



Strategies for Survival: The Software Talent Shortage¹

Avron Barr and Shirley Tessler
SCIP Software Industry Study²

The shortage of qualified software people has received a lot of press in recent months. However, the true nature of this problem is not widely understood. In company after company, programs and policies designed to address immediate recruiting and retention issues are short-sighted and likely to make the situation worse. Our advice is to take a long-term view towards IT personnel issues. This approach involves making your CEO aware of the competitive implications of IT weakness — a CEO who may still believe IT is not a core competency.

In February 1997, the Information Technology Association of America announced a study that estimated 190,000 open IT positions in the U.S., not including non-profit and public sector jobs. At a press conference in California this month, the ITAA reported that this year's survey showed 340,000 unfilled positions. At the same press briefing, Richard Daley, US Secretary of Commerce, raised the government's October 1997 estimate of a 1.1 million person shortfall in the IT workforce to 1.3 million over the next 10 years.

Ten years ago there was a surplus of hundreds of thousands of talented software people in the US and elsewhere. Defense and aerospace cutbacks in the federal government and the simultaneous staff reductions of large computer and communications firms like IBM, AT&T, Digital, Wang, NCR, etc., put many people out on the street. Coincidentally, during the late 80's, downsizing of IT staff was a common cost-cutting strategy in corporations in many industries. During the early 1990's, corporate computing did not look like a very attractive career to young people, and enrollments in computer science programs in the US dropped by 40% between 1986 and 1994.

Misconceptions about the Software Talent Shortage

During the same period (1986-94) in which computer science enrollments were declining, and in fact for most of the last three decades, demand has steadily risen for the people who can turn computing equipment into business value. Partly because the

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2. The Stanford Computer Industry Project is a long-term study of the computer/information industry, funded by the Alfred P. Sloan Foundation. <http://www-scip.stanford.edu/scip/>

growth in demand was masked by the massive layoffs in the late 80's and early '90's, the true nature of this shortage is widely misunderstood. Another factor contributing to the confusion is that, just as the displacement of software people was reaching its peak in the U.S. in 1990-91, Indian programmers appeared on the worldwide market at substantially reduced rates. Many people still believe that offshore outsourcing permanently displaced large numbers of laid-off American software engineers. In truth, over the subsequent five years those laid-off programmers were reabsorbed back into the IT workforce, and the effective cost of immigrant talent or offshore development caught up with domestic rates. People's perceptions, however, changed more slowly.

In fact, there are quite a few common misconceptions about the current software talent shortage:

- This shortage is not local to a geographical region or to the US – it is global. There are serious shortages of qualified people in at least a half dozen countries, including India, and there are no major untapped pools of talent abroad which are likely to impact the situation here.
- The shortage is not limited to Year 2000, Java, SAP or any technical specialty. It is also not limited to programmers, but includes systems architects, user interface designers, software project managers, systems analysts, software quality technicians, and a host of others.
- The shortage is not focused on high-tech industries. In fact, they were the last to feel the pinch.
- The shortage is not temporary and, because software talent is needed across so many different industries, the shortage not likely to be very sensitive to future economic cycles.
- There are no magic technologies that will soon make programmers unnecessary.
- Rising salaries will not draw enough new talent into the field.

Strategies for Survival

Thus, we believe the current situation marks the beginning of a new era in the way we approach enterprise computing. The ability to create the software needed to compete can no longer be taken for granted. Effective strategies for dealing with this kind of change go well beyond recruiting and compensation. They require a fundamental change in attitude about software at the highest levels of corporate management. Here are some general guidelines:

- This is not an HR/recruiting/retention problem, and HR cannot deal with this problem in isolation. Corporate IT and other software development groups, as well as top management and even Public Relations, must get involved in creating the kind of place that software people want to work. The changes required to survive are dramatic and expensive, and the won't happen unless top management shares the vision and works together.

