ENABLING SOFTWARE
CO-DEVELOPMENT
WITH PARTNERS

Organizations have found that they can generate new business, improve focus on core competencies, and reduce costs by enabling software co-development with partners using Web-based collaborative software development. This paper discusses the business issues, weighs various options, and outlines the benefits of co-development with partners.
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Introduction

To best leverage the investment and focus on improving internal software development processes, firms must now consider how to extend those processes to third-parties that participate in the delivery of goods and services to their clients. One of the major waves of innovation in global enterprises is the implementation of cross-organizational business processes and automated systems linking enterprises to their suppliers and customers.

In many industries, working with supply-chain partners to develop products that include a significant software component is no longer optional. Cost pressures, the need to focus on core competencies, and the prospect of generating new revenue streams through product differentiation—often as a result of partner innovation—are all resulting in organizations relying on their supply chain more than ever before.

Some organizations are actively embracing co-development with supply chain partners. Others may not be interested in joint development or sharing source code. While not jointly developing code with partners, these companies can benefit from supply chain integration at specific points in the development lifecycle such as gathering requirements, generating specifications, or integrating with test.

Partner co-development not only drives innovation, but also reduces cost and development time. According to Giga¹, collaboration can reduce product development cycle time and shorten time to market by 40 percent by helping companies manage, track, control, and facilitate collaboration from conception to completion.

While the potential upside benefits of collaborating more efficiently with partners are clear, the risks are equally apparent. Supply chain partners are often dispersed around the globe, making collaboration across time zones, languages, and cultures difficult and costly. Partners across the supply chain often use disparate systems and networks for product development and communication, making coordinated efforts more challenging. There are also security risks associated with including a third party into the development process and considerations about how co-development is impacted by corporate security guidelines need to be weighted.

Many organizations have found that they can enhance development functions, decrease time-to-market, and reduce costs by unifying across the supply chain using a single, Web-based Collaborative Software Development (CSD) environment. This paper discusses the business issues driving adoption of collaborative development environments, weighs various options, highlights some case study examples, and outlines the benefits of establishing an infrastructure that supports co-development with partners.

Issues

According to CIO Magazine², “The ABCs of Supply Chain Management,” “When you ask the people on the front lines...what they hope to gain from their supply chain efforts in the near term, they will all respond with a single word: visibility.”

Supply chain visibility in the traditional sense coordinates manufacturers, suppliers, and retailers in an effort to reduce inventory and streamline manufacturing and sales processes. Visibility across the software development supply chain, on the other hand, connects participants in the development community, from dispersed software development teams to hardware manufacturers embedding software into their products and customers testing software for use in their own environments. They can all engage in co-development, share knowledge and code, and

communicate across teams and projects—working as highly collaborative virtual organizations. Each development stakeholder has a customized, role-dependent view into the process, communications, and artifacts associated with the development project.

Integration across the software development supply chain is a competitive imperative given the complexity and interoperability associated with today’s applications and software-based products. Whether an organization is building a database on which other applications must run, software that is embedded within a network device, or a business application designed for a mobile phone, software runs as part of an integrated system. Given this interdependence, it is ironic that software has traditionally been developed in relative isolation. This traditional, serial process—development, integration, and customer adoption—causes feedback loops that are incompatible with a drive toward decreased time-to-market and time-to-profit.

**The Growth of Web Services**

The need to involve all development stakeholders across the supply chain from a project’s inception is made even more acute by the growth of Web services—Internet applications designed to interoperate across the Web with other Internet applications. A survey from Evans Data Corp.\(^3\), found that nearly 40 percent of developers are using Web services. Web services are often based on different languages, frameworks, technologies, and protocols, from .Net to Java and XML. As more Web services are deployed, supply chain participants at various organizations need to collaborate on integration and testing to ensure reliable interoperability and authentication.

