

Globally Distributed AD Demands Improved Collaboration

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Application development and maintenance by globally distributed teams, an emerging delivery model that often involves external service providers, requires technologies that combine management and collaborative features.

WHAT YOU NEED TO KNOW

Application delivery and maintenance by a globally distributed team, although potentially cost-effective, poses a risk that comes from geographical and cultural obstacles to collaboration, exposure of intellectual property to out-of-country geopolitical conditions, and from complexity of tracking project changes and progress. Application development organizations should press vendors for toolsets that mitigate the risks of global, collaborative application delivery.

STRATEGIC PLANNING ASSUMPTION(S)

By 2010, revenue in the CDZ market from licenses, maintenance and related services will exceed \$500 million annually (0.7 probability).

ANALYSIS

As projects increasingly involve multiple teams in disparate locations, often from multiple companies, collaboration in application development (AD) has become increasingly complex. More than five years ago, Gartner addressed the problem of failures in global AD. Since that time, these problems have proliferated, as the trend toward distributed or multisourced teams has accelerated. Hence, demand has increased for corrective techniques and solutions. A major criterion for success in AD is successful collaboration among development team members and between team members and business experts, as well as in “virtual enterprises” involving external service providers (ESPs), outsourcers or contractors.

Key Issues

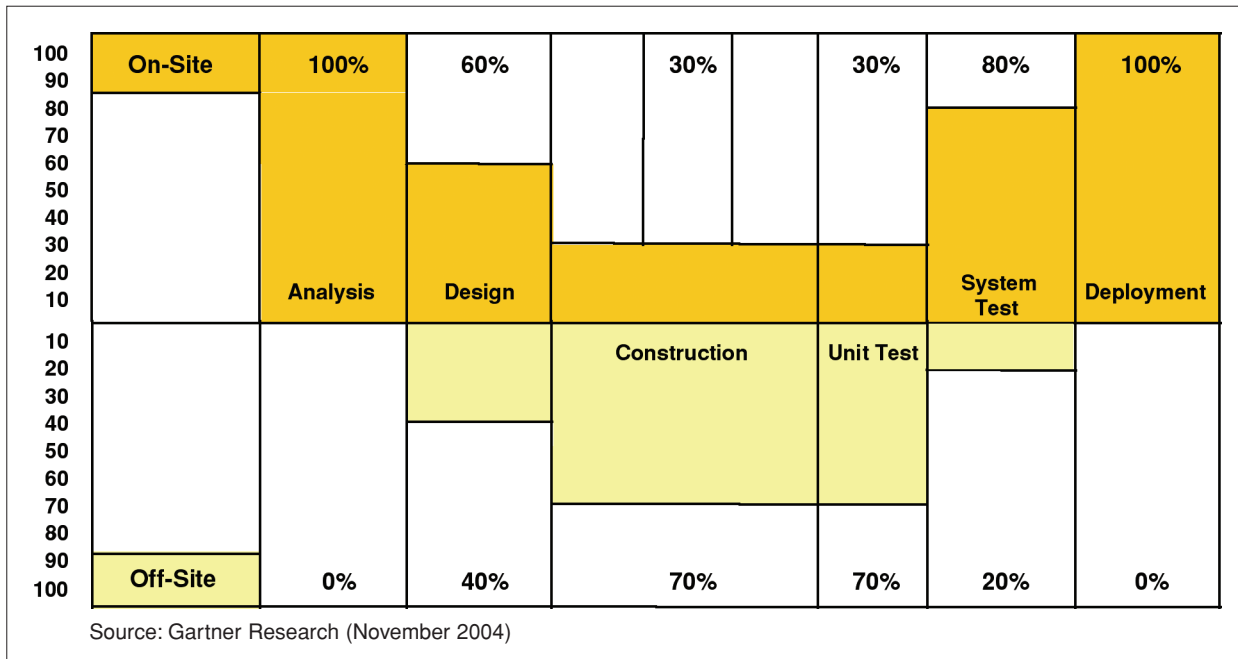
What are the wants and needs of users?
Where are the future growth prospects for this market?

Although broadly distributed development teams make collaboration more complex, this isn't the only market driver for applications supporting collaborative development in global arrangements. Many of the same difficulties arise as soon as teams move beyond a single building or campus, so that any highly distributed enterprise with global development organizations can benefit from enabling technologies.

