Engineering College Council Meeting
April 4-5, 2013
The Cornell Club - New York City

Members Present: Jim Becker, Lance Collins, Sarah Fischell, Greg Galvin, Michael Goguen, Frank Huband, Brian Kushner, Ivan Lustig, Jim McCormick, Howard Morgan, Evelyn Taylor Pearson, Jim Ricotta, Bob Shaw, Dan Simpkins, Sherri Stuewer, Duane Stiller, John Swanson, David Welch, Jim Wrightson, Todd Zion

Emeriti Present: Ken Arnold, Joe Bonventre, Charlie Brown, Jay Carter, Sam Fleming, Jim Hauslein, Jack Neafsey, Bill Shreve

The meeting presentations and materials can be found at:
https://confluence.cornell.edu/display/ECC/2013+Spring+ECC+Meeting

Username: eccmeeting@gmail.com
Password: eccmeeting#

Welcome and Introductions
Lance Collins, Dean of Engineering, welcomed the Council to the Spring '13 ECC meeting held at the Cornell Club in New York City for the first time, and indicated that the theme would be "The Cornell Tech Masters Degrees". He added that the Council members would be asked to weigh in on each degrees' value proposition for industry, as well as their effectiveness for preparing graduates to be successful entrepreneurs. Lance also announced Jim McCormick's generous contribution to the Teaching Excellence Institute. Duane Stiller, ECC chair, thanked Jim for his challenge to the Council to support this teaching excellence initiative. Two new Council members were introduced: Howard Morgan, First Round Capital, Cornell Ph.D. '68 ORIE; and Jim Ricotta, Verdasys Inc., Cornell B.S. '81 EE. Duane reminded the group that it is a council, and not a board, and in order for the council to be effective, it is important that the ECC members be actively engaged and provide insight and guidance to Lance. Duane thanked Lance for being open to the suggestions and feedback of the alumni and the Council. Lance requested that during the Executive Session that the ECC members provide him with feedback on the frequency of holding the ECC meetings in New York City.

Newly Created Two-Year Dual Cornell-Technion Masters in Connective Media – Value of Interdisciplinary and Multi-Institutional Program
Facilitated by Claire Cardie, Director of Cornell Information Science Program
David Shmoys, Professor, School of Operations Research and Information Engineering, and Department of Computer Science
Shie Manor, Professor of Electrical Engineering, Technion (via Skype)

Claire Cardie gave an overview of the Cornell two-year M.S. degree in Information Systems with a specialization in Connective Media. Students completing this degree will receive both a Cornell degree and a Technion degree for satisfying the same set of requirements. This degree made it through the rigorous approval process in Fall 2012 and was recently approved at the State level by SUNY. The degree will launch in Fall 2014.

"Connective Media" is the first of three hub degrees that TCII currently plans to offer. The second and third hubs are: "Healthy Life" and "The Built Environment". The three hub degrees share a set of basic technology and business courses. The degrees are interdisciplinary with a strong focus on getting students involved early in a large-scale entrepreneurial project with an affiliated company. This project

will replace a formal Master's thesis. Applicants to the MS program will preferably hold a bachelor's degree with a major in a science or engineering discipline. The MS degree will be obtained over four, full-time semesters (two years) and require 60 academic credits. David Shmoys noted that connective media focuses on extracting and using information from a variety of media data sources. This is a degree that is meant to hold both the sociological aspects and technical aspects together to put students in a position to think about where the new cutting edge technologies will be and to drive industry growth.

Shie Manor participated in the meeting via Skype and gave an overview of the hubs. He explained that the focus of these hubs is to promote close collaborations among students. Claire Cardie pointed out that it was a challenge because the two institutions had to agree upon a curriculum. David Shmoys added that Technion drafted a curriculum that Cornell, in turn, worked on. He noted that the M.S. in Information Systems with a specialization in Connective Media was one of the easier hubs to establish. The scope of the core of this hub resides in the IS, CS, and ECE departments.

