlining communications, collaborative software development environments can make offshore outsourcing a success.

For More Information
To learn more about CollabNet solutions for distributed, collaborative software development, please call 1-888-778-9793, e-mail info@collab.net, or visit www.collab.net.

For the latest information about CollabNet, CollabNet white papers, and web seminars, visit http://www.collab.net/news/archives/.