

Graduate School Review

of the

Institute of Technology, University of Washington, Tacoma

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Executive Summary

The Committee, which visited the University of Washington, Tacoma's Institute of Technology on November 5-6, 2007, reviewed the BA and BS degrees in Computing and Software Systems, the Masters in Computing and Software Systems, as well as two minor offerings, and the recently approved BS in Computer Engineering. The Committee found that the Institute's programs are following a rational curricular plan, students are attracted to the programs, and there is close interaction with local industry. We met many dedicated faculty and we spoke to enthusiastic students. The Committee also found serious problems largely involving senior leadership of the Institute.

Three areas of concern are detailed in the report: A shared mission and vision is lacking, causing faculty and staff to diffuse effort by starting new programs and recruiting students when they might better focus effort on implementing existing programs well. We recommend a moratorium on new programs (see Shared Mission/Shared Vision). The Institute's culture is characterized by top-heavy administration, insiders-and-outsiders cliques, poor communication, little inclusiveness and a general crisis of identity. We recommend a wholesale revision of departmental governance (see Departmental Culture). The promotion and tenure process is broken; there is no shared understanding as to "what it takes to get tenure," the research expectations—to the extent we could understand them—are unrealistic, teaching seems not to be valued, and decisions seem to be almost arbitrary. We recommend immediate repair to the P&T process (see Promotion and Tenure). A series of smaller issues is treated at the end.

The Committee was frustrated because many of the difficulties that it discovered had been identified previously in an earlier Institute review. Rather than being resolved, the problems continue, or have become worse. The Committee believes immediate change is necessary. In the interest of providing computational education to the South Sound region, the Committee recommends continuation of the programs under "Provisional Status," and that another review be conducted in three years. We sincerely hope that that review confirms what we believe: The dedicated faculty of the Institute can put their house in order.

Introduction

The Institute is in serious trouble. Those are strong words intended to emphasize that although the committee is recommending “Provisional Status”, it very nearly chose the “Suspend” option. The words are also intended to lend importance to the remainder of this report so it doesn’t meet the same fate as the 2003 Review Report, namely, being ignored. The Institute *urgently* needs remedial action, much as a company in receivership must stop “business as usual” and immediately adopt new practices that will return it to health. The Committee believes the faculty has the talent and expertise to make the necessary changes, allowing it to continue to meet the needs of the South Sound region and beyond.

The Committee determined as a result of its site visit on November 5-6, 2007 to the UWT campus (agenda attached) that the situation at the Institute is a complex one. There was, of course, positive testimony indicating that the Institute has made substantial strides in creating a set of degree programs responsive to UWT’s objective of supporting the South Sound’s educational needs. At the other extreme was negative testimony indicating that the Institute’s senior leadership is failing to establish an environment conducive to sustaining the Institute’s long-term educational mission. To address this topic, we group the issues under three headings:

- Shared Mission, Shared Vision
- Departmental Culture
- Promotion and Tenure

These are not independent topics – they interconnect substantially, but they describe areas in need of urgent attention. Finally, there are a series of smaller issues about which the Committee believes it can offer helpful advice. They are treated last. The recommendations are listed at the end.

Shared Mission, Shared Vision

During much of the Institute’s history it has been engaged in “institution building”. One outcome of that process might have been the creation of a clear mission and its adoption by faculty and staff. In an earlier review three and half years ago Lazowska and Notkin wrote as their “bottom line”, “it is the responsibility of *every faculty member* to participate in defining and executing that mission. Every faculty member must view him/herself as a faculty member of the *Institute*, and must buy into the Institute’s role in the South Sound region—in terms of student demographic, employer demographic, legislative expectations, pipeline issues, diversity issues, and so forth.” [Their emphasis.] This has still not happened,¹ and its urgency has become even greater.

Formulating the vision and the mission for a new organization is obviously difficult and the Institute’s difficulties are tied up with UWT’s parallel effort to formulate its broader

¹ It’s not literally true that there is no mission or vision statement. The Institute’s Web site publishes the text shown in the companion figure.

mission. Nevertheless, the lack of a common understanding of the Institute's identity and goals is having serious consequences on the faculty and staff.

Our Mission

The Institute of Technology:

- * Provides high-quality education by engaging students in discovery, application, and integration of knowledge, focusing on computing science and engineering disciplines.
- * Serves as a center of excellence for the computing science and engineering disciplines primarily for the local and state communities.
- * Proactively supports a diverse population of current and future students, with emphasis on non-traditional and underrepresented students.
- * Enhances the vitality and prosperity of our local and state community

Our Vision

The Institute of Technology is a unique public-private partnership in higher education that serves as a catalyst for generating energy and interest in computing science and engineering disciplines by:

- * Addressing the need to ensure the availability of well-educated bachelors and masters-level computing science and engineering professionals in numbers sufficient to support and fuel the growth of Washington's high-tech industries.
- * Providing every Washington citizen access and opportunity to prepare for, and advance in, outstanding and rewarding technology careers.