**Insufficient Tools for Collaborative Development**

Many of the issues associated with inefficient partner collaboration can be traced to the lack of a common development environment or to the use of traditional, single-function Software Configuration Management (SCM) tools. Software teams work in isolation because the tools at their disposal do not function with participants across the global supply chain. Most traditional SCM and issue tracking applications were designed for teams of developers using local-area networks (LANs). These applications do not easily scale to enable global reach across wide-area networks (WANs)\(^4\).

SCM tools also lack a comprehensive framework for interaction between software developers, partners, customers, and other third-party stakeholders in the development process. Software development, project communication, and knowledge management artifacts are typically archived in many different locations, out of the context of project history and scattered across partners and locations. Without a central location for project information, it can be difficult for teams not only to reuse code and audit project progress, but also to collaborate efficiently.

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\(^3\) Evans Data Corp., March 2002.
**Lack of IT Governance and Security**

Especially when sharing source code and sensitive project information across the development supply chain, organizations need to safeguard their intellectual property by tracking code contributions and ownership. They also need to be able to securely involve different parties within the application development lifecycle at the appropriate point in the process. For example, some development participants may need access to source code while others do not, and some parties may be involved only in testing versus development. One key to successful collaborative development is ensuring that stakeholders have the proper permissions and authentication to participate appropriately. Advanced IT governance and role-based security capabilities are not traditionally found in most development tools.

**Options for Collaborative Development across the Supply Chain**

For organizations that have realized a need to leverage their supply chain or partnerships with contractors as a critical component of their business and development strategy, new collaborative application development tools are available to address the issues previously outlined.

These new collaborative development environments take advantage of the Internet and advances in application functionality to change the way companies interact. While the Internet provides a platform for information exchange, collaborative software development environments provide Internet-savvy development tools, security, authentication, and rules for workflow, communication, and information management.

**Advantages of Web-based Software Development**

Companies that use the Internet to leverage core competencies and collaborate with customers and partners realize a distinct competitive advantage that is not without risks. The ideal collaborative environment effectively addresses both the business and technical risks associated with co-development.

**Decreased costs**

Traditional LAN-based tools require significant training and administration. Internet-based tools offer cost predictability and can be rapidly deployed—either under a traditional software license, as a managed device in a customer’s data center, or as a managed service—without cost overruns. There is no penalty for deploying to isolated partner developer groups or multiple locations, and no additional cost to transfer resources or licenses.

While blending internal and external resources across the supply chain can reduce labor costs and allow enterprises to focus on their core competencies, the cost of implementing and supporting partner development efforts can be prohibitively expensive. The ability to integrate securely, on a global scale, external business partners and customers into the software development process requires a sophisticated environment, yet one that makes it easy to add new process participants.

For example, a large system manufacturer would take as long as six months and spend hundreds of thousands of dollars to establish an infrastructure to support a new partner on a development project. To avoid the time and cost associated with this integration, the company would need to relocate a partner to physically work on site. After implementing a Web-based environment, the organization can integrate partners or contractors into the process without the large infrastructure investment previously required.
**Decreased time-to-market and time-to-profit**

Time-to-market and time-to-profit can be hindered by development across the supply chain due to issues with coordinating the activities of outside organizations across time and distance. An Internet-based environment effectively spans multiple organizations and provides visibility into activity and status of numerous projects simultaneously, allowing stakeholders to participate in multiple projects as appropriate. Web-based 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 teams.

Research firm Giga\(^5\) estimates that collaborative product development (CPD) solutions can help manufacturers reduce product development cycle time and shorten time to market by about 40 percent, due to the CPD’s ability to help manufacturers reduce the number of errors that occur and correct them earlier in the process when they are less costly to fix, streamline project management, improve resource utilization, reduce engineering change order-processing time, reuse code, and shorten review cycles. These same benefits apply to CSD solutions and the applications developed with them.

**Improved focus on core competencies**

Due to lack of coordination in application co-development, schedules can slip, products can fail, and support can become complex and expensive. However, using Web-based environments for collaboration, stakeholders can easily participate in virtual teams, focused on different aspects of the development process. Organizations can shift their focus from vertical integration, which entails finding specialized skills in-house, to horizontal specialization which allows outside participants to deliver on their core skill sets as efficiently as possible. Improved visibility into partner activities and productivity increases accountability among all parties involved.

