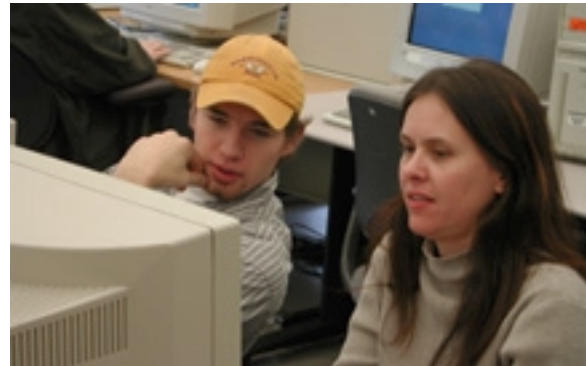


Sunday, January 14, 2001

Spreading the boom



Students Jake Goodrich and Shannon Hoffswell confer in a lab at UW's Department of Computer Science & Engineering.



Matt Ross, a Linux validation technician, works in an engineering laboratory at DuPont's Intel plant. A proposed technology institute in Tacoma would provide high-level talent for companies like Intel.

UW Tacoma technology institute would help sustain state's creative edge

by Edward D. Lazowska

Governor Gary Locke's proposal to create a "technology institute" at UW-Tacoma through a public/private partnership is an exciting initiative in which UW-Seattle – and especially my own program, UW's Department of Computer Science & Engineering – is delighted to be a partner.

Every recent study of high-tech economic development agrees that the Puget Sound region has joined Boston, Silicon Valley and a handful of other regions as centers of the high-tech boom. This high-tech boom is creating unprecedented prosperity for our region, and unprecedented opportunity for our children.

The benefits of this prosperity and opportunity are widespread, but they're concentrated in King County. The UW-Tacoma technology institute will play an important role in stimulating high-tech success in the South Sound region, and also in meeting the statewide demand for well-educated Bachelors graduates to drive our knowledge-based economy forward. It's also a key component of an emerging technology strategy for the state as a whole.

Why Tacoma?

Everything points to the South Sound region as "the next place" in Washington State for the high-tech boom to take hold. Tacoma's downtown renaissance is extraordinary. UW-Tacoma is thriving (it has been a prime contributor to the downtown renaissance), and its Computing & Software Systems degree program is poised for expansion. Through the Click! Network and other initiatives, broadband has become widely available in Tacoma, not only to businesses but to homes. Real estate is relatively inexpensive, traffic congestion is relatively light, and lifestyle assets are plentiful. Intel is expanding, and existing technology enterprises – such as Frank Russell, Fort Lewis, and Battelle, in addition to Intel – are being joined by a host of new entrants. UW-Tacoma is joined by Evergreen, PLU, UPS, and a host of community and technical colleges in meeting

educational needs. Business and political leaders – including members of the national delegation such as Norm Dicks and Adam Smith – are working together closely to make things happen. The Washington Software Alliance, on whose board I serve, recently opened a South Sound chapter to support technology businesses in the area. It's ready to happen in Tacoma!

The Role of UW-Tacoma

The "new economy" is knowledge-based. What this means is that the "content" of high-tech products is *intellectual* rather than physical. (Consider software!) So it's not surprising that the Washington Software Alliance finds that 75 percent of the jobs in Washington's software industry require either a Bachelor's or a Master's degree. (The Bureau of Labor Statistics cites a similar figure nationally.)

Industry values these Bachelors and Masters graduates not just for their skills, but for their well-balanced education. University of Washington graduates in any field – and from any campus – are exposed to the world of arts and humanities and science in ways that improve their ability to learn, their effectiveness as citizens, and their completeness as human beings. Last month, June 2000 UW Computer Engineering graduate Emma Brunskill was named a Rhodes Scholar, and December 2000 UW Computer Science graduate Kevin Zatloukal was named the nation's outstanding computer science undergraduate by the Computing Research Association. UW is the largest supplier of new college graduates in the nation to Microsoft, the largest supplier to Intel among its "focus schools," and the predominant supplier to many younger companies in our region. Art, Music, Architecture, and Computer Science graduates from our nationally unique computer animation curriculum (supported by the Advanced Technology Initiative) are in huge demand by regional and national animation houses. These achievements speak to the *well-balanced education* of University of Washington graduates.