Page from the Institute's Web site.

Placement of Effort

The faculty members believe they are expected to serve the existing students, build new programs and recruit new students into those programs. Which is most important? What is the prioritization? How should faculty balance their effort among these and other expectations? Both the UWT and the Institute's administration are apparently pressured externally by the legislature to add FTEs. These pressures, felt by the faculty, translate directly into new expansion plans before the recent expansions are completed and regularized. The result is chaos. Among the more passionately expressed comments offered during our interviews were:

- "There is very little institutional buffering from external forces; we are constantly on the start-up."
- "We are trying to do too many things for too many people."
- "It doesn't feel like an academic institution – so much emphasis on recruiting students and starting programs, not enough on education quality."

The stresses created by this external focus are exacerbated because within the Institute there appears to be wide variation among faculty, especially senior faculty who should be leading, on what they think the Institute should be. We heard:

- "Senior faculty do not have a shared vision. We have strong-minded senior faculty who do not agree. We need to take the time to do it. There is too much growth and not enough time on existing programs."
- "This program is young and diverse beyond words."
- "Morale is low – both faculty and staff."

Realistic ways need to be found to match external needs/administrator demands with faculty capabilities so that the program can stabilize.

Crisis Mode

Faculty and staff are overworked maintaining the existing programs and expanding into new ones. One result is that aspects of the normal stewardship of the academic unit are not being fulfilled. We were asked many questions in our Charge such as

- 5) How well does the program governance structure function for faculty, students and staff?
- 6) Is the primarily informal mentoring of junior faculty effective (page 14)? What is the unit's timeline to formalize this mentoring process?
- 7) Are there specific examples of how the staff has participated in professional development activities?

but addressing such issues is basically “off the radar”. Too many other, more urgent issues vie for faculty attention for anyone to be concerned about such topics. Yet, shared governance, formalized mentoring process, and professional development are reasonable expectations of the faculty and staff, and they are essential components of a sustained academic organization. In our view they are casualties of the continuing “crisis mode,” and cannot be addressed until a mission is adopted and something approximating “steady state” is achieved.

Thoughtful faculty mentioned other “off radar” topics that they thought needed to be addressed, such as “assessing teaching practices” and “evaluating the effectiveness of the programs.” And there are others.

Harmful To Recruiting

Both student and faculty recruiting are harmed by the lack of a vision and mission. The Lazowska/Notkin report advised the Institute to prefer bachelors and masters degrees with specialties within each, to a proliferation of separate degrees. The recommended approach is not only more flexible both for students and faculty, but it probably leads to economies of scale since classes will be fuller, etc. There are ample examples of such degree programs, including the MS in Computer Science of Rochester Institute of Technology with its predefined and student-defined “clusters of specialization.” The current structure is the opposite of that and creates confusion.

At the highest level “The Institute of Technology” name is itself unspecific enough to cause some confusion. From a student perspective, there is confusion regarding what the degrees are. We were frequently told that students and employers couldn't understand what a CSS degree entailed compared, say, to a CS degree. Further, there is confusion among the degrees as well; how do CSS, IT and CE relate? As a concrete example, the MS degree advertises an emphasis on “distributed systems.” Is this really the proper focus for the degree, given the difficulty in attracting students to the program, or is it a latent artifact of the program's creation? Once the Institute articulates a crisp vision of the kind of graduates it wants to produce, then that can be packaged for the public information.

At the faculty recruiting level the issue concerns “allocation of slots” to degree programs. The Institute is a computer science and engineering department, and generally speaking the faculty should be capable of teaching courses in each of its programs. So, when recruiting, the positions should be advertised and hired into the Institute rather than into a degree program. However, this year’s recruiting specifies in its ad three different positions one each assigned to CSS, CE and IT, with different contact persons. The ad has an extremely narrow specification of job requirements, implying that a person meeting the criteria for one cannot possibly fulfill the duties of another. Such recruiting, which misses the point that the specialties pursued by the students can be covered by a versatile faculty, limits the population of potential faculty candidates, and if applied to teaching responsibilities, will surely introduce imbalances. Enclosing each of the degrees in a silo is counter-productive.