- Money, in the form of salaries and bonuses, is important but not sufficient to attract or keep the talent you need for long. For most IT shops, the best talent is not longer even applying — you need to recruit the kids who are applying to Microsoft. The three most important things you can offer them are challenging projects, inspiring people to work for and work with, and a meaningful, recognized contribution to the enterprise.
- The way to recognize a contribution to a commercial enterprise is with a piece of the action. Salesman get a piece of the action. Executive management gets a piece of the action. The fact that it seems ridiculous that programmers might get some return on the fortunes their systems generate is indicative of old values and old thinking.
- Fixing old thinking and outdated attitudes needs to start at the top. Generally, CEO's respond best to fear, especially when asked to plan several quarters into the future. In some industries (like banking, travel, entertainment, newspapers, and retail auto sales), the fact that Bill Gates and his hordes of hotshot software engineers are now competitors is indeed creating an adequate level of fear and a new awareness of the strategic role of software. But, let's face it, most CEOs started their careers when programming staffs were recruited from the clerical ranks and the phrase "small matter of programming" wasn't a joke. They moved into upper management during the years when IT downsizing was in fashion — "not a core competency." Times have changed, and so must the boss's attitude toward software.
- Organizational changes are required. If your CIO still reports to the CFO, you're doomed — IT is no longer a productivity investment, it's a strategic weapon. Both the CIO and CTO should report directly to the CEO, and one of them should have a seat on the Board. Don't wait for Year 2000 disasters to make the case that the business now runs on technology and competes on the basis of software. It is in the company's interest to make sure technology is well-represented in business decisions at the highest level.
- Within the technology groups themselves, serious reorganizations which will make the company more attractive to highly-talented architects, developers and project managers should also be considered. Meaningful careers for these people must be apparent to potential recruits. Furthermore, the software staff has to get involved in recruiting, maybe even teaching classes at local schools (infiltration). Recruiting and retention must be included in the way management's performance is evaluated.
- The way that software is developed and maintained, the tools and equipment purchased, and even the types of projects undertaken may have to be re-thought in terms of their impact on attracting and keep the personnel who will create the company's future systems. Creating a modern, layered, distributed applications infrastructure, administered just like your database infrastructure, might be a step worth considering.

- Retaining and retraining the staff you currently have is a “no brainer.” After all, they know more about your business, organization and systems than new hires ever will. In general, they’re probably more talented on average than the people you are likely to be able to recruit. But how to retain these people? We recommend recruiting them — after all, everyone else is recruiting them in this era of “passive job seekers.” You have full-time recruiters to go to college campuses, so why not designate a number of full-time retention experts to focus on what will keep your software professionals working for you instead of for your competition. The fact that the first generation of programmers is starting to retire makes retention of your other employees even more important.
- Finally, we think that new kinds of relationships with IT services firms are likely to evolve very quickly. Obviously, some services firms are staffed with the very talent that corporate IT departments can no longer attract and are better able to offer the working environment and compensation schemes that will attract top-notch software people. As demand for software rises, corporations will want to form stronger bonds with their services providers, assuring availability of talent that is in demand elsewhere. Eventually, services firms will form long-term strategic partnerships with their corporate partners, taking a piece of the action themselves in return for exclusive commitment to a technology-enabled business opportunity.

Most firms will be resistant to transformation of this sort, of course. We’ve proposed a dramatically new vision of enterprise software and traumatic, expensive changes. Other consultants may recommend more straightforward actions, like giving the staff preemptive bonuses or offices with doors. We’ve offered a long-term perspective, but the situation is critical. The Mongols are at the gates, or rather, at Mr. Gates’.

Avron Barr and Shirley Tessler are strategy consultants to software organizations. Ms. Tessler has degrees from Wharton and Stanford in Finance and Computer Science. Much of her career has been in commercial banking and corporate finance. Mr. Barr studied Computer Science at Stanford, edited the four-volume *Handbook of Artificial Intelligence*, and founded a Silicon Valley software start-up in 1981. They are now principals of Aldo Ventures, Inc.

Since 1994, Barr and Tessler have been co-directing a study of the worldwide software industry at Stanford University's Computer Industry Project, on a grant from the Alfred P. Sloan Foundation. This four year project has systematically identified and analyzed the issues that will shape the commercial use of software, including piracy, patents, antitrust, project management, the Internet, globalization, litigation, software quality and project failures. Since the fall of 1996, their study has focused on the ramifications of the shortage of talented software people throughout the world.