David Shmoys mentioned that the soonest they could conceive of offering another degree would be the Fall of 2015. The decision to launch another degree will be determined by hiring. He noted that Cornell Tech is unique and there's no other university quite like it. David also pointed out that initial stages of the marketing have already begun. Shie Manor indicated that these degrees will probably not be marketed heavily to Technion undergrads because of the cost of tuition and living expenses.

David pointed out that at first, they are expecting the faculty who are based at one of the two campuses to spend 2-3 years at the NYC campus. Currently there are three different streams of hiring taking place: Cornell hiring for MEng degrees (CS, ECE, IS, ORIE); Cornell hiring for the new joint MS degrees in JTCII; and Technion hiring for the new joint MS degrees in JTCII.

Comments on Johnson School
- How does the Johnson School's efforts intersect this?
- David indicated that an accelerated one-year MBA is also being planned in New York City. The program will cover a mix of business and technology, with a focus on innovation.

Comments on evolution of hubs
- With everything that's changing how will courses be able to change fast enough to keep up?
- Claire pointed out that over time the hub foci will evolve and we'll rely on the faculty and knowledge of existing research directions to influence the direction of the classes. These hubs are potentially not permanent. They were designed to be something that can last for 5 years, but perhaps not for 10 years. So over time, the hub foci will change.

Lance Collins asked for the Council's perspective on the following question:

What mix of technical material, hub domain material and project would they recommend in this 2-year program?

Comments on curriculum:
- Need to marry curriculum with the pragmatic side of what companies need. Key criteria of this is to keep things super fresh.
- Curriculum needs to keep up with changes in technology. Carnegie Mellon does this well with gaming. It has integrated this well with the integration for art, graphics and modern computer science. Consider having an explicit current topics type of course.

- The students need to learn in teams. RIT is doing this well. One of the challenges is working across time and space (it's not going to be a classroom experience, but rather a project experience).
- David Shmoys asked the Council if the proposed curriculum has the right balance of courses.
- They seem very academic. They should be structured so that the students can do problem solving.
- The Master's degree is useful for learning how to learn. Applicable skills for problem solving are very important.
- David Shmoys noted that one concern is the number of courses. Do we have the right balance of courses and projects for this two-year degree?
- This seems very academic. It would be good to create an entirely new model for the students that is much closer to what they would find if they were thrown into the water in a company to work on a problem and they had to learn a lot of things along the way in order to solve that problem. And they are not only focused on the problem but on a whole set of connected issues (e.g., security and privacy).
- It seems a little heavy on the course work. Learning how to learn is also very important.

Comments on computer security:
- Computer security will be a very hot topic and an enormous opportunity for us.
- Lance asked Shie about Technion's expertise in computer security and privacy.
- Shie responded that it's definitely going to part of a hub (computer security and privacy).
- The area of computer security and privacy is going to be one of the biggest issues of the next decade. How will this program help us produce solutions that will be viable? Shie indicated that in terms of security and privacy Technion has outstanding strengths and will work with Cornell in that area.

Comments on global experience:
- Projects should be a global experience.
- Engineers often lack awareness of how to communicate internationally which is crucial.
- Lance added that NYC is a global city.
- Engineers often lack an awareness of the cross-cultural and communication aspects of project work. Because of the Technion partnership, this could be an opportunity to work on projects internationally.
- The types of projects that this hub is going to produce will certainly involve working with Asia and the ability to communicate globally will be crucial. This is an opportunity for New York companies to emerge to potentially provide our strength in the U.S., in the soft sciences, and technologies that can be exported abroad.

Comments on communication skills:
- It's not necessarily going to be a classroom experience, but a project experience.
- It doesn't necessarily come naturally to engineers to know how to socialize in a way that allows them to effectively communicate, cooperate and produce something of value across time and space.