Responsiveness to Local Industry

Local industry strongly supports the Institute, and through its Industrial Advisory Board the Institute has formalized contact with local industry. The Board was well informed about, and generous with its praise of the Institute. The sentiment was that the Institute has been a definite benefit to Tacoma and the South Sound area, and the Board was eager to extend the benefits. Though strongly positive, a thread through the Board’s testimony viewed the Institute as ignoring Industry.

A consistent comment was that the Institute must emphasize quality. Graduates do find jobs, but the view was expressed, “we don’t want a trade school; we need rigor; we need creative people” and “move past ‘work force in Pierce County’ attitude.” The Advisory Board has advised the Institute that the faculty need to do more research. This advice was intended to improve the quality of the faculty and the educational experience, but there was the secondary goal that Industry “wants to collaborate with Institute faculty, building teams to solve problems.” It was recommended that faculty members contact their Advisory Board member to set up a lunch meeting to learn about each other’s interests and explore possibilities for collaboration.

There was a sentiment expressed by several on the Board that faculty members are not interested in solving local problems. Also expressed by several was the view that the faculty needs more national and international research visibility,

- “... no one has heard of the Institute.”
- "A serious graduate program requires a shift to research."

These two sentiments—more locally-relevant research, more national visibility—appear contradictory, since national research reputations tend to be built on solving problems of (research) community-wide interest, whereas local problems generally have only local impact. Nevertheless, the view was expressed that focus on problems of local interest – port-related problems, for example – could result in the Institute becoming a widely known center of excellence in that domain. The tension is one to consider carefully when formulating a mission.

Departmental Culture

The Institute is failing to provide an environment of high job satisfaction, *esprit de corps*, collegiality and common commitment. The faculty and staff do not see themselves as players on a team with commonly held goals, shared aspirations and mutual respect. But the issue is not whether everyone is a “happy camper”. The consequences are serious. The senior faculty seem to be largely oblivious to this problem, but the further down the ranks one goes, the greater the awareness of the problem is, and the greater the impact on one’s job. The staff is often impacted the greatest.

Without doubt one of the worst manifestations of the “culture problem” are the P&T difficulties; we have an entire section dedicated to it below. Other problems are covered in this section.

Hierarchical Structure

Most, though not all, interviewees stated that the Institute organization was hierarchical with senior faculty making all of the major decisions. Additionally, the structure gives the appearance of being administratively top-heavy. (The “run it like a business” model has consistently failed, at least in computer science.) The hierarchy has resulted in fairly widespread perception by both staff and junior faculty that their work and contributions were not valued. It was also apparent that few of the senior faculty members were aware of the level of discontent among the ranks.

Shared governance is a long-standing principle of successful academic units; it has the advantage of using all of the available talent, it engenders “buy in” from the faculty for the unit’s mission, it fosters mutual respect and collegiality that make the hard work rewarding, and on and on. Recall that Lazowska/Notkin said, “it is the responsibility of *every faculty member* to participate in defining and executing that mission” It is a basic principle of academics: if they don’t participate in *defining*, they won’t participate in *executing*.

Cliques

Another related problem reported in the interviews with a variety of groups (junior faculty, senior faculty, administrative faculty, and staff) is that the Institute definitely has two cliques: the insiders, who are privy to and contribute to decisions made within the Institute, versus the outsiders, who feel excluded from decision making and are informed of decisions much later. For example, several interviewees commented that they were “out of the loop” and that “not all faculty are treated equally.” Moreover, a couple of interviewees actually sought information from the committee that was easily obtainable from senior members of the Institute. This leads to a sense of isolation that greatly impacts performance. It has even gotten to the point that several junior faculty view participation in open houses as an imposition, especially since they think that “few [non-administrative] senior faculty show up for these events.”

Balance of Responsibilities

Like the confusion that results from simultaneously trying to maintain existing programs, creating new ones and recruiting students that was mentioned in Mission/Vision, the

standard academic issue of balancing teaching, research and service is also confused, a victim of the “culture problem.” First, there is not sufficient respect for teaching, based on the numerous comments received, but the teaching load is substantial; there is little support in the form of graders and teaching assistants, and the students are academically diverse. The role that research and scholarship play for all faculty has not been agreed upon; is research important only to get tenure? How is service apportioned – are junior faculty given negligible responsibilities to allow time for becoming good teachers and firing up their research programs? The issue is not so much the exact answer to these questions, but rather that the faculty must come to a consensus on them and see themselves as all having the “same job” with similar expectations for teaching, research and service. Of serious concern to the Committee was the apparent lack of research and scholarship among some of the senior faculty; though administrative responsibilities have traditionally come with the expectation of a “down tick” in research and scholarly activity, zero activity exacerbates cultural tensions.

