



Rational software

Achieving true collaboration in global development.

Solutions for visibility, innovation and control

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IBM Rational systems marketing

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The rise of global collaboration

Globalization has given organizations around the world unprecedented access to personnel and marketplaces. For some, this has meant the growth of the distributed organization, with staff located across the world. For others, globalization has meant the routine outsourcing of functions that only a few years ago were considered core capabilities.. Still others combine the practices.

Most find that the benefits of working globally are many, including savings in time and money and the ability to take advantage of skills that may not be available locally. But outsourcing and its related practice, global distributed development (GDD)—in which teams of software developers who may be either employees or outsourced workers are located across geographies—also present challenges. Among them are the need to evolve architectures, relationships, cultures and decision-making routines in ways that enable the organization to reap business benefits.

In the world of systems and software development, any model for outsourcing or GDD that an organization adopts—whether it is captive, single-vendor, multisource, joint venture or any combination of approaches—requires careful attention. For management, the goal is to convert disconnected or adversarial aspects of the relationship to collaborative cooperation. The effective management of people, including the organization's own employees as well as members of the outsourcing team, is a key factor to the success of a venture.

Software development is a social activity. A development project is subject to the same conflicts, misunderstandings and bottlenecks that can occur in any people-based relationship. Collaboration also is social. It takes place between people—not between technologies, machines, processes or lines of code. Yet development and collaboration can be supported and enhanced by technology. It is therefore important that an organization carefully consider its supporting technologies when adopting the GDD approach.

Highlights

New technologies can help globally-located developers work together without the traditional limitations of infrastructure.

Technologies and processes are now available to address the complexity of managing software development involving global employees and contractors.

Collaborate to innovate—and win

The Global Human Capital Study 2008 from IBM, which drew on the knowledge and expertise of more than 400 human resources executives from 40 countries, identified collaboration as “a key tenet fostering innovation and growth.”* In other words, an approach to GDD that is based on using collaboration to produce innovation can become the transformational force for change and adaptation for global operations.

That’s because innovation benefits the entire organization, not just an individual project. As the IBM study notes: “There can be no doubt that winning in competitive and quickly-shifting global markets requires responsive organizations.” For workers to be able to successfully adapt to change, the study continues, “they must be able to collaborate across their organizations, connecting individuals and groups that are separated by organizational boundaries, time zones and cultures.” This can be especially important in a GDD environment, where collaboration must not only extend across the enterprise, but also encompass outsourcing teams.

The need for collaboration is driven by the increasing presence of technologies and devices in daily life and in the growing footprint of software in systems. This accelerating trend calls for highly collaborative product development efforts among a variety of engineering disciplines to address the increasingly complex proliferation of software. The solution is to harness the process, making jobs manageable with supporting technologies that enable developers to work together on the task at hand without the infrastructure limitations that traditionally have made true collaboration difficult to achieve.

One role for the organization’s technology leadership is to give the company and its employees, partners and global workforce the foundation necessary for true collaboration. Deploying a highly scalable, flexible infrastructure and a powerful methodology for collaboration can be a significant step in meeting the increased demand for innovation and adaptability.

