



www.computer.org/itpro

CIO Corner

Tom Costello

This material is presented to ensure timely dissemination of scholarly and technical work. Copyright and all rights therein are retained by authors or by other copyright holders. All persons copying this information are expected to adhere to the terms and constraints invoked by each author's copyright. In most cases, these works may not be reposted without the explicit permission of the copyright holder.

IEEE  computer society

© 2011 IEEE. Reprinted with permission from IT Professional. Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the IEEE.

For more information, please see www.ieee.org/web/publications/rights/index.html.

The decision to outsource depends on several factors that need to be carefully addressed before taking the plunge.

Phillip A. Laplante, Tom Costello, Pawan Singh, Sudi Bindiganavile, and Mark Landon



The Who, What, Why, Where, and When of IT Outsourcing

Outsourcing of IT functions has become so pervasive that IT managers and CIOs cannot ignore it. Gartner Dataquest has projected that this market will reach \$159.6 billion in revenues by 2005 (“North American IT Outsourcing Industry to Experience Continued Growth Through 2005,” Feb. 2002; http://www.sykes.com/english/news_it_growth.asp). Yet in many cases, outsourced IT projects have failed. For example, in one study, IT managers reported only a 33 percent satisfaction with outsourced IT services, as compared with a satisfaction rate of 70 percent to 80 percent for outsourced non-IT services (W.R. King, “Developing a Sourcing Strategy for IS: A Behavioral Decision Process and Framework,” *IEEE Trans. Eng. Mgt.*, Feb. 2001, pp. 15-24).

To complicate the matter, outsourcing to other countries has become increasingly popular. The advantages to this type of outsourcing include cost savings, 24/7 operation, and access to highly specialized skills. Yet a strategic alliance with a geographically and culturally remote partner presents its own unique challenges.

Thus, IT professionals should not take the strategic question of whether or not to outsource lightly, or avoid it. Rather, they can make such a decision by analyzing the responses to the following five key questions, what we call the five Ws:

- Who should outsource?
- What is outsourcing?
- Why outsource?

- Where should you outsource?
- When should you outsource?

This article emerged from a focus group of CIOs conducted by the CIO Institute, a not-for-profit community of practice for CIOs in the Greater Philadelphia region (<http://www.techcouncil.org/cio.cfm>).

WHO SHOULD OUTSOURCE?

This question is actually a composite of two questions: What type of organization (who) should outsource and whom should you outsource to? Perhaps it's easier to answer the question, “Who should not outsource?” The myth is that outsourcing is cheap. It is not. Even in India, where the perceived difference in relative economy would suggest a lower labor cost, the cost of a skilled developer is approximately \$25 per hour, based on our collective experience. Moreover, in most cases, vendors will only take on large to very large projects—making outsourcing less accessible to smaller IT organizations. Finally, in all cases, the outsourcing company needs a strong communication infrastructure to make outsourcing work. Infrastructure costs could include those for significant domestic and international travel, telecommunications, providing specialized equipment to the vendor, and so on.

Therefore, outsourcing is not likely to be suitable for very small organizations of \$3 million in revenues or less. The choice to outsource or not is, however, so case specific that it is impossible to generalize.

Table 1. The difference between a vendor seeking a sale and a partner seeking a long-term collaborative relationship.

Criteria	Vendor	Partner
Availability of value-added services	Hit and run	Only where in the interests of the partner (customer)
Executive involvement	When problems develop	Continuous
Project management style	Command and control	Collaborative
Financial approach	Sees revenue	Sees opportunity

Whom should you outsource to?

In answering this question, consider that you are transferring knowledge when you outsource. This knowledge can be valuable. It is possible that a vendor can cut and run after completing the outsourcing project; nondisclosure or noncompete agreements are more difficult to prosecute if the vendor is not in your home country. Therefore, the vendor must be a trusted one.

In choosing a vendor, you also must take care to protect your brand both through accountability for the vendor's actions and also by transference of the vendor's reputation. One example of non-IT outsourcing gone wrong recounts the outsourcing of 800-call answering for the travel bureau of a particular US eastern state. The state based the call center at one of its women's prisons. Although there is nothing wrong in providing work for the inmates, and they apparently provided excellent service, when word leaked out that potential travelers to the state were consulting with convicts, it hurt tourism for a time—particularly because the state had a reputation for a high crime rate.