MEng/MPS Degrees at Cornell Tech in CS, ECE, IS and ORIE – Combining Technical Depth with Business Savvy
Facilitated by Dan Huttenlocher, Vice Provost and Dean, Cornell Tech
Rajit Manohar, Associate Dean for Academic Affairs, Cornell Tech
Greg Pass, Founding Entrepreneurial Officer of Cornell Tech

Dan Huttenlocher facilitated a discussion on the re-invented MEng/MPS Degrees. He indicated that there is a set of degree programs in various stages of planning. The first one discussed in the morning was the 2-year degree programs with the Technion planned for the Fall of 2014. Additionally, we have a set of Cornell one-year Master's degrees. The CS version of this degree is currently being offered to a small set of students that we refer to as the beta class that started in January 2013. Dan indicated that he would value the Council's feedback on these programs already underway.

Dan introduced Rajit Manohar who gave an overview of the CS M.Eng./MPS (Master's of Professional Studies) degree program and requirements. The New York City CS M.Eng. students satisfy the Ithaca CS M.Eng. graduation requirements. He emphasized that Cornell Tech strives to combine Cornell's academic excellence and technical expertise with business savvy and real-world experience. The programs are designed to adapt to the changing global market for people who want to impact the world. Course credits from the Ithaca campus are the same as those from Cornell Tech. "Cornell Tech is organized to support flexible and dynamic interdisciplinary instruction instead of traditional academic departments. World-class academics, each of whom has entrepreneurial experience, teach courses handcrafted to fit the unique mission of Cornell Tech and build deep expertise in the fundamentals and uses of digital technologies".

Greg Pass discussed the practicum (open forum) part of this program in which students participate in a weekly active discussion or working session with a leading practitioner who has impacted the world through their entrepreneurial efforts. Friday practicums feature very broad-minded guests such as practitioners, entrepreneurs, designers, storytellers, VCs. It's a chance for the students to be inspired by entrepreneurs. They have also kicked-off cooperative projects.

During the first week of school, all students at Cornell Tech select semester-long projects with local companies or organizations. The organizations, including startups, mature companies, and nonprofits, propose projects featuring real-world challenges and opportunities drawn from their businesses, and provide a project mentor to give practical advice to the students. These "real-world projects give local organizations: meaningful, early connections to exceptional prospective recruits. A lightweight means to influence the direction of research at Cornell Tech, leading to further opportunities for collaboration and commercialization. Fresh perspectives on relevant opportunities and challenges, and potentially valuable intellectual property. A well-scoped, low-friction means to collaborate with a university. A leadership opportunity to help raise the standard of cooperative education."

There were four teams of students who were matched with 31 projects which they, in turn, ranked in order of their preferences. This was followed by a match day and kick-off meetings. Next semester, there will be practitioner office hours. However, this is a work in the progress that will be tweaked over time. Students work on projects throughout the week. Currently all of the teams are in pairs, but that will grow over time. "The practicums help students understand the value of entrepreneurialism, what it takes to be entrepreneurial, and how to achieve real-world impacts, ranging from commercial success to societal good, from computer science to inter-disciplines from the pure tech sector to the information economy transforming all sectors, from startups to growth opportunities on and at any stage."

Comments on project teams:
- Greg Pass indicated that the course work, labs and projects are all on teams. Many of the business pitches are also on teams. He added that we are working on determining the right work balance of time for the projects.

- Greg noted that students are organized into teams their first semester, but not of their own choosing, and then assigned to a local company or organization. They have to learn how to make their teams work.
- During the second semester, they can pick their own teams and choose a practitioner to mentor them.
- They also work on a project that they propose to the organization. Most projects last one semester.
- Greg added that the students should be able to produce something of value after one semester on a project. There is a public demo day after every semester so that students can present their projects.
- Greg noted that the student projects are a key learning opportunity, and failure will be a part of that experience, because failures happen in the real world.
- Duane Stiller added that he recently hired a Cornell graduate student and required him to submit a weekly mistakes' report. A large part of an entrepreneurial venture is being willing to take risks. If you're willing to take risks, you're going to gain a lot of knowledge through regular mistakes.
- Dan Huttenlocher pointed out that the objective of this program is to push students out of their comfort zone by having them do a different project every semester.

