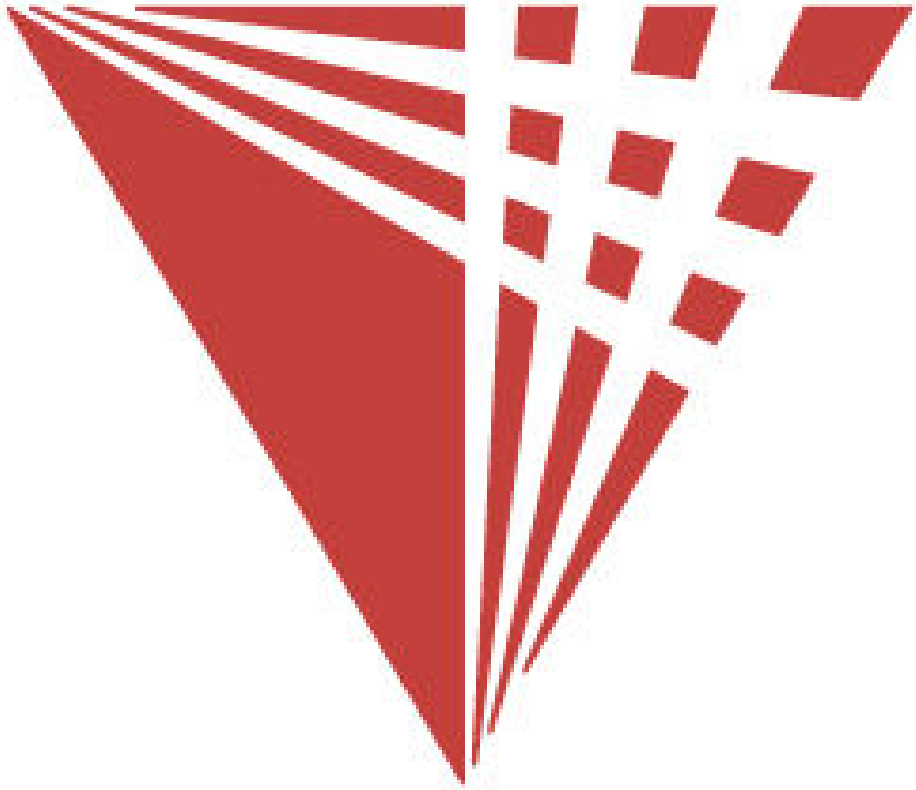

ILLINOIS INSTITUTE
OF TECHNOLOGY

Many Voices, One Vision

Undergraduate Committee of Student Initiatives: Report on Many Voices, One Vision

November 8 and 9, 2008

UNDERGRADUATE COMMITTEE OF STUDENT INITIATIVES

Committee Members

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Discussion was led by Steering Committee Representative:

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Chemical Engineering and
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UNDERGRADUATE COMMITTEE OF STUDENT INITIATIVES: REPORT ON MANY VOICES, ONE VISION

Summary of Comments from the Undergraduate Committee

Thirteen undergraduate student leaders from a diverse background of experiences came together on the weekend of November 8-9th to analyze the vision statement of the President, his core principles in achieving that vision, and the four subcategories the President outlined as key to the solution.

We have decided to follow the Steering Committee model of grouping initiatives and ideas into those four subcategories: Strengthening the Core, Supporting the Core, the creation of an Innovation Sandbox, and the Blue Ocean concept.

We are aware that since our input only covers that of the undergraduate student body, some of our ideas may be taken less seriously. However, we did our best to represent the views of as many in the university we could, and are hopeful that our input will be taken as seriously as the other bodies that make up our university and its future.

