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How to Identify Projects Suited to Globally Distributed Application Development

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Long-term commitment, project size and class, and life cycle phases figure prominently in determining whether application development projects should be globally distributed.

WHAT YOU NEED TO KNOW

An enterprise's chances to succeed with globally distributed application development increase if the enterprise makes a long-term commitment to the paradigm. Midsize to large projects and enterprise-class projects are recommended for globally distributed AD. Rigorous formalization of AD/software development life cycle processes is a critical key to success. Easy-to-formalize AD and software development life cycle phases (such as programming) are best for global distribution. To enjoy cost-saving advantages of globally distributed AD, you must be aware of and accept the risks. Stay away from this strategy if risk concerns outweigh cost-saving promises.

ANALYSIS

Application development (AD) projects increasingly involve multiple teams in different locations, often from multiple companies and countries. Globally distributed AD has the potential to provide cost savings and other benefits, but it also poses complexities of collaboration across cultural, geographical and professional lines.

Not all projects are equally suitable for globally distributed application development. One of the frequently asked questions is, "What projects should globally distributed teams develop and maintain, and what projects are better done through local development?" Projects that meet the criteria listed in Table 1 are good candidates for global distribution.

Table 1. Requirements for Successful Globally Distributed AD

Criteria	Requirements That Satisfy the Criteria
Commitment	Long term
Project size and class	Midsize to large projects; enterprise and departmental class
Collaboration	Low (if not low, then rigorously formalized)
AD phases	Technical (rather than business-related)
Relationship with other applications	Application is relatively isolated
Life cycle phases	Technical support is easier than maintenance; maintenance is easier than AD
Project/process management	Established
Skills	Insufficient local pool and/or level
Risk of losing intellectual property	Low
Knowledge transfer	Low need
Cost vs. risk trade-off	If objective is cost-driven, rather than risk-driven

Source: Gartner (September 2005)

Commitment: Project distribution requires substantial and costly preliminary work and investments, such as external service provider (ESP) research and selection, travel to remote/offshore facilities, and building relations with and within the distributed team. It makes it necessary to appraise established strategies and set new strategies, and undergo the internal IT structure and process reorganization to meet new paradigm requirements. Therefore, it is advisable to make a long-term commitment to that paradigm of application delivery. Incurring those expenses for the sake of accomplishing a near-term project is difficult to justify.

Project Size and Class: Lengthy and expensive preliminary work justifies globally distributed development of midsize to large projects that could be classified as enterprise-class or departmental-class, rather than small personal or workgroup-class projects.

Compared to smaller, less-critical projects, those larger, enterprise-class projects typically have a better architecture, are more carefully designed and their requirements are more rigorously formalized. Therefore, these project classes are better suited to overcome globally distributed AD inhibitors and risks, such as miscommunication, cultural differences and geographical distances.

Collaboration: AD is a collaborative process that involves a multitude of professions, including, but not limited to, programmers, testers, analysts, project managers and business experts. Interprofessional miscommunication has always been a major obstacle — for example, between programmers and analysts or between testers and programmers, due to misinterpretation of requirements, vaguely written specifications and lack of formalization in "use cases" or test scenarios. Globally distributed AD added another source of complexity: on/off-site miscommunication — for example, between programmers separated by geographic and cultural lines.

The simplest way to mitigate collaboration problems is to select projects, AD phases and software development life cycle phases that require low collaboration. Too often, it is not possible. In those cases, our general and critical recommendation is to rigorously formalize collaboration processes, and use tools and techniques that enable formalization (see "Cool Vendors in Application Development, 2005").

AD Phases: AD phases that are more technical, and less business- and human-related, are less risky for distribution because they are easiest to formalize.

The most technical AD phases are application construction (programming) and unit testing; the least technical is analysis. Analysis involves collaboration between IT personnel and business experts/customers, which requires crossing the gap between two cultures: business and technical. It often involves specific enterprise practices, policies and politics, personal likes and dislikes, and competition between units. The analysis is often chaotic. On the contrary, programming application construction has a smaller human-related component and its process is more formal.

Not surprisingly, a common allocation of efforts in distributed AD is:

- Programming — 70 percent off-site/offshore and only 30 percent on-site
- Analysis — close to 100 percent on-site (see "AD Sourcing Cost Model: AD Phase and Effort Allocation")

Higher levels of formalization make the application construction phase the best candidate for global distribution, because formalization mitigates inherent, globally distributed AD risks of miscommunication.