Comments on internships:
- During the summer, the students can do internships.
- Dan Huttenlocher added that for the summer we are looking for students here who can succeed in a CS M.Eng. but who can also succeed in getting thrown in with a company on a project as of day one.

Comments on admissions:
- We're looking for ways to use the summers to broaden the applicant pool.
- We have extremely selective admissions both for the beta class and for the fall. And we're talking about potentially having some programs the summer before, that might be ESL programs for some students, who are coming from overseas, because if they aren't fluent in English, they won't succeed in the program.
- Conversely, there are some students who may not have a CS degree who have been working for awhile, and we are confident that they can learn the necessary undergraduate materials, then we pair them with a Columbia or NYU that has some summer classes.

Comments on establishing a dual degree program:
- Has there been any thought about establishing a dual degree program? Yes, JTCII.
- Dan Huttenlocher replied that it's a possibility. It is possible to have students who can do the M.Eng. or MPS and then go straight to the MBA.

Comments on rigor of program:
- Some students indicated that the program is very intense.
- Rajit responded that the students are taking more courses now than they will next semester. Most of the students are 2-3 credits over the traditional course work load, so we may have to tone down some of the course work, which is under discussion.
- Rajit indicated that he has met with all of the students multiple times and has adjusted some of the course workload based on their feedback.

- Rajit noted that for the fall semester we have changed the credit hours so that the students will have more manageable credit hours to more accurately reflect what they're expected to do. Greg Pass added that much of the feedback has been very positive regarding the content.

Comments on innovation of program:
- Dan Huttenlocher noted that he was unaware of any other university that has a program such as ours.
- Most universities don't allow students to work with companies for credit. Cornell Tech is taking an innovative approach to this.
- It's very important to reinvent oneself and one's company. This is crucial.

Comments on Tech Entreprises Class:
- Greg Pass pointed out that there's a brand new class on tech entreprises that has been developed in collaboration with the Johnson School.
- Topics include product development, ethics, pitching, basics of finance, storytelling, as well as being able to communicate the value of a technology solution.
- Dan Huttenlocher added that we're taking a philosophical approach with the Johnson School to actively come up with curricula appropriate for our students that marries entrepreneurship and engineering in an innovative manner. He also noted that all of the faculty currently teaching at Cornell Tech have either founded their own company or a non-for-profit company.
- Dan added that Greg Pass's title is Chief Entrepreneurial Officer. The scope of the entrepreneurial office includes not only bringing about an entrepreneurial spirit into the curriculum, but also to help us identify what we need to do to help bridge the gap between an idea in the university setting and the potential commercial impact of that idea. This office will also identify the goals and resources to make that happen which will be a multi-year process.

Comments on leadership training and entrepreneurship:
- Perhaps the students should have leadership training, and a Meyers Briggs evaluation to prepare them for teamwork before the first class.
- The entrepreneur needs to have the ability to lead. Most of the failures come from the entrepreneur's inability to lead.
- Greg Pass pointed out that they've done the IMQ during orientation (similar to the Meyers Briggs). Most of our students will be "intrepreneurs" (leaders of entrepreneurial activities) rather than entrepreneurs.
- Dan Huttenlocher noted that we are really aiming for our students to be successful in driving high-growth organizations, that is, entrepreneurial high growth, whether starting their own business or being an active contributor to the high growth of a business.
- Greg added that it is important to have a template for a role model of what we'd like them to be (the faculty and practitioners we bring in are all inspirational).

Comments on maximizing customer experience for future students
- Rajit indicated that we are collecting a lot of customer feedback.
- For example our students have expressed an interest in becoming more connected to our alumni. So, we plan to organize some events for them so that they can actually do this.
- He added that we are taking into consideration the students' feedback and making changes as needed.
- The faculty are also making adjustments based on the students' feedback.

What mix of technical and business material would they recommend in this 2 semester program?

Duane Stiller asked for the council's feedback on this topic. Dan Huttenlocher pointed out that the faculty are not grading the students based on a particular objective for the course project, but what did the students learn from engaging in this project.