Strengthening the Core

Our experience at IIT is completely different from that of a tenured professor or long-term staff member. The average student attends IIT for a 4-year period, and is therefore handicapped (relative to a professor) in his or her ability to think of $50 million research initiatives. Such was the goal of the Steering Committee, to come up with major research and education initiatives that encompassed many parts of the university and would promote our excellence in important fields in the world of tomorrow. While the Undergraduate Committee agreed in principle with many of these initiatives, the students felt that most of the "promising areas of investment" the President wanted would only wither and die without first placing small but time-consuming investment in the following major initiatives:

- **IPRO 2.0**
  As an evolution of the current IPRO system, the new IPRO program would involve some critical adjustments that can make it more sustainable, attractive to investors and industry, and create a resounding impact. Financing for this initiative would be similar to the Steering Committee's plan of creating a Tech Park or Idea Barn. However, several inexpensive initiative recommendations were also detailed that are critical.

- **Communication and the Professor Initiative**
  Discussion of IIT's Core Strengths led to consensus that IIT's major education Blue Ocean initiative could be of the grandest nature, but never succeed unless the underlying issues in the student/faculty relationship were addressed. We are proposing changes in the Intro to the Profession (ITP) classes, class requirements for all majors, and an end to "lecture style" teaching.

- **Other Initiatives**
  Similar to the Steering Committee's results, many initiatives were certainly worthy of future consideration and detailing.

IPRO 2.0

In every discussion of the university's strengths and weaknesses, the IPRO program was at the root of the discussion. We felt that every University goal, strength, vision, and even the Blue Ocean and Innovation Sandbox ideas are discussing the very essence of what IPRO is and should be. It needs an upgrade that involves considerably more resources and focus.

We propose that significantly more resources are provided to ensure these student/faculty/business programs are a success. This would include (as was discussed in the Steering Committee notes) a Tech Park or IdeaBarn that provides IPRO teams (and others involved in the innovation sandbox) the physical space that does not hamper their success, but whose sole purpose is to "bend-over-backwards" to help (create a we-help-you vision for such a building infrastructure). It would include labs, computer technology, physical space to test prototype designs, work benches, garages, 24-hour printing/copying/marketing labs, and a major inventory space of physical and intellectual resources that students/faculty would have access to. The Steering Committee had similar comments.

Every major problem in the city of Chicago should have an IPRO team. Every technology and professional business related to IIT's programs should sponsor an IPRO team. That said, these businesses and government institutions need to know that the IPRO teams will be productive. We can be more productive in three ways:

1. IPRO becomes a year-long program, instead of 2 semester long programs, or at least the majority of projects are year-long. The IPRO Office is making progress this semester in reducing red tape and structure that dampens innovation. However, while the remaining reports, meetings, and presentations are necessary for any business project, the time allotted for such an undertaking as an IPRO is insufficient. Most groups spend so much time writing reports and preparing presentations that they never have time, funding, or intellectual resources (from an involved faculty/business member) to accomplish anything meaningful in a semester. In particular, the amount of time required outside of "class time" to succeed in an IPRO was determined to far outweigh most IIT classes. Therefore, it should also be worth more credits to reinforce the importance of an IPRO in both an individual's education and in its impact for potential investors.

2. Faculty involvement in IPROs should be a requirement of a department, not voluntary, and the proper adjustments/incentives need to be made for those faculty involved. IPROs that have more faculty-involvement consistently see higher productivity because of increased guidance, support, and intellect. The current involvement of faculty ranges from extremely active to rarely present. The latter of the two is more likely. For most hardworking faculty, there are no incentives to run an IPRO, which consumes time that they could be working to earn tenure. Adjustments need to be made to include faculty in the process and to institutionalize IPRO into their career plans at IIT. If we want IPRO to be a major focus of IIT, then it needs to be weighted higher in a Professor's *required* objectives.

3. Thirdly, a common complaint is that the purpose of an IPRO is to write a good report and do well in the final presentation, not to actually accomplish anything. We believe that a more involved Professor will be much better at evaluating a group's final output than the IPRO Day judges, and they need to only take the final project presentation as a small part of the group's overall grade. Too many groups have received top marks in presentations (and A letter grades) without actually doing anything and the Undergraduate Committee accounted this many times from personal experiences.

IPROs need to be involved in four key areas: industry, City of Chicago, global problems, and the university. IPROs are not gaining full potential in these areas. In particular, the City of Chicago and the university are IPROs with so much potential because they solve tangible problems that exist in our daily activity.

