CFO

Gaming the System

How a small outsourcing firm uses competition to unite its global community

Scott Leibs - CFO Magazine

Module Behavior

Software development is not usually positioned as a competitive sport, but there is very little that's usual about TopCoder Inc., the Glastonbury, Connecticut-based firm that has pioneered this novel approach to outsourcing. Rather than create software, the company has nurtured a global community of independent designers and coders who compete against each other to write small software modules that are ultimately assembled into large programs. By reaching out to MiG-29, nhzp339, and 130,000 others like them, TopCoder has come up with an ingenious solution to a problem that plagues software vendors and corporate IT departments alike: how to maximize the efficiency of an army of highly paid experts.

It's the sort of capacity-utilization dilemma that most managers can appreciate. Do you staff up for peak workloads and risk idleness, or go lean and risk missed opportunities? TopCoder decided to go in a completely different direction. When it lands a corporate client, its employees serve as architects and project managers, developing high-level specifications for an application and determining how to build it from a series of modules.

Typically, about half of those modules will already exist in TopCoder's software library. It's in developing the other half that things get interesting. The company launches a contest around each module, posting the start and end dates and all other relevant information on its Website. At the appointed hour, any and all programmers interested in competing in that particular contest plunge in, each giving it his (and it's almost invariably his — there are very few females in the community) best shot. Each entry is reviewed by a panel of three judges (who are also community members). The winner and the second-place finisher collect cash and points, the rest lick their wounds and try again next time.

The result, says TopCoder, is rapid delivery of software that is less costly and of higher quality. No need for clients to fear that a boutique consultancy is letting the meter run: the company claims that it can produce applications in 100 fewer days than industry norms, at half the cost and at least twice the quality (based on the "constructive cost model," aka COCOMO, a common software-development benchmark).

Benchmarks, in fact, are a company hallmark. TopCoder tracks every community member on a wide range of statistics, from contests entered and won to money earned to quality and reliability scores. "But there is one thing we don't measure and never will," says company founder and CEO Jack

Hughes, "and that's the number of hours spent on development. We don't care about that; the focus is on quality."

By pushing the work out to a vast network of independent developers, who may be students, hobbyists, retirees, moonlighters, or full-time freelance programmers, TopCoder unshackles itself from the timecard blues. Competitors can sweat out how much time they do or don't put into developing a module; in the end all that matters is whether it's good enough to win and thus become part of the finished application.

"Competitive development of software is a groundbreaking innovation," says Grady Bryant, vice president of R&D at Verisign Inc., a TopCoder client. "At first I was skeptical, but the ability to tap into the most uniquely qualified minds is a huge advantage." Verisign, itself a vendor of security software, has turned to TopCoder for everything from security components to testing frameworks to an internal social-networking Website.

"This is as good an example of business-model innovation as you're going to find," agrees Saul Kaplan, executive director of the Rhode Island Economic Development Corp. and founder of the Business Innovation Factory, a nonprofit group that fosters collaborative innovation. "They've flipped the [software labor] problem on its head."

Hughes launched the company in 2000 and was keenly interested in avoiding a problem he had witnessed at his previous business, Tallan Inc. (which was acquired by CMGI at the peak of the dot-com bubble). At Tallan, he says, the complexities of managing 600 programmers convinced him that "the software-creation process was broken, it was too labor-intensive, too 'body-based' and inefficient."

Offshoring was beginning to take hold, but Hughes saw it not as a cure but simply a way to "turn the clock back on labor rates, temporarily." Instead, he began to think about how the Internet could reshape workforce management. "I started as a programmer," he says, "and I knew that good developers love to compete and compare and learn from each other."

So TopCoder was born as an online community in which developers went keyboard-to-keyboard simply for fun: it was three years before the company turned its focus to building software for corporate clients. But from the beginning, Hughes says, the company knew that it wanted to approach software creation as a manufacturing discipline, and looked to companies such as Toyota for inspiration. "The key to quality," Hughes says, "is to avoid monolithic systems in favor of component-

based systems." An emphasis on quality, he adds, will inevitably drive down costs and improve speed of delivery.

TopCoder gives clients several options for tapping its network of developers and its software library: they can job out a software project as they would to any other outsourcer, buy modules from the firm's software library, or even plug in to TopCoder's contest infrastructure directly, by launching their own competitions. In that scenario, TopCoder becomes a provider of labor, not software. Developing a global workforce that can cooperate even as it competes is not easy, says Verisign's Bryant, "so we ride over TopCoder's network in order to create our own."

Network News

The idea of leveraging a vast network of self-employed experts isn't unprecedented. A decade ago, Thomas Malone and Robert Laubacher of MIT predicted the advent of "the E-lance economy," a constantly evolving landscape of workers who would approach their professional lives based on projects rather than full-time jobs, and increasingly use the Internet to collaborate on a temporary basis before moving on to the next opportunity. Eden McCallum, a London-based consultancy, has a very small central staff that taps the expertise of a large network of independent consultants depending on a client's needs. And Procter & Gamble augments its traditional R&D with what it calls "C&D," or "connect and develop," a collection of networks that reach internal "technology entrepreneurs," top suppliers, business partners, retired scientists, technology-transfer specialists, and others who may have a ready brainstorm.

TopCoder takes that approach further, however, by harnessing the competitive fires of programmers to drive faster, higher-quality development. Beyond the benefits it brings to its outsourcing clients, Kaplan says the company should inspire all executives to pursue new solutions to organizational problems. "Companies should devote R&D to new business models just as they do to new products," he says. "A typical CEO today will need to preside over a changed business model three or four times in his career, but no one really knows how to do it. It's not taught in business schools, and there is much to learn about how to manage a workforce that is no longer just within the four walls of the organization."

"People thought we were crazy to have independent developers compete to build actual commercial software," Hughes says, "but this kind of virtual outsourcing is becoming huge and can go beyond IT. As jobs become more information-based, as travel and facilities costs rise, and as people become

more concerned about the environmental impact of workers traveling en masse to a central location, fostering self-selective groups of workers based on talents or skills provides many benefits."

But will they want to compete with the same relish as MiG-29? "Everyone is already competing on some level," Hughes says. By using the right metrics and incentives, and respecting the needs and motivations of the community it fosters, Hughes says many companies can follow at least part of his company's model. Bryant of Verisign predicts that competitors will emulate TopCoder's model. And why not? After all, as he says, "I'm sold."