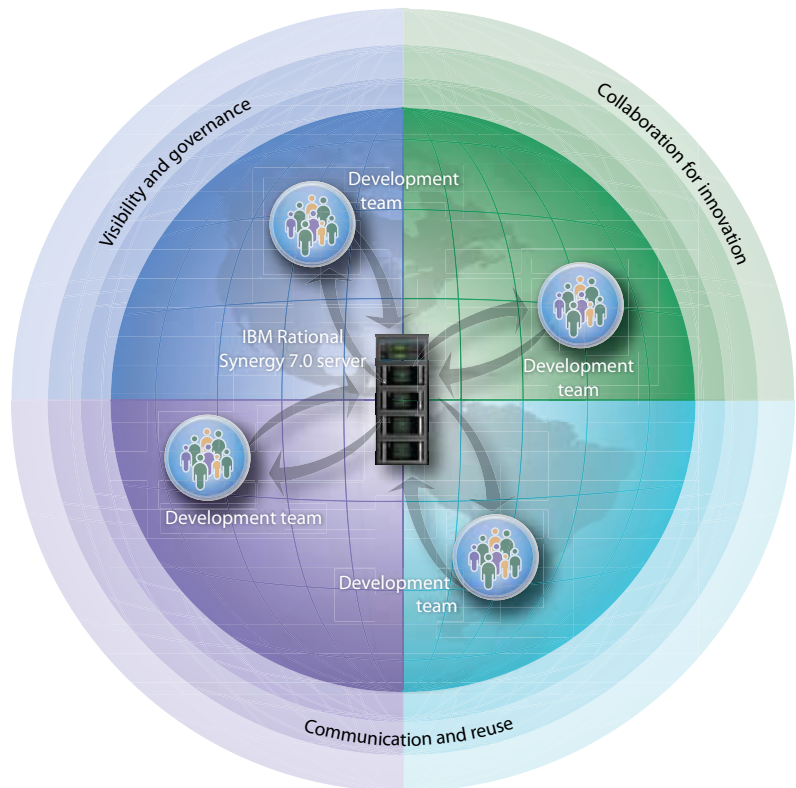
Highlights

Today such a deployment is possible. The balance of benefits and challenges associated with GDD has reached a tipping point—the condition in which technology, processes and organizations are able to come together to make true collaboration the reality that was difficult to achieve before.

A closer look at global distributed development

Remote software development has been a common—and steadily increasing—practice for 20 or more years. But as common as it is, GDD is not as straightforward as it may appear. Managing systems and software development involving employees and contractors located beyond the boundaries of a single geography has many layers of complexity.

Global distributed development can be a difficult model to adopt—making it hard for employees to provide collaborative value to the organization.



The IBM® Rational® Synergy tool gives global users fast WAN access to a central repository—and helps enable organizations to avoid provisioning servers for each remote location. This common repository is designed to enhance collaboration and communication, for better control of critical software development requirements and support of advanced systems delivery.

Highlights

The multiple servers, multiple data repositories and replicated software of traditional solutions require significant efforts to synchronize developers' work.

The infrastructure necessary to enable collaborative development is now widespread. The question is how the organization will use it.

The obvious advantages include enabling companies to expand their operations on a worldwide basis, taking advantage of differences in cost and skills around the globe, and reducing time to market due to the availability of developers around the clock. Work naturally flows to wherever the best skills are available. All of these benefits make for a diverse and agile development team that can respond quickly to changes in the marketplace.

But GDD can have its downside; it can be a difficult model to adopt successfully.

Dispersed project teams—whether they are company employees or outsourced workers—must be able to communicate accurately, clearly and effectively in development environments where team members may not speak the same language, have different cultural backgrounds, follow a variety of potentially incompatible in-house processes and have no clear definition regarding the ownership of assets. An organization may have very smart people, but if they can't effectively collaborate, they're not providing much value to the organization.

Infrastructures that do not provide the requisite visibility into all aspects of the development process can result in assets that get lost in the shuffle, breakdowns in requirements and change management, and a lack of synchronization between geographically remote teams. Schedules can slip, costs can skyrocket, quality can suffer and business objectives can remain unmet.

A global model also can generate staggering costs. Maintaining multiple servers and hardware configurations can turn into a budgetary nightmare due to the heterogeneous nature of the development environment. But what is more, multiple servers with multiple data repositories and replicated software can create not only logistical headaches but also errors in work. Developers logging into those servers often see different versions of projects.

Highlights

The application lifecycle management approach provides Web- and WAN enabled capabilities for collaboration and communication.

IBM Rational Synergy can tightly integrate virtually all aspects of the systems and software development lifecycle.