On-campus IPROs would be a particularly good area of investment because they require fewer resources and less non-university contact. A student board should be created under the Provost's Office, and overseen by someone like the Associate Provost, that looks at university goals and project initiatives, or identifies university problems, and then creates a "Craigslist" of potential IPROs that work to solve these problems or accomplish these goals and projects. This board wouldn't fix the problems, but only identify them and create IPRO opportunities for students that would vastly improve the campus. These IPROs would have a resounding impact on the campus, particularly since students could carry these IPROs through to completion and all of IIT would be able to see the results.

The aforementioned major changes to the IPRO will vastly improve their quality and impact.

Communication and the Professor Initiative
Background

Communication is a buzzword used so often in the discussion of our university goals and vision. We want great communication in interdisciplinary work, between staff and students, students and faculty, faculty and staff. However, many of IIT's problems stem from poor communication in these areas, and it is our opinion that fundraising for major initiatives is only one part of a successful institution, and that undertaking a communication initiative will act as a catalyst for success.

One major strength of IIT is that we don't waste time commencing the education of our students. Students begin their education in their majors with their Introduction to the Profession (ITP) classes. While acceptable in theory, these classes are not living up to their potential. The type of material taught is different in each major (which is a problem in itself), but many choose not to truly introduce students to their profession: some majors teach computer programming to engineers for entire semesters of the ITP or help them prepare for the Pumpkin Launch. We don't feel that this material is unimportant, but it certainly isn't what a freshman expects of a class marketed as an "introduction to the profession." Every undergraduate agreed that students don't learn enough about their departments or possible career path while at IIT, let alone in their 1st year.

It was also understood that students need to start researching and gaining hands-on experience much earlier in their undergraduate years, and that competing universities like MIT expected research as a requirement for learning.

Proposal

We propose a uniform structure of the ITP class that will produce better communication between faculty and students in their department, as well as a better education in the 1st year experience. All professors are to be involved in an ITP at some point. One professor would still run the class, but every professor in the department would be required, and have the opportunity, to present on their unique field of research and study, as well as to meet the 1st year students in the classroom. By the end of one semester of such a program, all faculty and 1st year students in their department would be familiar with one another. Even more importantly, students would learn about what career they'd like to have after reviewing a host of different fields of study and what research they can get involved in from the very first semester, and of course they would also know who to contact about doing it. We also feel that such an introduction requires Professors' investment in selling their ideas to the students, because they want to attract as many students to their research as possible. Lastly, such an ITP would help raise awareness of what groundbreaking things are happening at IIT through each incoming undergraduate class.

One undergraduate report also noted that Duke University professor's sit-in on their fellow professor's classes, much like a principal does at the high school level. These "sit-

in Professors" critique the lecturer on how to improve his/her teaching methods, as well as learn what types of things their fellow professors do in the classroom. It was our consensus that Professors are often uninformed about what their peers are doing in the classroom and lack any resources or required opportunities to improve their teaching of students. This consensus was expressed by many who saw political science and psychology professors as far better teachers than their colleagues in engineering and science, and that their inspirational teaching methods resulted in many students feeling uninterested in their choice of discipline and leaving for the humanities and social science fields.

IIT students should be required to take a communications course on writing and public speaking in a 1-semester course. Both international and domestic students are extremely intelligent, but are still lacking the necessary skills to communicate their ideas to the world, including their professors and peers.

Lastly, classrooms need to be fundamentally altered. IIT students graduate thinking like engineers, but too often without having actually solved a problem physically in the real world. Many alumni find that they know the text book, but are uncertain when they need to do the work hands-on. Studies show that people retain more information by doing than by any combination of seeing and hearing. IIT students should have access to both, but current lectures tend to stick to whiteboard and power point presentations. Although teaching aides like these were revolutionary once upon a time, they are far surpassed when students exercise their learning. The IPRO is supposed to demonstrate IIT's commitment to this style of learning but doesn't go far enough. An example of what the Undergraduate Committee meant by this style of learning is provided in the following example for chemical engineers, and was provided by a faculty member:

- In the Heat and Mass Operations class, students spend countless hours reading about heat loss through a surface, but instead of requiring tons of homework on this coursework, students should analyze the heat loss through the windows of Perlstein Hall. How much energy does IIT lose per day in December through these windows? And to follow-up, what can be done to reduce these costs?