Comments on faculty
- To what degree will the faculty be industry-oriented people, as opposed to traditional academic faculty?
- Rajit noted that this is something that they have considered when hiring faculty.

Comments on coursework:
- Dan Huttenlocher noted that there is also a design question that we don't have the answer to, which is a lock step curriculum at least for the first part of the program. The first year curriculum is very rigid followed by more flexible courses. The program strives to feel close to a business and law program, as well as to an engineering program. The lock step classes in the fall will include a large-scale computing course, computer security class, mobile computing, as well as 3-4 more carefully picked courses that are very important in today's environment for computer scientists to know. However, we may add some other electives on top of that if we think it's something everyone should have an opportunity to take.
- Rajit pointed out that they will have at least one elective for the fall students. There are a number of offers out to faculty, who, if they come, would allow us to offer more electives. They're also talking about offering some additional courses from Technion visiting faculty.
- How are you trying to integrate some of the outside class work with the inside class work?
- Rajit gave the example that for his class, every third lecture, he doesn't lecture, but rather he makes the students implement what they talked about in the classroom. The students bring their kit and software and work on their team projects.
- There's a big difference between knowledge and wisdom. You get knowledge from coursework and wisdom from being involved with industry people. They will be able to provide wisdom and guidance.
- When giving students a unified view of the prime development life cycle and ingenuity of software systems, it would be very useful for the faculty to have a uniform view of how that can be implemented. How will this be accomplished?
- Greg Pass indicated that we don't have a uniform view right now with respect to software development. However, that's something we need to consider.

Comments on communications skills
- Duane commended the program for having the students pitch ideas to help them strengthen their communications skills. Often recent graduates have to be taught how to talk to people. They're often only communicating with each other through texting. His company has been teaching recent grads to talk on the phone or to go to someone's desk in person to talk (instead of texting).
- Greg Pass added that in their business class there is a topic on giving and taking criticism. It would be a great practicum for Cornell Tech to offer. Projects are a great setting for giving and taking criticism because companies know how to give you feedback.

Industry Engagement

Facilitated by Dan Huttenlocher, Vice Provost and Dean, Cornell Tech
Rajit Manohar, Associate Dean for Academic Affairs, Cornell Tech
Greg Pass, Founding Entrepreneurial Officer of Cornell Tech

Lance indicated that the purpose of this topic was to have a vibrant conversation on industry engagement. Greg Pass kicked off the discussion stating that we need to come up with a program that can support different levels of engagements and then promote these options to companies. There were 12 practicum during the semester, some of which were in panel format, with 17 organizations involved in that product.

Greg added that there is a wide range of engagements (from light to heavy engagement). He also described the negotiation of the engagements and the move towards new standard agreements to avoid friction. Often hundreds of hours are spent negotiating these student-company projects. However, they have not spent much time yet on commercialization and tech transfer.

Greg outlined the types of companies they work with: startups and non-profits (often they don't have the legal resources or experience negotiating); companies that have sponsored research (are eager to negotiate and sign agreements but often involve friction); and large companies (i.e., Google).

Comments on corporate engagements:
- Companies are engaging because it provides insight into talent.
- Dan Huttenlocher noted that an example of engagements that are not around students, but around a broader notion of corporate interactions, include people from law firms and consulting firms, spending externships on our campus working on a problem that we have but that's also of interest to their employer to bring a certain kind of know how back into it.
- This will only work if there is a common strategic understanding about long-term goals.

Comments on types of projects
- Greg Pass indicated that in the Spring of 2013, the students worked on 4 projects with the following companies:
  1. Tapestry (a start-up related project on a creating an api so that other companies can create their own content in this new publishing format)
  2. Google.org (non-profit side, using machine learning to improve the effectiveness of severe weather alerts)
  3. Bloomberg LP (on the process of creating an app for navigating through news stories and a financial analytics app)
  4. Qualcomm (R&D behind self-driving cars).