Synchronizing changes so that developer teams can work in a cohesive, collaborative fashion becomes a major objective.

Moving beyond risks—opportunity's tipping point

Study after study of chief information officer (CIO) and chief executive officer (CEO) priorities identify organizational agility, human capital optimization and strategic change management as key focus areas. The deciding factor that has tipped the balance of GDD toward supporting these areas has been the ability of the technology landscape to provide the benefits of true collaboration. Successful GDD, a real-world manifestation of these priorities, requires a rich mix of collaboration, innovation, consolidation, adaptability and change competency on the part of all stakeholders.

Today, the infrastructure necessary to enable collaborative development is more widespread than ever. Technological advances, such as reliable, universal, high-bandwidth connections over a wide area network (WAN); the pervasive Internet; powerful, low-cost hardware and software; and the development of sophisticated collaboration capabilities, including Web 2.0 innovations, have all made geographic dispersion possible.

The questions are, how will the organization use this infrastructure to provide true collaboration, and what kind of tools and processes will it need to put in place to take advantage of infrastructure capabilities?

An answer designed specifically to optimize the software and systems delivery environment is the application lifecycle management (ALM) approach. The evolving ALM platform includes provisions for enhancing collaboration and communication among diverse, geographically separated development groups both inside and outside the organization. It provides Web- and WAN-enabled capabilities that control the flow of work assignments, changes and other critical lifecycle information and attributes regarding project progress.

Highlights

Task-based configuration management can facilitate collaboration between software developers virtually regardless of where they are located.

Now team members at nearly any location can access software assets in a centralized development repository at LAN-like speeds.

Meeting challenges and achieving the benefits

IBM Rational Synergy can contribute to organizational success by tightly integrating virtually all aspects of the systems and software development lifecycle, breaking down information silos and fostering global communication, collaboration and coordination. It addresses the key focus areas—collaboration, innovation, consolidation, adaptability and change competency—that are critical to manage and optimize for success.

Collaboration

Collaboration is the key to optimizing the work of employees and outsourced teams. With workers around the globe, an organization needs to manage employee and partner relationships and help everyone work together as a team. To do that, it's necessary to have a platform that makes easy connections possible.

IBM Rational Synergy uses a common language—task-based configuration management (TBCM)—to facilitate collaboration between software developers no matter where they are located. TBCM has helped streamline software development by capturing intent, automating the tracking of file-version changes, and managing process and build assets at the work-assignment or task level. Instead of telling the system to update the latest version, developers can tell the Rational Synergy control point to update the latest good set of completed work assignments so that information, staff and projects can stay current.

Innovation

A smooth and efficient workflow is important to collaboration and to one of collaboration's most precious goals—innovation. Workers can find it difficult to come up with new ideas, to design new products or to approach a challenge in an original way if they are frustrated by the mechanics of getting the basic job done. Proper tools, technologies and processes can help overcome the inertia that keeps many organizations from moving ahead.

Highlights

Rational Synergy's central repository enables an organization to avoid provisioning servers for each remote location.

Team members can synchronize with one another's progress because they have access to the same up-to-date information.

The centralized WAN-access mode in Rational Synergy software allows team members at any location to communicate with one another and access software assets in an integrated, centralized development repository at local area network (LAN)-like speeds. Performance can be as much as 20 to 40 times faster than standard software configuration management (SCM) applications running over a WAN. And Rational Synergy technology is highly scalable, enabling more users at more locations to connect virtually seamlessly.

At the heart of the system is a new IBM Rational Synergy server that uses standard Web protocols for asynchronous client communication, helping to reduce dependence on network latency. Client systems communicate with the server using a new optimized technique known as Web Mode Access that features a redesign of work areas—the “developer sandbox,” where work-in-progress files reside—and the command line interface (CLI).