Chemical engineers are trained to solve these types of problems. Perhaps they do this project together as a class moving around Perlstein Hall. And the benefits are endless: they make students more invested in solving their university's problems, they are more interested in the class and material, they have a higher rate of retention, and IIT can begin analyzing many of the problems that would normally require an outside consultant.

Other Initiatives

1. <u>24-hour top quality University computer printing, scanning, marketing, and program enabled lab for all students, staff, and faculty</u>. Current computer labs are inadequate, inconsistent, and not universally available. Computer labs on campus are inconsistent in that each lab has a particular strength and weakness. For example, Crown Hall has excellent AutoCad and large-scale photo printing, but is incapable of running Matlab (which Siegel currently has), and neither is available 24 hours for all students. It is an issue of red tape that discourages students working on their differing projects (that require different needs) during all hours of the week.

2. Current student merit-based scholarships through the Leadership Academy and Departments. Many students are able to afford IIT because of generous scholarship assistance. However, for maintaining student retention and providing incentives for higher student involvement in academia and extracurricular activities, we recommend more application/interview based programs be available through currently existing programs like the Leadership Academy that provide continued incentive for students unable to earn a Leadership Academy Scholarship or Resident Advisor position. More than 200 applications are received for each of these programs, but each program is unable to select more than 15 of these applicants each year. We also recommend that each Department have such a program that rewards involved professionals. We **do not** recommend that any of these be full tuition, but mainly focused on recognition. For example, the Leadership Academy might have a separate group of scholars that are recognized for their merit, but which also receive the additional reward of a $1,000 scholarship for continued involvement in their community and development of their leadership skills.

3. Continue improving and constructing major campus facilities that are regularly regarded negatively: the Athletics facility, MSV, and the academic units. Probably the most expensive of all initiatives and the least effective in improving IIT's distinction and visibility, but still very important for one of the Core Principles: focusing on students.

4. Better relationship with companies: Real support from industry for undergraduate education appears lacking. The stories of Motorola being an active part of the IIT education a decade ago for some degrees are still legendary. Some universities have facilities nearby or on campus for NASA, General Motors, etc. These companies provided research funds for universities and in exchange recruit a large number of students.

5. Consensus on specific Steering Committee initiatives: Students supported investing more in the Pritzker and Wanger Institute ideas, felt strongly in support of the teaching-tenure track, and were for placing greater emphasis on enabling groups like Formula Hybrid and the Robotics Club to perform.

Supporting the Core

The Undergraduate Committee first discussed two improvements that must be made for the university to succeed. Following this discussion they found that they agreed entirely with *most* of the recommendations from the Steering Committee.

Undergraduate Committee

Every person in the university can name three or more departments at IIT with which they have had problems. Frustrations with each department fluctuate from year to year. These problems cannot be fixed by hiring more people or patching up the problem with half-effort solutions. To sum up all the problems of every staff department in Main Building, the Health Center, Perlstein Hall, Keating, the HUB, and the MTCC, one word was chosen: Communication.

Offices need to be more communicative and accountable. We propose that every department have a handbook (that is also available online) that outlines what each department is responsible for, exactly what each person in their department is responsible for, and outlining the things they are not responsible for. New people need to be properly trained on these handbooks, and secret shoppers should be patrolling departments weekly to find out where problems exist and correct them. Consequences **must be** enforced to ensure that repeated discrepancies are not tolerated.

When new programs are planned, make sure they are properly supported before implementation: examples include Banner, One-Stop-Shop, etc. And make sure that all departments understand exactly what they are responsible for when they begin a project so that participants are held accountable.

Following this same thought process, a number of interdepartmental communication problems revolve around the check/payment process. Anyone should be able to go to my.iit.edu and find out exactly which department is working on their check. Such an online system would prevent the "blame game" and again, enforce accountability.