Relationship With Other Applications: Better/best candidates for distribution are applications that are isolated from other applications; their operations are minimally dependent on the operation of other applications (especially those located at a great distance). AD teams should be cautious when using components shared with other applications and implementing logic where the quality or performance depends on other applications' behavior.

For testing, release management and user acceptance, we recommend using simulation of interrelated application behaviors. A substantial amount of effort during the AD phases, such as system testing and deployment, should be conducted on-site at the production environment location (see "AD Sourcing Cost Model: AD Phase and Effort Allocation").

Life Cycle Phases: AD is more difficult to formalize than application maintenance and technical support. Technical support personnel usually react to end users' complaints by executing problem-detection logical flow outlined by application developers. If they cannot detect a problem, they escalate it to the developers who created that application.

Maintenance is often outsourced for applications that were developed years ago, where most bugs already have been detected and corrected. Occasional errors or small code corrections/enhancements are usually straightforward.

AD is the least formalized life cycle phase/activity. It demands the highest degree of not easily formalized collaboration between business and IT organizations, and within the IT organization, especially in the analysis phase.

Project/Process Management: Poorly defined and executed AD processes will get worse in an environment that spans time zones, geographical distances and cultures. Established, formalized and well-executed project and process management mitigates some risks of project distribution. Part of the process should be a clear definition of service-level agreements. All deliverables should be crisply packaged and formalized, which would mitigate miscommunication posed by globally distributed AD. Capability Maturity Model (CMM) certification of Level 3 to Level 5 is an indicator of established formal processes, and is one of the reasons why ESPs in India have established such a good reputation. (A high percentage of CMM highest-level-certified ESPs are Indian.)

Skills: In addition to a potential cost savings, one of the main reasons for AD distribution is lack of required skills at an enterprise's domestic/central location. For example, an enterprise with primarily legacy AD expertise (mainframe or client/server) is planning a migration to advanced technologies and concepts, such as Java, .NET, Web services and a service-oriented architecture. Lack of advanced technical skills, combined with a high cost of skill migration, makes globally distributed AD a sound choice for this enterprise (see "Migrating Legacy Developers to Java: Costs, Risks and Strategies").

Risk of Losing Intellectual Property (IP): The possible risk of IP loss should be a critical project selection criteria. It is a risk for companies to lose, or have stolen, strategic business initiatives implemented in software and related documents (such as requirements, specifications, test scenarios and architecture blueprints).

Consider global distribution for projects that pose a low risk of IP loss. Often, this is not possible. Therefore, companies should take measures to mitigate that risk: hire/partner with reputable vendors, or pay extra for additional security measures and for low offshore personnel turnover. Consider developing projects domestically if risk of IP loss is critical to an enterprise or government agency.

Knowledge Transfer: Knowledge transfer is bidirectional. A great deal of technical expertise (for example, in application construction or testing) is concentrated off-site/offshore, while business expertise is concentrated on-site. Usually in the AD process, some business knowledge should go offshore because off-site developers need to understand the business essence of the project, while technical knowledge should be transferred back to enterprises when the project is done (so that the enterprise will have some technical expertise in the application).

The low need for knowledge transfer from an enterprise to remote AD locations diminishes the risk of IP loss. Knowledge transfer is time-consuming. Consultants are not getting incentives to transfer knowledge. Their primary objective is to create an application, not to educate the enterprise's IT specialists. Enterprises should plan and pay for technical knowledge transfer back to the enterprise or consider projects that require low knowledge transfer.

Cost vs. Risk Trade-Off: Offshore outsourcing is a potential cost saver, but exposes an organization to geopolitical, economic and legal risks (see "Offshore Sourcing Presents Risks to Financial Services Providers").

Among those risks are:

- *Security:* Armed conflict, violent demonstrations, hostility to foreigners/private property, violent crime, organized crime and kidnapping/extortion
- *Legal and regulatory:* Fairness of judicial process, enforceability of contracts, speed of judicial process, discrimination against foreign companies, confiscation/expropriation, unfair competitive practices, protection of IP rights, protection of private property and integrity of accounting practices.
- *Foreign trade and payments:* Potential trade embargoes and sanctions/trade tariffs, the need for trade licenses, and the capability for companies to efficiently and cheaply make/receive payments for commercial activity
- *Infrastructure:* Disruption of business caused by an inadequate infrastructure (such as telecommunications, Internet, computing and transportation) that supports commercial activity

Be aware that the political-economic risk in primary outsourcing destinations — such as India, Russia, the Philippines and China — is higher than in the U.S.

Key Issues

What are the dynamics affecting this market?

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