

## IT industry needs new blood

### Computer science enrolment down

**Danny Bradbury**

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Canada's IT industry is looking underfed thanks to a lack of new expertise -- and that could affect companies' ability to perform, warn experts. The recently renamed Information Communications and Technology Council, tasked by the government with promoting technical skills in Canada, is proposing a broad set of initiatives to reverse the trend.

Figures from the Computing Research Association show computer science degree student numbers plummeting in the United States, and academics suggest the same is true in Canada. The number of incoming undergraduate students majoring in computer science fell by 70% between 2000 and 2005, according to the CRA's Taulbey survey.

"There has been a definite drop in enrolment in the past couple of years," agrees Michael Katchabaw, assistant professor at the University of Western Ontario's computer science department.

While enrolments fall, demand is increasing. The ICTC has compiled Statistics Canada figures on employment trends in the communications and technology sector and is concerned about the results. The labour force for this sector, which has been broadly rising since last summer, started dipping again in June, falling below September 2003 levels for the first time. The unemployment rate for professionals in this field has been falling since June 2003, and the most recent figures this summer suggest unemployment figures of about 2.75%. The council expects to see demand for 89,000 new hires in the next three to five years.

The problem presents Canadian companies with recruitment challenges. "We are experiencing some gaps on a number of fronts," says Carol Ariano, vice-president in human resources, global operations at Montreal-based IT services company CGI. The company is hiring hundreds of new people across all of its Canadian offices.

Technology skills are crucial to performance, warns Stephen Ibaraki, a board director at the Canadian Information Processing Society (CIPS).

"Because organizations are unable to get sufficient numbers of skilled workers, that will affect them," he says, warning of the potential impact on competitiveness and service delivery. "Organizations need to adapt very rapidly, and that ability is dependent on technology."

To make matters worse, experienced workers are retiring, Ms. Ariano warns. About 31,000 IT workers will retire or otherwise leave the industry within five years, according to the ICTC.

While this is a problem for Canadian industries across the board, Ms. Ariano argues it's a particular issue for IT because it's a young sector with falling graduate input. The skills base is being eroded at both ends.

Part of the reason enrolment is dropping off is perception. "Enrolments in post-secondary education in IT courses have dropped by around 50% because of the negative view of the IT sector," says Paul Swinwood, ICTC president.

The post-bubble crisis in IT has turned educators and students away from the sector and they are not recognizing its recovery, he warns. "In reality, there are 35,000 more people employed in Canada today than at the height of the boom in IT."

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Another misconception is that offshore outsourcing is starving the IT industry of jobs, warns a report from the U.S. Association of Computing Machinery. The report is skeptical about offshore outsourcing's effect on the IT job market, arguing that outsourcing is creating more job opportunities in the United States.

"We're seeing a demand for higher-end skills in Canada as a result of globalization," Mr. Swinwood says. "We're not programmers to the world. I think India's trying to take that place."

"Higher-end" means skills that mix technical expertise with business knowledge. In addition to traditional software development skills, CGI needs "technical people who can also function as management consultants. And preferably people with deep subject matter expertise." Project managers are in particularly high demand.

Figures from recruitment company Robert Half Technology bear this out. The company's 2007 Salary Survey found that salaries for Canadian project managers in consulting and systems integration range from \$74,000 to \$105,000 -- up 5.6% from last year's survey. Business systems analysts could expect to earn between \$61,750 and \$88,750, which is up 4.9%.

One solution to filling this shortfall, Mr. Ibaraki says, is as near as CIPS, which has a membership base of 6,000 practitioners. The other immediate solution could be immigration.

"Canada is a welcoming country for people with IT skills," Ms. Ariano says. "Increasingly, as we look at a smaller available workforce, people with appropriate qualifications from other countries are certainly welcome."

Mr. Swinwood would like to work with organizations, such as settlement agencies, to ensure people from overseas stand a better chance of attaining business-focused technical positions in companies.

"We want to impact the training they give so that when these people learn English, they're learning a business English," he says.

Many would argue the onus is on developing these skills within Canadian schools and universities. One key to that is co-op programs, which place students in companies for a portion of their study time. Mr. Swinwood encourages more of these programs.

"Our co-CEO Mike Lazaridis was a co-op student when he founded RIM, and we have close ties to the co-op programs at universities," says a spokesman for Research in Motion. The company's headquarters is next to the University of Waterloo, where Mr. Lazaridis studied.

Experiential development programs, where companies work directly with in-house student teams on commissioned projects, can also help students marry business and technology expertise early in their careers.

But these activities won't capture the imagination of high school students. "If the students aren't getting interested in IT at the K-12 level then you're slimming it mightily upstream when you want to get people involved at the higher education level," says Bobby Schnable, a member of the ACM's globalization task force.

Things may not be all bleak, though. Mr. Katchabaw says he sees the decline in new IT students bottoming out. Hopefully, inspired teaching and industry mentoring will help prime the pump to keep Canada's IT industry flowing, and replace the runoff as the older IT specialists begin to retire.

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