Lastly, departments need to publicly state monthly, semester, and yearly goals and expectations online. Once these goals are published for all to see; departments will live up to them or endure the ensuing consequences. For example, if Athletics proclaimed that intramurals will finally be offered by the end of the fall semester 2008, Athletics would have to follow through or risk being reported to the Dean of Students. If the Dean of Students fails to follow through with consequences, then the Vice President is approached, and so on…

Steering Committee

The summary put forth by the Supporting the Core Subcommittee of the Steering Committee summarizes and goes further into detail on every comment the Undergraduate Committee would have stated. We emphasize that this may be the most important part of the strategic planning process as we go forward. We can entice as

much fundraising as we want, but we will never truly change as a university until their recommendations are met. The student committee would also like to greatly emphasize that the Focus Group Appendix I is an incredible document that truly breaks down problems into areas and provides recommendations, and that these should be included in the report to the President.

Something that we already addressed but is certainly related to Supporting the Core is the initiative for good student/faculty relationships (Communications and the Professor). The current relationship is not positive. For students, it is an issue of customer service; the general feeling is that we are a nuisance to faculty and waste their time, but why don't we deserve more of their time when we pay $100,000 to go here? For faculty, they have so much work to do; how can they continue to do more work with no additional compensation? We have already provided possible initiatives in the strengthening the core portion, but the importance is that this relationship is strained and needs to be resolved.

Innovation Sandbox

The Undergraduate Committee concurred with the Steering Committee's proposal. However, a number of small disagreements or other possibilities arose when discussing the Life Cycle of the Innovation Sandbox.

1. We were in full support of an IdeaBarn solution, but noted that such an investment needs to be tooled to also support IPROs, student organizations, and other student-led projects that should be allowed free access to the space and inventory.
2. There should not be a standard class credit or monetary value placed on anyone who wants to be involved in such a project as the innovation sandbox. If someone feels that such a substitution is required then we want to be supportive of that, but we hesitate to say that x amount of credit hours on a project will achieve a good result. We know that in many cases this would work, but in many projects it would also enable people to waste time. It requires more discussion.
    a. It was a mixed conversation. While we felt that a credit amount would lower the innovative idea's value, we also felt strongly that IIT students don't have time for such a project with their current required class structure. We address some solutions to this in the Blue Ocean section.
3. We really liked the idea of community involvement in the "Green-lighting" process. In fact, we felt that there should be an "Idea Craigslist" that is constantly updated with ideas for university feedback and ways for people to get involved. This is also true for all university research projects. By placing all research and innovation sandbox ideas on one site, campus approval can be gauged and applications for research will significantly rise, resulting in a better selection of research assistants.
4. Recognition for these innovative ideas is critical.
    a. There almost needs to be a Nobel Prize of IIT in which inventors and entrepreneurs are rewarded, not just on a successful completion, but like the actual prize, for what they've done so far.
    b. A majority of recognition must come from the media.

Blue Ocean

The Blue Ocean ideas that the Undergraduate Committee came up with were exciting, but we lacked time to formulate the ideas into a plan. However, some of the ideas or topics for future university engagement are listed in two separate categories below: Blue Ocean ideas that revolve around our educational model, and ideas for potential research that will have far-reaching effects on the future.

Blue Ocean ideas for education

- **Flexibility in schedules**: IIT creates course bulletin schedules for majors in both 4-year and 5-year formats. Most students want the opportunity in their schedules to participate in internships, co-ops, research, student organizations, and non-major courses, but find resistance from departments to lowering the number of required classes. By the same token, a student might stay a 5th year if their scholarship were to last a 5th, as it does in the Leadership Academy (4 years full tuition from the 1st year of acceptance into the program). In order to offset the costs, perhaps when a student decides to attend IIT, they choose a 5-year or 4-year program (and have the opportunity to switch) so that their scholarships are able to be disbursed evenly over 5 years. This would encourage students to take a more well-rounded course load and engage in their community.