The matter of time allocated to teaching and research was on younger faculty’s minds. To a person, they said that the workload for teaching was so great that it was effectively impossible to do research during the academic year. (This is not whining, it’s consistent with the teaching load as compared to other universities coupled with the special UWT teaching challenges of the last paragraph.) We heard,

- "We need more help learning how to teach in this environment, because of the widely diverse student backgrounds, abilities, and needs. We need to find by ourselves ways to maximize our teaching productivity so that we have time to do our research."
- “Research is a spare time activity in the summer.”
- “Research is possible only in spare moments; I waited to visit a colleague over summer.”
- “Keeping up contacts in research community is tough with everything else that has to be done.”

Whatever the consensus is about balancing teaching and research, the solution must be realistic.

Gender Issues

The Committee did not come to any definitive understanding of gender issues in the Institute. When asked a direct question, the usual answer was “no, gender is not an issue here.” On the other hand, some answers, and reports of specific experiences suggested otherwise. We note that all of the full professors and associate professors are male, and all but one of the women are lecturers. Most, but definitely not all of the senior faculty seemed unaware that gender could be an issue. For example, it appears that at no point did any senior faculty member consider whether it would be useful to name a female mentor for a female assistant professor; the CRA-W (Computer Research Association – Women, a national professional organization) has such a mentoring program to aid faculties with few senior women.

Some students observed that the timing of the courses is extremely difficult for parents with small children, a situation that was reported on only by women. Some classes, essential for degree requirements, are scheduled 7:00-9:15 PM. (In the Winter 08 term TCSS143, 322 (one section), 325, 371 and 435 are all offered in this time slot.) There is no daycare (or rather evening care) at these times, and we heard stories of finding friends and family to help out, as well as the consequences to the children. The problem, though easy enough to attend to, seems to speak loudly to being unaware of such matters.

There was other indirect evidence, but no clear picture. Perhaps the best way to conclude is to observe that the gender profile of the Institute differs substantially from that of other computer science departments, and that there is evidence that when a department decides to commit to fixing it – MIT is the poster school here – a reasonable balance can be achieved. That is, if there is no specific gender problem, there is a general one.

Promotion and Tenure

Promotion and tenure issues are a consequence of the absence of a shared understanding about the Institute's standards, measures of success, and so forth ... basically, its culture. We have discussed several topics above—the hierarchical structure, the “them and us” of cliques, the chaos caused by always being in start-up—that should all be considered as contributing factors here.

Of the five assistant professors hired since 2001, one was tenured last year, two are “in process”, one is leaving at the end of the year having chosen not to be considered for promotion, and the most recent hire is in his second year. (Because of the small size of the population and considerations of confidentiality, this section is less well “attributed” than other portions of the report.) All of the assistant professors have concerns over the promotion and tenure process.

Expectations for Promotion and Tenure

In broad terms the Faculty Handbook describes the requirements for promotion and tenure, but the translation of those general guidelines to the specific case of the Institute at UWT—in common parlance, “what it takes to get tenure here”—is not established. This fact is perhaps the most serious consequence of the “culture problem.”

All current and former junior faculty weighed-in on the topic. Distilling the interviewees' perceptions, the expectations for tenure are unrealistic relative to the balance between teaching and research. This manifests itself in several ways. First, as related earlier the teaching burden—substantial load, little assistance, diverse student population—leaves virtually no time for research during the academic year, yet the expectation far exceeds the research one can accomplish in one's “spare time;” the quarter release time in the second year hardly makes up for this problem. Second, quality teaching seems not to be a plus, and poor teaching seems not to be a minus. Is teaching valued? Third, other valuable manifestations of research—advising student research, publishing with students, collaborating on problem solving with local industry—apparently don't “count,” either. Fourth, not all research areas are deemed respectable, and the quality of the research—despite peer-review and other evidences of quality—seems to be a subject that the voting

senior faculty cannot agree upon. We heard disturbing reports of candidate's research *methodologies* being questioned at tenure meetings; avoiding such microanalysis by the uninformed is why experts are asked for letters of evaluation. Fifth, and perhaps most disturbing, there is the view that it is not what you achieve in teaching, research and service, but how you present yourself to the (insiders on the) faculty that determines tenure.

It is not uncommon for junior faculty to misunderstand the expectations for tenure, so there are mentors. The troubling fact is that the forgoing is the result of the Institute's informal mentoring process.