Outsourcing overseas is becoming increasingly common, especially in Australia, India, Ireland, New Zealand, and former Soviet block countries for Japanese and British IT projects. But in dealing with vendors overseas, you must investigate several issues. For example, is the vendor competent and reliable?

You must also pay attention to the potential vendor's legal organization. For example, if you work with a subsidiary and have a complaint, the parent company can legally disconnect the subsidiary from itself in the event of a lawsuit, making it difficult to obtain remedies in the case of malpractice. Similarly, disputes with an overseas vendor might be more difficult to resolve because of cultural differences; legal remedies are also more complicated and more costly to obtain.

Whether the outsourcing is domestic or overseas, the chemistry and culture of vendor and client should mix. Vendors to whom you outsource should view your company as a partner, rather than a target for plunder. Table 1 sum-

marizes some differences between a vendor looking for a sale and a partner looking for a long-term relationship (C. Gearhards, "Achieving Success Through Effective Public/Private Sector Partnerships," Presentation to the CIO Institute, November 2002; http://www.techcouncil.org/whitepapers/achieve_success.pdf).

For example, an outsourcing partner should be interested in collaborative management of the project and

continuous executive involvement—not a command and control structure that excludes the customer with limited access to top management of the vendor. However, remain aware of cultural differences that affect the way international partners prefer to work.

WHAT IS OUTSOURCING?

Perhaps the earliest form of outsourcing was payroll processing. Today, IT organizations can outsource two basic types of work:

- explicit functions relevant to the operations of IT (for example, software development and infrastructure), and
- business operations that have direct impact on IT systems (for example, customer call centers and manufacturing).

For example, hiring a few consultants to serve as internal members of the IT organization is not true IT outsourcing. Transferring applications to servers that are physically located in a vendor's facility—where the vendor is responsible for the up-time, connectivity, and maintenance (of both hardware and software) with service-level agreements for performance—is an example of outsourcing an explicit IT function.

Business process outsourcing, on the other hand, can include outsourcing of a call center or help desk function, or even the computer security function. Although the third possibility might raise some eyebrows, there is some justification for outsourcing this type of work. Security expert Bruce Schneier notes that, in general, outsourced functions have one of three characteristics: "They are complex, they are important, or they are distasteful. Computer security reflects all three characteristics" (B. Schneier, "The Case for Outsourcing Security," *Computer*, Apr. 2002, pp. 20-21, 26). Moreover, computer security is a domain in which only the most expert knowledge is really helpful—knowledge that is generally only available from very specialized companies or a few experts.

WHY OUTSOURCE?

According to King, companies generally outsource IT to save costs, better focus on their core business, or because they consider the internal IT function inefficient, ineffective, or incompetent. From an economic standpoint, if you can consider an IT activity a commodity, there is little justification for performing it internally. For example, payroll processing is typically a commodity IT activity. In these cases, a focused vendor should be able to provide the service at a higher level of quality, lower cost, or both. In other words, outsourcing takes advantage of economies of scale provided by another business specializing in that domain.

One study proposed that firms choose to outsource as the costs and disadvantages of the traditional permanent-employment arrangement become prohibitive because of increasing technological and environmental change (S. Slaughter and S. Ang, "Employment Outsourcing in Information Systems," *Comm. ACM*, July 1996, pp. 47-54). The study further notes that outsourcing provides firms with increasing flexibility.

WHERE SHOULD YOU OUTSOURCE?

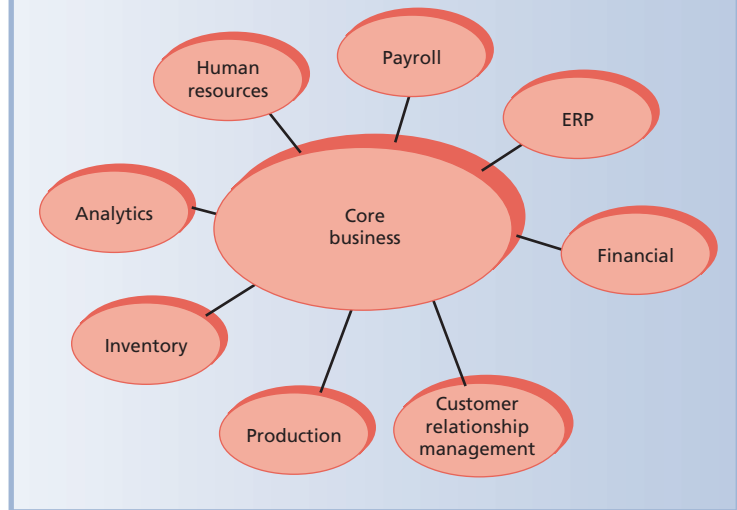
A commonly held view is that the market does not pay a company for doing things outside its core business, an idea similar to the economic notion that the market does not pay a company for diversifying risk. If you accept this premise, any IT function that is not part of a company's core business is a candidate for outsourcing.