Comments on projects not chosen
- Dan Huttenlocher indicated that the projects are very competitive. We had 31 companies interested in participating in a project, we considered 17 of those companies, but only selected 4 companies. He also pointed out that it's very important for the projects to have mentors (tech projects with tech mentors for the first semester, and mentors for start-up company projects for the second semester, as well as early start up investors and customers as mentors).
- How do you deal with having so many companies interested and only selecting a small few?
- Dan responded that he is working on engaging the companies not chosen in creative ways. Every company that proposed a project will be invited to demo day, where they'll be able to see the things that happened and be able to meet with representatives from other companies. He

added that we're looking for ways to build relationships and not just transactions. For example, using them for practicums and for building relationships.
- The companies not chosen should be made aware of the co-op program so that they know there's another resource available.
- Could the companies that did not match be part of a clearing house that could be used by other universities? With the social media platform you could connect companies with small projects with students. This would be a tremendous benefit to the university and Ithaca.

Comments on IP ownership and agreements
- Greg Pass noted that with respect to IP ownership choice, they have made it flexible so that they can elect that all the resulting IP be company owned, student owned, or public domain - it's entirely between the student and the organization.
- Greg added that of the four projects that were matched: two were public domain, one was company owned and one was student owned.
- Greg added that the Technion owns all the IP for its projects, except with Cornell.
- It's huge that Cornell is not involved in the IP process. Is Cornell Tech working on a master agreement with the company so that every project does not have to be negotiated?
- Dan Huttenlocher noted that we're being bolder than that by using standardized agreements that will be public and that will be shared with any company or university that is interested. The goal is not to use master agreements. Can we follow through?
- Cornell's Standard Project Agreement will be available on the web by this summer. He added that we've referred to the co-op model in writing this agreement.
- It would be good to have feedback on the standardized agreement (request permission from companies to share their agreement – open source agreement). Can we follow through?
- How long are the agreements?
- Greg responded that currently the agreements are six pages long.
- Dan indicated that Fall 2013 will be a very good test because we'll have a standard agreement that would have been vetted by several lawyers.
- Dan added that one big change is in place about how faculty can be engaged in start-up activities. We now have in place a policy that was first executed in Ithaca, that was driven by the needs of this campus where, with the right approval from the department chair, dean, and Office of Sponsored Programs, a faculty member can be half time at the university and half time at a company, and as long as there is the right separation between the intellectual property, the university is not going to claim ownership of the intellectual property.

Comments on recruiting students:
- Dan Huttenlocher asked the Council if the recruiting of students should be replaced by something that is much more strategic and more relationship based. How do we really work to broaden and interface relationships across multiple levels of this campus with industry?
- Hiring students that work on a project with the company can create an incredible connection over time. You need to stay connected to the students.

Comments on importance of feedback
- With respect to quality control – how do you make sure that we have people on the other side who are enthusiastic?
- Greg Pass indicated that he talks to them personally to see if they're serious about executing the program.
- It's important to ask for candid feedback regularly.

- Dan Huttenlocher added that faculty mentors play an important role in obtaining feedback by letting us know how it's working with the company and how the students are working out.

Comments on marketing message:
- What's likely to be Cornell Tech's marketing message?
- Dan Huttenlocher noted that it's too early right now to have marketing message, and we won't have one for another 1-1/2 years from now.

General Discussion: Re-envisioning Academic-Company Engagement – Beyond Hiring Graduates and Licensing Technology
Facilitated by Lance Collins and David Shmoys

Are there any specific external mentorship networks or programs that you think role model how mentorship could work at Cornell Tech. (So far we've implemented cooperative-project-based mentorship, are considering other forms.)

Lance indicated that he wanted an open-ended discussion with the Council on this question. He mentioned that one example is the media lab at MIT. Our perception is that our connective media program is more technical, which is a different model. Lance asked the Council if they interact with several different companies.