- **Classroom to Industry:** Professors currently teach directly from their notes and preferred textbook, and prepare students to become future researchers and professors one day. We don't do enough to prepare students for the world of industry.
    - The proposal: Tailor all degrees towards training students for specific companies that might sponsor an IIT degree program. Examples might include NASA, Army, Air Force, GM, Ford, Boeing, BP, UOP, Sargent & Lundy, Motorola, Microsoft, Google, etc. Substitute required courses and fill them with internship requirements or research requirements for the companies that sponsor each department's programs. While this may seem like we are selling our students, the bottom line is that this would definitely improve our students knowledge of what they should know to work in industry.

- **Rotation of Majors**: Similar to a medical school program or industry contract (BP puts college students on a 3-year rotation where they spend 9 month sessions gaining experience in 4 different fields of BP before choosing their career), students would attend IIT and spend their first 2 years rotating through the basics of each major (perhaps focusing on a different major per semester for a total of 4 majors). Then they would choose the major that best fits their individual goals after having viewed the possibilities of each major. In this way, students would have the benefit of flexibility of choosing their major and learn more of the fundamentals of different career paths, but still start earlier than many schools in learning college/major material.

- **Individual Design of Majors:** To benefit students wishing for a more well-rounded education, as well as those looking for a mesh of 2 degrees, IIT would be the first technology school to follow the liberal arts school method of helping each student pick a major (not based on a department). For instance, a student could graduate with a degree in social and environmental impacts of chemical engineering, and their required classes would be uniquely chosen through their advisor and educational services. Such an example would probably require a fair mix of chemical engineering, sociology, environmental engineering, and political science courses, perhaps even some communications.

- **International Aim**: We have such a large number of international students, yet we don't prepare our students to be a part of the global community. Foreign language courses should be required for the first 2 years, and then students should study abroad for at least 1 semester or summer semester of their third year (preferably in the country whose language they have studied). We would be training our students to be engaged in a global world and culture.
    - Going along with the Global Aim idea, IIT should open a satellite school in Dubai (for example) where international and IIT students can go to earn a US-accredited IIT degree. Many countries would love to have an American school presence, and it would also provide a unique opportunity for our students and faculty to travel between schools.
    - The Chicago Council on Global Affairs brings many important international figures to the city. IIT needs to make a concerted effort to host these conferences (for the French Ambassador, the US Economic Advisor for Asia, etc.). More research needs to be done to determine how one holds such a conference, but it would certainly bring a global name to IIT as a regular host.

Blue Ocean of the Future

- Get our "foot in the door" into solving every Chicago problem.

- Build the greenest (LEED certified) campus in the nation.

- Aim our technology research at the future of global communication
    - The Star Trek idea: Provide the technology that not only allows video conferencing, but for individuals to simulate live interaction with one another. For example, when a company has a business meeting, they can simulate the board room and actually feel as if they are seeing and shaking hands with the other members. What if people could shake hands from across the globe, and to take it one step further, if they could produce visual effects of having someone actually in the room? Such a simulation or exercise would be capable of creating a physical, viewable, and personable being from across the globe.

- The possibilities of a world that can wirelessly transmit energy and electricity. The applications are not just immense for the consumer, but imagine the renewable and sustainable energy impact that solar panels would have if they could be place in orbit around earth (or even the sun) and then transmit this energy back to earth.

- Predict disease and cancer mutations ahead of time: This would be fairly hard to do, but what if IIT could develop the biomedical process that simulates mutations of diseases and works in advance at creating the antidotes or cures (mutations of AIDS, breast cancer, etc)?

- Engineering focused on improving the world's impoverished nations and making these designs an economic success.

- All weight machines in IIT's athletic facility would generate energy for each lift, rotation on a bike, etc., and this gym would be able to power part of Keating! IIT could have the world's first electric power producing gym. And IIT could sell the designs to gyms around the globe. Our students could even gain scholarship money for the amount of energy they produce.

- Aim to create true productivity for increasingly popular social networking sites and alternate realities like "Second Life."
    - Have more classes at IIT on the Social Effects of Technology and aim to make these technologies (that currently produce nothing of value) productive.