For example, ERP (enterprise resource planning) systems might not be a company's specialty, therefore they are a likely candidate for outsourcing. On the other hand, a company such as Wal-Mart might require an ERP that can predict consumer behavior, which is therefore within its core business, and hence, unsuitable for outsourcing.

The CIO and IT managers must initially work closely with the chief operating officer and chief financial officer to determine the methodology for evaluating which functions to outsource. The CIO must engage the organization's executive leadership to clearly articulate the goals for outsourcing (for example, cost reduction, shared risk, or access to enhanced capability) while defining limitations or boundaries.

A variety of categorization models exist to differentiate between core and noncore functions. Cisco has employed the *core versus context* model, which states that core activities increase shareholder value and outsourcing them poses immense risk to the company. Context activities, in contrast, do not provide any competitive advantage (J. Bruno, "Getting Comfortable with Outsourcing," *Optimize*, Mar. 2002; <http://www.optimize.com/issue/005/mentors.htm>). Although each

Figure 1. IT functions outside of the core business are typical outsourcing candidates.



organization must internally agree to a definition of what is core to its business, any organization typically defines several functions as supporting; these are likely outsourcing candidates, as Figure 1 shows.

Although IT managers can initially consider these supporting IT functions as strong outsourcing candidates, they should assign a relative value to each, representing its proximity to the organization's core functions.

For those items considered outsourcing candidates, IT managers should review each function to consider

- the risk to the business of down time or failure,
- relative cost reduction in outsourcing (the return on investment),
- complexity of migrating the function to an outside provider,
- competitive advantage provided by the function (you might want to keep such a function in-house to safeguard the advantage),
- skills or proximity required to meet business needs and expectations, and
- the organization's ability to manage the vendor and process to meet business needs.

These factors together define a relative benefit to the organization.

Mapping these two values (benefit and proximity to the core) for each function into a matrix such as the one in Figure 2 can help categorize the outsourcing candidates.

For example, cases with a low benefit have a low justification for outsourcing. In the case where the benefit is high and the function is not within the core business, managers

Figure 2. Matrix that maps proximity to core and relative benefit.

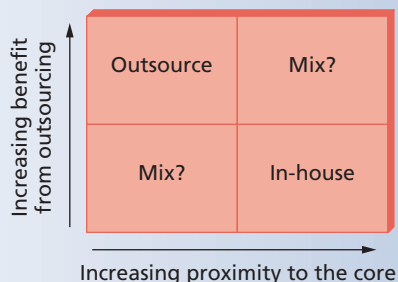
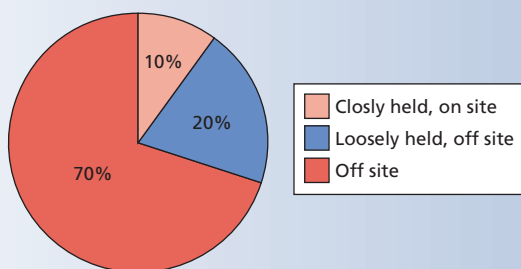


Figure 3. Three-tier strategy for outsourcing.



have a strong incentive to outsource. However, when either the function is outside of core and the potential outsourcing benefit is low, or when the potential outsourcing benefit is high but the function is within the core business, managers have to exercise their judgment.

Furthermore, consider that today's core function might be tomorrow's auxiliary function. The converse might also be true. Foresight, then, might suggest that managers outsource a core IT function if it will not remain within the core. Nor would managers outsource a noncore function if they perceived benefit in performing that function in-house, gaining domain expertise and then incorporating that function into the core business.

There is an opposing view on outsourcing, however. Some IT managers believe that they should only outsource those aspects of the IT operation that they know well. In these situations, they are not at a disadvantage in negotiating the contract and in managing the delivery process. Conversely, then, those who have this viewpoint might not outsource something outside of their core—even if there was economic benefit to doing so.