**Reduced complexity**

According to the Standish Group\(^6\), the availability of a standard infrastructure is one of the top 10 keys to project success. With Internet-based collaborative development, a project or technical manager has an increased access to specific technical resources that may be required for a specific project. All participants use the same tools, eliminating issues of tool incompatibility and providing everyone involved with a common environment for development and collaboration.

Interconnected software development environments also are flexible enough to work with a variety of IT environments, making it easier to integrate new process participants into the development cycle. Collaborative environments centralize software development tool deployment and support, making developers across the supply chain quickly productive.

**New revenue generation through partners**

Partner co-development helps corporations drive value and increase product differentiation and innovation. On the other hand, partner involvement can lead to protracted development and integration cycles due to lack of communication across the supply chain.

Collaborative development streamlines cross-partner relationships. When all project participants work as virtual teams, they can share product vision, specifications, and implementation across an entire range of product development efforts. Teams across the supply chain can easily create

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reusable technical assets, which can be leveraged across multiple business units and project teams.

One CollabNet customer had a target of three new projects in 12 months with 12 developers. After implementing the CollabNet environment, the company completed 15 projects in the same period of time, a 500 percent increase in the number of new products.

Collaborative development environments give organizations the flexibility of tapping third-party code and expertise, but at the same time they provide tools for improved IT governance and tracking of intellectual property. Through project, issue, and version tracking tools, collaborative environments allow organizations to determine code contributions and ownership, thereby helping to safeguard intellectual property rights.

The Value of CSD across the Supply Chain

Organizations implementing Web-based environments can more effectively cope with many of the strategic and technical imperatives of co-development. Organizations can capitalize on resources across the supply chain, with little regard for geographic and corporate boundaries—all while avoiding the hidden costs of software development involving multiple stakeholders.

The leading Web-based CSD platform, the CollabNet environment, integrates applications for software development, knowledge management, and project communication. It is controlled through a Web-based project workspace with a centralized role-based permissions model and enables secure and cost-effective development across different groups within an enterprise or between multiple organizations. The CollabNet environment supports all the phases of the application lifecycle, from requirements, through development and testing, to support.

A major telecommunications provider, for example, selected the CollabNet environment as the basis of software development efforts for its handset operating system. CollabNet allows the company to extend access to the development environment to partners, including handset manufacturers, business partners, and 500 content and software providers of games, ring tones, images, stock prices, and other services.

With the deployment of CollabNet, co-development activities, previously managed by multiple project managers, are now unified under a single system. This improves communication efficiency, reduces administrative overhead, and provides synergy between the company and its numerous partners.

Using a CSD solution like CollabNet, manufacturers and organizations developing products with integrated applications can reduce the risks of integration and compatibility. Customers are more loyal because of their stake in the development process. In addition, products are more tailored to customer needs and are more likely to work within customers’ specific target environments. With an integrated co-development strategy and infrastructure, organizations can optimize software compatibility design and development, increasing product quality and avoiding market failures.

Integrating across the application development supply chain allows organizations to address new market opportunities and each organization can focus on its core competencies, spurring innovation that results in new features and products. Using CollabNet, organizations are increasing upside revenue potential because they can bring additional new products to market more rapidly.
Conclusion

Involving business partners in the application development process is a valuable practice for organizations that are attempting to reduce costs, differentiate their products, and decrease time to market. The risks, however, of involving partners in co-development are high, especially given the complexity and high level of integration of today’s products.

Web-based solutions for collaborative software development can increase visibility into project status across the supply chain and with contractors, provide more control, reduce complexity, and accelerate time-to-market, while at the same time protect access to software assets. These solutions offer clear advantages for organizations in streamlining co-development to deliver differentiated, integrated products while strengthening partner and customer loyalty.

Read Other CollabNet Papers


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