Comments on interactions and relationships with companies:
- Howard Morgan pointed out that his company has a media lab that is very much project focused. The support comes from companies becoming members, and the companies becoming members, in turn, receive certain benefits from this. It is more design focused, as opposed to just technologically focused and is focused around themes (such as Smart devices). It's question of getting the companies to pay. The companies come once or twice a year, and they have a conference (similar to a demo day). However, Howard added that Cornell Tech needs much more scale before it will be able to do this.
- Student-to-student mentoring would be useful. Perhaps this year's graduates can mentor next year's students to help them get through the program. Also, having someone in industry who could provide career mentoring would be helpful. And then provide a position description outlining what's entailed for the mentor and the mentee with an emphasis on the time commitment and perhaps have them both sign off on it (which the football alumni association is doing with the football players).
- Lance mentioned that the practicum is another long-term mechanism of bringing in the very experienced people. They're not assigned to an individual but there's certainly an opportunity to have this interaction.
- Cornell Tech should start with the relationship between a professor or a group of professors and a research team or manager of a company and as that continues it will grow to become a relationship between organizations. It's an engine to create relationships between a student and a company.
- Lance emphasized that we really want to have a deeply engaged relationship. The strategy is to start with a Master's degree program. This is an engine to start the program. Right now they're focused on getting these relationships going.
- It's important to create personal relationships with the companies. It is important to find a good way to have a mentoring core of people (which might be that of networking with like-minded individuals).

- Cornell Tech should start mechanisms with a rich set of companies that will inspire other companies to come.
- Is the relationship with companies something that we're going to celebrate as an accomplishment or is it a means to the end? If it's the means to the end, we need to start talking about the end. We need stop points (imagine you're giving a champagne toast, what dot points would you celebrate?). What are the ends? For example it could be: we want to take students and move them along so that they can be incredibly successful in technology related situations where they produce a lot of growth. That's an end.

Comments on foci and mission of program
- Lance indicated that with this program, we are striving to produce a savvy student in the tech field who can work in this high-growth fast-paced world of the tech sector. Our goal is to train our students to be very nimble and agile in a fast-paced world in order to be successful.
- David Shmoys added that with this program we want to be bolder and find a technological niche for a new intellectual core that will have an impact on new industries.
- You want focused and engaged alumni involved in this program. If you're interested in having them engaged in this, you have to get them engaged now so that they can lead by example.
- Hopefully 10 years from now, Cornell will have created new R&D technology in a way that creates an exceptional flow of innovation. The future of Cornell Tech looks bright.
- Lance added that we've created a different place with a different mission. We also need to maintain a campus that has a traditional academic mission.
- We need to create something like Duffield Hall. This is a great opportunity to change the model.
- We need to ease the friction associated with licensing technology.
- The new book, "*Tech and The City, The Making of New York's Startup Community*", by Maria Teresa Cometto and Alessandro Piol", regarding New York's startup scene, would be good to read.
- It is important to keep in mind the users. Lance added that he agreed that the users are at the core of our success.
- In order for this campus to create the intellectual property for these projects, they need to be longer term. Realistically, one semester is probably not enough time to produce a germ of an idea that is going to grow a company. It much more likely to happen if you have Ph.D. students who have more time to invest in the problem and the respective faculty. The campus will need to get to that model to generate the intellectual property or ideas and then feed them to the new set of companies.
- David Shmoys noted that at this stage it is being driven through the faculty recruiting process. The kind of faculty we are recruiting will want a doctoral program of students working with them who will be engaged along the same lines, creating a culture that becomes an integral part of the program. This will not be any different than a traditional university in terms of the role the doctoral program and doctoral students will play. We can't retain the type of quality faculty that we aspire to without having the doctoral students who are a long-term investment. The faculty will have one foot in academia and one foot with the ability to cycle out for one to three years in industry and then cycle back in. Also, all of the faculty involved in this program have start-up experience. It's in their DNA.
- Lance pointed out that for the time being we're in the early phase of building the campus and, for now, there will be a heavier focus on the Masters degrees until they are all fully built. However, we have put together an operating document on how Ph.D. students can enter the campus. The early seeds for this have been planted and down the road this will have an increasing role in the program. Lance also mentioned that he was pleasantly excited to hear that some of the CS faculty are very excited about this Master's program.