Consolidation

Using IBM Rational Synergy, an organization can avoid provisioning servers for each remote location. Instead, it establishes one central repository that can reduce overhead, operating costs and management complexity. This common repository is designed to provide virtually all team members with the same up-to-date information so they can synchronize with one another's progress, reduce errors and rework and avoid duplication through intelligent associations in their software development and delivery environment.

Effective traceability gives project managers a new level of visibility into the development process. It also allows the project team and others in the organization to share knowledge and lessons learned.

If they wish, organizations with specific needs can continue to deploy Rational Synergy software on distributed servers and use the solution's replication

Highlights

With IBM Rational Synergy organizations can create a collaborative environment that is best adapted to developers' needs.

IBM Rational Synergy allows the organization to track changes to user requirements and achieve a single, up-to-date view of the development status.

technology, Distributed Change Management, for exchanging objects. With the traceability and automation of tasks and changes made possible by the task-based development paradigm built into the software, either the centralized or distributed topology can deliver powerful results.

Adaptability

Organizations can tailor the core capabilities of IBM Rational Synergy for SCM, requirements-driven development and enterprise change management to fit within the scope of development methodologies. The software automates high-level processes and diligently traces the relationships between artifacts. It can be configured to incorporate capabilities associated with contemporary technology stacks, such Web 2.0 applications and service-oriented architecture (SOA). And it can accommodate heterogeneous environments and legacy applications.

IBM Rational Synergy provides the flexibility to create a collaborative environment that is best adapted to the development group's needs—and the ability to change with those needs. For individual projects, the Rational Synergy solution enables developers to respond to requests for changes by establishing processes, control points and the stages that a change must go through before it appears as a feature or capability in a product. To speed and simplify development, Rational Synergy software can automate processes when appropriate. To enhance collaboration, it can define flows of data, information and decision making across the network.

Change competency

As a GDD project evolves, IBM Rational Synergy provides a managed process that allows the organization to track changes to user requirements that eventually find their way into the finished project. Rational Synergy software is tightly integrated with IBM Rational Change, providing a single, up-to-date view of the development status.

Highlights

Rational Synergy software can accelerate management processes for releases and builds, optimize the efficiency of resources and unite distributed teams.

IBM Rational Synergy is well suited to developing advanced software systems for industries such as electronics, medical systems and telecommunications.

Organizations also can achieve requirement-to-code traceability through the upstream integration of IBM Rational Synergy with IBM Rational DOORS® software—and they can automate build and release execution with IBM Rational Build Forge® software. This provides a comprehensive view of the ALM environment, rather than just snapshots or linear chains of progress.

Collaboration through IBM Rational Synergy

IBM Rational Synergy provides capabilities that can help software development teams work faster and more easily by increasing communication and collaboration. It can accelerate release and build management processes, optimize the efficiency of limited development resources and unite distributed development teams. Among its strengths are the abilities to provide:

- *Fast WAN access to a central repository for global users*
- *Task-based configuration management that provides a common language for the development team*
- *A powerful process engine supporting complex SCM needs for development agility*
- *Deterministic support for software reuse, component-based development, product-line engineering and advanced release management*
- *Powerful ALM capabilities through deep integrations with IBM Rational Change, IBM Rational DOORS and IBM Rational Build Forge software*
- *Enhanced mechanisms for conflict detection and realtime feedback*
- *Complex topology support with options to install central or distributed servers*

Why IBM?

IBM has extensive experience in supporting complex systems and applications development in a highly distributed environment. IBM Rational Synergy is particularly suited to the development of advanced, high-quality software systems. Some of its largest deployments occur in industries such as electronics, medical systems, telecommunications, aerospace and defense, IT integration, independent software development and embedded device development.

For more information

To learn more about IBM Rational Synergy software from IBM, contact your IBM representative or IBM Business Partner, or visit: ibm.com/software/rational



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* IBM Global Business Services, *Unlocking the DNA of the Adaptable Workforce: The Global Human Capital Study 2008*, IBM Corporation, 2007, page 2.