Mentoring

The Institute reports using an informal mentoring process, and as just noted, it seems not to be working at all. The junior faculty either have, or have had mentors. How these mentors are chosen seems to match the Institute's hierarchical structure rather than the needs of the junior faculty. In addition, the lack of consensus for "what it takes to get tenure" imply that it is unlikely that senior faculty would agree on the advice given. So how one is directed may be harmful or beneficial depending upon senior faculty's ability to communicate and respect each other's judgment. These problems become more profound when faculty are reviewed for promotion and tenure. The criteria must be agreed-upon before any mentoring system can work. Then the process can be formalized.

P & T Process

There are disturbing questions about the actual process. Because at least two cases are under consideration at the moment, we were unwilling to probe too deeply to avoid any appearance of affecting the process. However, we are concerned on several points. First, there seemed to be small discrepancies between university and Institute guidelines on the mechanics of the process; we trust this will be fixed. Second, deliberations about P & T decisions seem to be influenced by a general lack of communication and hostility among senior faculty. Third, and more seriously, tenure decisions are being delayed in a variety of ways: We understand that there have been cases where,

- faculty who are apparently ready to be considered are advised to delay applying,
- senior faculty attempt to influence candidates to back out of the tenure process
- promotion is postponed into the "sixth year"

Without further investigation, it is not possible to condemn the process, but the evidence we received is extremely troubling.

Other Topics

Everyone who has read the report this far must keep in mind that the situation is not so gloomy everywhere. The Institute is viewed along with other units of UWT as having been a transformational asset to Tacoma. Dedicated faculty members teach a solid curriculum that is educating traditional and non-traditional students who speak highly of their classes, the faculty and their time in the program. And there is good news on a range of other topics from the enviable support of local industry to a quality computing

infrastructure. (This may be the first review on record of a computer science department in which no one complained about computing resources or operation.)

Expansion

The committee is concerned that the push to expand into new programs—Masters in Information Systems, Information Assurance and others—is definitely premature. A faculty member expressed this sentiment well at the exit interview saying: "We have been too willing to say yes around here." A moratorium on expansion of programs is advisable. However, raising the Institute's vision beyond the South Sound, with the goal of attracting more students to the existing programs seems advisable. Larger classes are possible, and have a favorable marginal cost.

CIDR

The Center for Instructional Development and Research plays a valuable role on the Seattle campus. Teaching is at least as important at UWT, and the challenges are perhaps greater given the diversity of the student body. Junior faculty and instructors commented on the lack of availability of mentoring and assistance in teaching. CIDR needs to provide services on the UWT campus. It is impractical to advise UWT faculty to seek help from CIDR by traveling to Seattle. The time commitment alone can outweigh the value of the help received.

Name Change

There is a broad consensus among the students, faculty, and this review committee, that the name "Computing and Software Systems" is a source of confusion, though the Industrial Advisory Board did not think it was a problem. The degree is effectively a computer science degree. Changing its name to Computer Science and Systems makes it clearer and has the advantage of keeping the "CSS" abbreviation. Though beneficial, this change is not required to resolve the foregoing problems; possibly it should be delayed until it becomes the Institute's most serious problem.

Accreditation

It is typical for Computer Engineering programs to seek and maintain ABET accreditation, just as other engineering specialties are accredited. Accreditation of Computer Science and Information Technology programs is also common, though less universal. The committee recognizes the benefits that accreditation can provide the Institute through outside validation of current quality and future needs. In particular, it can define appropriate faculty workloads, because "currency in the field" is one of the crucial factors in CE program quality. The committee recommends that if the faculty decide to go for the accreditation process that the Institute provide the resources necessary to support them.

Recommendations and Summary

The Committee's findings imply a set of recommendations. The problem to be addressed should be clear in all cases given the findings.

Recommendations:

1. Adopt a moratorium on the establishment of new programs; consolidation is worthy of consideration.
2. Replace the hierarchical, top-heavy administrative structure with a more open, egalitarian, and communicative form of Institute governance that encourages contributions and attracts commitment.
3. Define and embrace a shared mission and shared vision of the Institute and its programs.
4. Hire faculty to teach across programs rather than assigning them to “degree slots.”
5. Increase collaboration with the Industry Advisory Board, especially in regards to research.
6. Define the Institute’s criteria for tenure (in accordance with the APT guidelines), focusing on realistic expectations for teaching, research and service, respect all forms of scholarship generally recognized in the field, and ensure that all faculty accept the criteria.
7. Commit the Institute to formal mentoring of teaching for all junior faculty.
8. Expand the Institute’s horizons beyond the South Sound to embrace southwest Washington to the Columbia.
9. Consider changing the name of Computer Software Systems degree to Computer Science & Systems, though this is not urgent.

There are many other enhancements that could be considered, and these can be revisited once the Institute’s fundamentals are aligned.