In theory, any phase of an AD project can be performed anywhere; however, in practice, not every phase can be conducted fully remote from the specifying client's site. Physical separation makes collaboration more complex by introducing location-related cultural and organizational differences. Gartner's assessment is as follows:

- Gathering and analyzing a client's requirements usually demands the developers' full on-site presence.
- Most of the design phase should be conducted on-site, because of the need to walk through multiple iterations of the prototype design, demonstrating it to the client, getting feedback and making changes to the design based on client reactions.
- The construction phase can be successfully conducted on-site and off-site, with a substantial off-site component. It is practical to achieve these ratios between the on-site and off-site components of the total construction work: 40 percent on-site vs. 60 percent off-site, 30 percent on-site vs. 70 percent off-site or even 20 percent on-site vs. 80 percent off-site.

Figure 1
AD Effort Allocation



Why Collaborative AD Is Difficult

Distributed teams should minimize the negative effects of:

- Language and cultural differences between members of the global teams staffed with developers from different countries
- Time zone and geographical distances – the inability to have face-to-face meetings; business people who are disconnected from developers; waiting for answers from colleagues around the globe that might take as long as nine hours

There are also technological difficulties that would make it necessary to cope with new technology paradigms, such as service-oriented architecture (SOA) and the service-oriented development of applications (SODA):

- Management across multiple suppliers of components – coordination of reuse is more difficult using multiple sites than at single site
- Assembly of processes and services residing in different locations
- Integration of components developed recently with new technologies and legacy components developed long ago

Enterprises involved in project outsourcing need to protect themselves against fraud and geopolitical risks:

- Protection of intellectual property – this includes (but is not limited to) source code and executables, as well as the risks involved with having artifacts (including code, documents and design patterns) residing on foreign soil
- Property risks (including intellectual risks)
- Geopolitical risks, including armed conflicts, terrorists acts and hostility to foreigners/private property – some applications affect life, liberty or property, and building these applications with offshore service providers requires extra security

to prevent the introduction of unwanted “features”

- Redundancy and multiple billing (when one team duplicates what has been done by another team)

Problem resolution during global collaboration requires industrial-strength tools with robust features (see Table 1).

New and Old Features in Innovative Configurations

Most of the features described existed for a long time in point solutions, such as those for issue tracking, change management or project portfolio management (PPM). However, collaborative global delivery begins to make these features mandatory in a different, “virtual enterprise” use case. It also requires that all of them be part of a single development “zone,” which is globally distributed and enables centralized and decentralized access.

Some features are relatively new, but, again, their importance has become critical due to outsourcing (especially offshoring) and global, collaborative delivery:

- Intellectual property protection
- Property protection
- Knowledge management/transfer
- Support for multiple sites
- Central dashboard

Communication Features Enabling Globally Distributed AD

Communication enables collaboration. Table 2 presents communication features that are critical (from low to medium to high criticality) to collaboration in a distributed development environment. It also provides examples of vendors’ products, as well as open-source products offering those features.

Technology Providers

The market for CDZ toolsets is immature and evolving. By 2010, revenue in the CDZ market from licenses, maintenance and related services will

Table 1
Features Enabling Global, Collaborative AD

Feature	Functionalities	Risk Mitigation
Issue Tracking	Alerts, task state change notifications, reports, task dependencies, logs, new feature request trackers, support request trackers, bug trackers	Timely issue identification and resolution, allocation of resources.
Change Management	Change justification and approval, impact analysis	Preemptive, rather than reactive, change handling
Asset Management	Source-code and executables management; managing models, documents and other artifacts related to a project	Reduces waste from redundant work efforts, mitigates potential delays, supports lower cost of quality by reusing tested components
Knowledge Management	Capturing structured and unstructured knowledge for client and vendor use, pervasive search of all data types, pushing key information to team members	Easy knowledge transfer to the clients, support personnel or new team members (for example, from vendor workforce turnover); ensures all personnel will have access and not miss related information
Project Management	Maintenance and synchronization of project schedules, resource assignments	Keeping project on track according to planned milestones
Central Console (Dashboard)	Consolidated view of distributed team, assets and intellectual property	Multiple levels of detail enable decision-making for all problem layers (from ones that requires executive decisions to technical problems)
Support for Multiple Sites	Access to shared workspaces, repositories and data sources; replication service; local caching; synchronization.	Enables timely access to all assessments by authorized personnel, regardless of geographic location
Intellectual Property Protection	Having intellectual property (such as innovative blueprints and source code) replicated regularly to the server in your country	Guarantees the safety of intellectual property when geopolitical risk is involved or the outsourcing country has inefficient legal and social systems
Property Protection	Integrity of assets protection and distribution	Maintaining assets as if it is a single site without “loss of integrity” concerns
Requirements Collaboration	Collection, discussion and tracking what the business needs from the application via simulation, storyboards, prototyping and other techniques involving analysts and users	Avoid delays and wasted effort by accurately understanding needs and scope, help ensure quick user acceptance
Distributed Sites Execution Monitoring	Pinpoints execution problems for multisite maintenance	Application maintenance monitoring systems simplify system failure diagnostics.