This is what the University of Washington, through UW-Tacoma, brings to the South Sound region. UW-Tacoma partners with the region's outstanding community and technical colleges (Bates, Clover Park, Green River, Highline, Pierce, Olympic, and Tacoma) to produce strong Bachelors graduates. The Computing & Software Systems program was designed by UW-Tacoma in collaboration with UW-Seattle and UW-Bothell. UW-Seattle actively assists with faculty recruiting. UW-Tacoma students participate in internships as part of their education. These internships tend to be with local companies, which increases the likelihood that graduates will take permanent positions locally. (The conversion rate from internships to permanent positions is very high.)

Today, Washington ranks among the *bottom 10 states in the nation* in our capacity to grant bachelor's and master's degrees. With support from the Governor and the Legislature, the state's colleges and universities have increased the number of technology graduates by more than 40% in the past three years alone. But the workforce gap is still huge – as is the *opportunity gap* for the children of our state. Creation of the UW-Tacoma technology institute is one important response.

Part of a State Technology Strategy

The UW-Tacoma technology institute is one element of an emerging technology strategy for the state as a whole. While this strategy has many dimensions – ranging from K-12 education to telecommunications infrastructure to digital government – I'm going to focus here on the role of research universities, and in particular the University of Washington.

Studies of high-tech economic development cite the presence of strong research institutions as the No. 1 success factor. (Workforce is No 2; quality of life is No. 3.) Boston has Harvard and MIT; the Research Triangle is named after Duke, UNC, and NC State; Silicon Valley has Berkeley and Stanford; and our state has the University of Washington.

The most essential contribution of the University of Washington is the education that it provides. *UW is in the opportunity business* – we provide one of the finest educations in the nation to the citizens of Washington, at a bargain-basement price. My own program has more than 400 undergraduate majors and 275 graduate majors, and annually enrolls nearly 3,000 students in introductory courses and 5,000 students in extension courses.

In addition, UW brings new technologies to the region – for example, ARPANET, NSFNET/Internet, Internet2, and modern integrated circuit design. We help attract companies to locate here, sometimes with extraordinary effects – for example, engineers from DECwest Engineering, which my program helped to attract roughly 20 years ago, went on to form the core of Microsoft's Windows NT group, and to found and/or staff many successful startups such as BSQUARE, Equator, F5, and Singingfish.com. We create new companies through our faculty, students, and discoveries – 10 in just the past four years from my program alone, in fields as diverse as web performance (Appliant.com), network security (Asta Networks), embedded system software (Consystant), analog integrated circuits (Impinj), XML-based data integration (Nimble Technology), and back-end system performance optimization (Performant). We license our innovations to existing companies – technologies such as the first full-text Web search engine (WebCrawler) and the first Web meta-search engine (MetaCrawler). And we provide leadership – ranging, in the case of my own program, from the state K-20 Educational Telecommunications Network initiative to ongoing efforts with UW-Bothell and UW-Tacoma.

It can't last, unless steps are taken. On a per-student basis, UW's state budget is *20 percent below* the average of its Olympia-defined peer institutions. (State support accounts for only 16% of UW's budget.) Annual tuition for Washington residents is only \$3,761. (In focus groups, \$10,000 is the usual guess!) And where states such as California, Georgia, Illinois, Indiana, Michigan, North Carolina, and Wisconsin are investing hundreds of millions of dollars in new high-tech initiatives centered at their research universities, nothing analogous has happened in Washington.

The state technology strategy will address this gap. *It must*, if Washington is to have a 21st century economy, with 21st century opportunities for her citizens.

Ed Lazowska is the Bill & Melinda Gates chair of computer science at the University of Washington. He serves on the boards of directors of the Washington Software Alliance and the Technology Alliance, on the Technical Advisory Board for Microsoft Research, and as a board member or technical advisor to a number of high-tech startups and venture funds.