For those functions considered strong outsourcing candidates, the CIO could next evaluate whether to outsource

onshore, near shore, or offshore. A model such as the R³ (risk, return, and rating) model lets the user review the variability of various geographic scenarios to best determine the appropriate hemisphere (R. Kleinhammer, T. Nelsen, and A.J. Warner, "Balancing the Risks," *Darwin*, June 2003; <http://www.darwinmag.com/read/060103/risk.html>). This model develops a head-to-head comparison of the various costs and complexities across the three geographies to generate a relative index.

WHEN SHOULD YOU OUTSOURCE?

When should you outsource and at what stage of the process? People usually recognize a need for outsourcing when it is too late, that is, when the project is too far along for any benefit in outsourcing to be realized. Therefore, make the decision to outsource as early as possible. This involves considering outsourcing any function at an early stage and weighing the cost-benefit ratio of waiting too long to decide.

How to outsource

Many companies fail in the execution of strategic outsourcing, and there are several ways to do so. For example, organization culture mismatches lead to failure. In addition, morale damage can occur if outsourcing involves any layoffs.

Yet another reason for failure is outsourcing for the wrong reasons. For example, outsourcing cannot absolve you of your responsibility. You can't outsource your problems.

There are several standard methodologies for outsourcing software development. For example, consider the three-tier model. Figure 3 depicts a recommended distribution of outsourced work in which an IT organization holds 10 percent of the work closely, having the vendor's staff perform the work on site under close supervision. Another 20 percent of the effort could also occur on site; a combination of vendor and in-house staff would do this work under normal supervision. The remaining 70 percent of the project goes off site, under the vendor's control.

In any case, when a vendor performs outsourced work off site, it is critical to have your own agent at the site. A good rule of thumb is to have one of your staff members for every 20 vendor employees working off site. This rule of 20 is largely based on the incremental cost of housing an employee offshore to supervise the work.

One other consideration: Outsourcing can be a learning endeavor. It might seem rather mercenary to bring in a vendor, outsource to them, learn from them, and then jettison them. But this is a risk that vendors understand, and they factor it into their margins.

In any case, we suggest the following best practices and rules of thumb:

- When negotiating the contract and throughout the project life cycle, carefully set expectations.
- Have a quality management infrastructure in place.

- For costing purposes, we have found that overseas projects cost about \$25 per hour and US projects cost about \$75 per hour.
- Whether the project is outsourced domestically or overseas, have your own employee at the vendor's site—one for every 20 vendor employees.
- In the case of overseas outsourcing, account for language, culture, and time-of-day differences.

Successful projects have a detailed process for project definition and specification development. This ensures the unambiguous definition of the project methodology, scope, schedule, and deliverables, and a clear understanding by both parties. Contract negotiations serve as a mechanism for building shared understanding (R. Heeks and colleagues, "Synching or Sinking: Global Software Outsourcing Relationships," *IEEE Software*, Mar.-Apr. 2001, pp. 54-60).

O utsourcing is not for the faint of heart and does not fit most situations. However, in those cases where outsourcing fits, proper supervision and careful attention to expectations and details can ensure that it provides a significant business advantage. ■

Phillip A. Laplante is an associate professor of software engineering at Penn State University's Great Valley School of Graduate Professional Studies in Malvern, Penn., and the founding director of the CIO Insitute. Contact him at plaplante@psu.edu.

Tom Costello is a principal at UpStreme Inc. in Malvern, Penn. Contact him at tcostello@upstreme.com.

Pawan Singh is president at Quantum Performance Solutions in Bethlehem, Penn. Contact him at psingh@periscopeiq.com.

Sudi Bindiganavile is director of information services at Primavera Systems Inc. in Bala Cynwyd, Penn. Contact him at sbindiganavile@primavera.com.

Mark Landon is CTO at Educational Directories Unlimited in Chester, Penn. Contact him at ml@edudirectories.com.

For further information on this or any other computing topic, visit our Digital Library at <http://computer.org/publications/dlib>.

SET INDUSTRY STANDARDS

wireless networks
gigabit Ethernet
enhanced parallel ports
802.11 FireWire
token rings

IEEE Computer Society members work together to define standards like IEEE 802, 1003, 1394, 1284, and many more.

HELP SHAPE FUTURE TECHNOLOGIES • JOIN AN IEEE COMPUTER SOCIETY STANDARDS WORKING GROUP AT

computer.org/standards/