Source: Gartner Research (November 2004)

Table 2
Communication Features Enabling Globally Distributed AD

Feature	Facility Example	Importance
Web Conferences	NetMeeting, WebEx	Low-to-medium importance for AD, because most AD is adhoc; more important for business analysis, sales training
	Bulletin/message boards	Important for open-source AD, not as important for enterprise users.
	Discussion forums	Yes, we need it; integrated with e-mail as e-mail elevates the priority or alerts
Voice	Internet phones	Highly important, but for those “titles” that are proficient in English (executives, upper managers)
Electronic Mail/ Messaging	E-mail	Highest importance
	AOL Instant Messaging	Important in same/close time zones, but not working if time zone differences are large (for example, India/United States), not easily trackable or persistent
Scheduling and Meeting Management		Medium-to-high importance, importance grows with increased time-zone/geographic distance (cannot just stop by and arrange a meeting)
Interactive Diagrams	Visio, Mind Mappers	Medium importance, moderating the thought process
Shared Data	Microsoft Project	Highly important

Source: Gartner Research (November 2004)

exceed \$500 million annually (0.7 probability). No single vendor provides a comprehensive CDZ solution, but many vendors deliver multiple pieces and appear to be approaching such solutions by adding features and interfaces. Examples include the following:

- Allen Systems Group (ASG) – Visual Process and Business Information Portal defines and applies standard AD processes, such as the Capability Maturity Model Integration (CMMI), and integrates guidance into task assignments; provides secure access inside and outside the organization, as well as collaborative features.
- Borland Software – Collaborative requirements (Caliber) and change management tools (StarTeam) interface with additional, targeted development tools (such as Together Designer). Caliber offers an electronic requirements “document” that is live, secure and easy enough to use to encourage user involvement; the StarTeam tool is similarly nonintrusive for developers.
- CMD – Synergy supports standard development processes, online delivery of methods, references and deliverables; estimating support, problem, issue and change tracking, time reporting; Microsoft Project interface and multiproject reporting.
- CollabNet – CollabNet Enterprise Edition provides change management and issue tracking, and a module for task and knowledge management, as well as a shared project workspace for distributed teams, and integrations with other development tools (for example, IBM Rational ClearCase).
- ComponentSource – Software Asset Value Engineering in IT (SAVE-IT) provides reuse infrastructure and incentives in three modules (Process, Catalog and Content).

- **Flashline** – Flashline registry provides a repository with tracking capability for project artifacts. Flashpacks supplies defined processes for such program types as outsourcing, Web services and component-based development, Java or .NET development, model-driven and open source.
- **IBM Rational** – Rational Unified Process has an integrated set of tools for analysis, design, testing, configuration/change and Rational Portfolio Manager for PPM.
- **Identify** – Application maintenance monitoring systems simplify system failure diagnostics.
- **iRise** – The AppSimulator analysis tool captures business requirements, simulates the application to help validation and enables remote collaboration in requirements gathering to enable users to test software simulations before full-scale development proceeds.
- **Logic Library** – Logidex provides a library of shared or private AD assets with a specification-based engine for finding suitable patterns, components, models or other artifacts.
- **MKS** – The Enterprise Technology Management solution has modules for process management, geographically collaborative development, software configuration management, requirements and test management.
- **Sofea** – The Profesy business analysis tool simplifies and formalizes business requirements capture and production via application simulation, and automatically generates use cases and test cases.
- **SpeedDev** – This Web-based systems development life cycle (SDLC) software has modules for requirements, issue, time and project

Acronym Key

AD	application development
ASG	Allen Systems Group
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
CDZ	collaborative development zone
ESP	external service provider
PPM	project portfolio management
SAVE-IT	Software Asset Value Engineering in IT
SDLC	systems development life cycle
SOA	service-oriented architecture
SODA	service-oriented development of applications

management, with one interface to project teams to exchange information independent of location and time zone.

- **VA Software** – SourceForge includes the File Release System, Task Manager, Tracker, and Global Development Dashboard for project status and statistics. Integration with project/change management systems is available. Access controls enable “gated” communities for outsourcers, and the Collaborative Development Process supports process maturity up to Capability Maturity Model (CMM) Level 3.

Some of those vendors are new, small companies that are driving the growth of this market with tools supporting globally distributed, collaborative AD and offering innovation. Others are the “usual suspects” – major AD vendors with sets of tools more or less completely covering the space, but not precisely addressing the specifics of global, collaborative AD. In the interim, due to the absence of mature tools, most ESPs use homegrown tools (for example, ITCl’s Sentinel or EPAM’s Project Management Center) or generic collaboration tools.