- The passion of the students has not been mentioned. Are we focusing on the global effort to help the world? It would be good if there was a way to have the project come first and then have the coursework feed that person. The student would be much more motivated if they had a problem to solve.
- Lance indicated that we don't want to restrict or eliminate any of the above. Some of the drivers could be commercial activities, non-profits, or other sectors. The city has the density for all of these activities. He added that students should be given a choice of what they want to focus on. By giving them choices, this will allow them to align their experiences with their interests.
- David Shmoys added that currently we are focused on planning the healthier life hub.

Comments on faculty
- In 10 years, how many of the faculty will the tenure track, how many will be non-tenure track, and how many will be professors of the practicum?
- David Shmoys responded that approximately 60% will be tenure track and 40% non-traditional faculty.
- How will you deal with faculty promotions? David responded that it will be the same process as that used to promote faculty in Ithaca.
- Lance indicated that initially we're hiring at the senior level. However, we also want to build up high-quality faculty who need to define the culture and expectations since they should not be exactly the same as those in Ithaca.
- Why do you need tenure at all? In the real world people's successes are based on their performance. Why not do the same thing here since we're working with businesses?
- Lance commented that tenure track allows you to attract the highest quality faculty, most of whom already have tenure in their home institutions. There hasn't been any movement in the direction of eliminating tenure. We would not be able to attract the kind of people we've been able to attract without tenure. He added that this campus needs flexibility with respect to tenure. The Tech campus is different and we're going to have to find some comfortable way of managing that difference. If we break the strong linkage between the two campuses and say it's tenure in NYC and not tenure in Ithaca, then we lose the tenure standards and the quality of the NYC faculty will drop.

Comments on measuring success of program
- You need to know what is your end goal and whether you've achieved it or not which was brought up earlier in the meeting.
- That's something that should be part of your business plan. Cornell Tech has the opportunity to create a set of objectives that will be very fresh and very exciting. If we don't do that it will be very disappointing.

Comments on hiring graduates
- Lance asked the council what indicators they use when determining who to hire from one university over another.
- It's a long-term problem. It takes years to determine. From an employer's point of view, they know that someone coming out of "x" university was admitted on a highly selective basis and has a deep knowledge base due to its known rigorous program. Ultimately, they look at peer organizations or even people within their organization to see if they were consistently more successful if they graduated from "x" university than people who graduated from another one.
- Due to the nature of research, tenure and seeking government grants, asking professors to do work with industry is very difficult because they're not calling the shots. If someone around the

table were to say that they'd like for a professor to do "xyz" project for them, they would define the project, rather than the professor. A short-term measure would be to know how many dollars are actually flowing to the University for those various kinds of projects where one of us is actually willing to pay the University for a professor or student to do work for them. That could be measured more readily than measuring whether anyone would want to hire a Cornell Tech campus student because it can clearly be proven that they're going to succeed.

Lance noted there are multiple motivations for wanting to commercialize technology that goes beyond the profit motive. For example, technology that has been demonstrated in the lab may not impact society unless the technology is turned into a commercial product that is properly "packaged" and "priced" for the general public. Some entrepreneurial activity is generated for the societal good rather than common view of generating huge wealth à la Bill Gates or Mark Zuckerberg.

Lance pointed out that there's a cultural gap, especially with our more senior faculty, which causes friction. Many of our faculty have been raised in a time when you could live off of NSF grants and be extraordinarily successful. When you write an NSF grant you define the problem and NSF does not put many boundaries on that. Lance added that a colleague commented that sometimes we at Cornell can develop an ingenious solution to the "wrong problem". This is a warning that if you get too disconnected from the technology trends, then you may end up solving a challenging problem that has little impact. The younger faculty (on average) see the benefit of this virtuous cycle between industry and the university far more than the senior faculty due to the different cultural environments they grew up in. So there's definitely a generational divide to this.

The times are changing and this is the direction in which we need to move. Cornell Tech will help with this process. Lance added that the sheer excitement surrounding Cornell Tech has greatly amplified this message to senior and junior faculty alike.