State of the School Address  
September 20, 2016

Good afternoon to everyone and a warm welcome to the 2016 Fall State of the School Address! This occasion affords us the opportunity to reflect on the school’s mission and how to adapt it to today’s fast changing technology environment. It also affords us the opportunity to assess our accomplishments and to look ahead as the next year is rapidly unfolding.

Every year, and as long as I have been the dean, I could count on a biblical figure whose presence would honor the dean’s table in front of this podium: Solomon Golomb. He would listen to the speech in his inimitable quiet manner, often with his eyes closed. Later on, with his unparalleled wisdom and in the kindest of ways, he would zero in on the most essential advice to me – for that key element to which I should be paying more attention. Sadly, this year, I will not have that privilege. Sol is no longer with us.

For over 50 amazing years, Sol devoted his professional life to USC Engineering. He joined USC instead of Caltech or Harvard, from both places of which he had an offer, because he thought he would make a bigger difference. As with everything else Golomb-related, he could not have been more right. In a most fundamental way, through his radiating brilliance, Sol left a monumental legacy at USC Viterbi. He attracted, mentored and promoted talented colleagues. In the process, he created a culture of service and a culture of excellence that continues today. It is unlikely there would have been an Andrew Viterbi at USC without Sol Golomb. Or Bill Lindsey. Or Lloyd Welch. The list is long. He will be missed more than we can imagine.

Sol joined two other colossal USC figures (both engineers) that also left us this year: Steven B. Sample and Si Ramo. Steve Sample, the indomitable visionary 10th USC president, an electrical engineer by training, used his acuity and remarkable talent to transform USC to a research university of global prominence. Si Ramo was one of the most brilliant engineers of our time. Through a Presidential Chair appointment, Si became part of USC Viterbi in the latter part of his amazing life, although we had already had long, strong and enduring relationships with the companies he built, including TRW and later Northrop Grumman. An inventor of true brilliance and phenomenal insight, an entrepreneur par excellence and a genuine renaissance man, Si devoted his career to the advancement of technology, national defense and human prosperity. I had the privilege of meeting Si often in the past few years and enjoyed his amazing wisdom and wit. In 2008, when we gave him the USC Viterbi Lifetime Achievement Award, he graciously acknowledged it and then he said, “What award are you going to give me 10 years from now when I am 105?” He was 103 when he died this year.

Sol, Steven and Si, all engineering titans, will be greatly missed. Please join me in a moment of silence in their memory.

Thank you.
The first-ever USC engineering course was offered 112 years ago, at a time when things we take for granted today, such as electricity, automobiles, and refrigeration, didn’t exist in most of the world. They were a figment of a “magical” vision of the future.

A century later, engineering and technology have transformed the world, ushering in tremendous advances that among many things, have helped reduce extreme poverty; increase life expectancy, and connect people instantly around the world. In the process, these advances bring a truly global understanding of humanity’s common destiny.

Today, I would like to focus the first part of this address on how this tremendous evolution of technology is being shaped, and in turn, how it shapes us as an engineering school. I will use three “C” words to this effect: Convergence, Connectedness, and Culture. In the language of Sesame Street, “Today’s speech is brought to you by the letter ‘C’. ” (And a little later, by a few more letters!)

You have heard me define engineering and technology as “leveraging phenomena for useful purposes.” Since repetition is the source of learning, I will keep talking about it again! “Leveraging” implies the creation of engineered systems and their endowment with “smart” or “intelligent” properties. “Phenomena” are, in increasing complexity, of various origins: physical, chemical, biological, geological, cognitive and, not too far in the future (if not already here), social, origin. One could also substitute “Phenomena” with “technologies”, (e.g. “body computing”), or with “hierarchies of technologies,” etc. This hints into an autocatalytic effect of technology and Moore’s law. “Useful purposes” bring in important complementary ethical and legal considerations, and decision making, and they also declare the potential for unintended consequences, which can be increasingly powerful, as technology is increasingly powerful itself.

In the past, this is where I would have talked about Engineering+. Engineering + is a fine concept, but it’s so 2015(!). An equally apt word capturing the same is Convergence, where engineering empowers or comesling with other disciplines for useful purposes. This is the first “C” word in today’s speech. Convergence is another word for Engineering + X, where X is (truly) anything (e.g. Media, Medicine, Entertainment, Biology, Education …).

And I see this convergence following one of three different pathways: We will call them E2X, EUX and X2E. (Don’t worry about a test, here. The upcoming Dean’s report will be elaborating on them…)

The first path, E2X, is where E (Engineering) makes X smarter, more efficient. It helps open new opportunities, and to acquire new dimensions and properties, many of which are disruptive. Consider the digitization of wide swaths of our economy and their truly transformative global impact. Digital media, communications, entertainment, platforms. This is E2X. It is the ubiquitous digitization of almost everything. The incoming torrent of cyber-physical disruption with the Internet of Things (IoT) and other fast rising cyber-physical technologies and systems is also E2X. It is with these thoughts in mind, that we recently formed two new centers, which I am announcing today: A center on Machine Learning (MaSCle), to be led by CS Professor Yan Liu; and a center on Cyber-Physical Systems and the IoT (CCI), to be led by EE Professor Bhaskar Krishnamachari. Both these centers will be the incubators for the development of new tools to enable E2X for practically any X.
Interesting questions arise when X is centered on societal or human-centric questions. To address such interactions, we also recently formed two new centers in partnership with other USC schools, which I would like to announce today: CAIS, a new center on “AI for Society,” a partnership of Engineering with the School of Social Work (newly named as the Suzanne Dworak-Peck School of Social Work), to be led by Professor Milind Tambe; and CHARIOT, a new partnership with the Rossier School of Education to apply IoT to personalized learning. Formal launching events will be held in the very near future.

Consider, now, a second convergence path, EUX. This is where engineering and X come mingle in a tight tango dance, a tightly intertwined “double helix” of (mostly) natural sciences and engineering. EUX is the path where convergence can lead to truly exponential technologies. Consider:

Engineering plus Biology – a partnership with the Dornsife College at the rapidly constructed new Michelson Center. This will include BmE Professors Ellis Meng, Eun Ji Chung, Stacey Finley and Christina Zavaletta; MFD Professors Andrea Armani and Rich Roberts; AME Professor Nima Pahlavan; CS Professor Fei Sha; and a strong ISI presence through ISE Professor Carl Kesselman and his core on Discovery Informatics. Consider Engineering plus Quantum Physics. For example, like in the new IARPA large grant received by EE’s Daniel Lidar and ISI to advance quantum computing, and Engineering Plus Medicine (a partnership with the Keck School of Medicine) reflected in the works of National medal of Technology winner Mark Humayun on artificial retina, and of BmE Professors Ted Berger and Vasilis Maramarelis on memory prosthetics. And so on.

EUX is also relevant to socio-technical systems, many of which are inherent to the development of engineered systems. These include: Systems Engineering, Design, Technology Startups, Technology and Engineering Management, Systems and Enterprises, of significant interest to ISE and our Systems Engineering programs. The exponential growth of technology, the connection of everyone with everything, the digitization of everything are ushering in a revolution in organizations, with concepts and processes such as the cloud, the ability for instant and global outreach, big data, system networks, IoT and cybersecurity being the new vocabulary and tools for many organizations. Data Analytics, such as developed in IMSC, led by Professor Cyrus Shahabi, are the lexicon of such organizations.

This brings us to the third path, X2E, where E can benefit from X (e.g. in biomimetic or socio-mimetic contexts). In certain X-mimetic processes, X2E is really the shortcut for optimal answers to complex problems that nature has uncovered, through “nature’s” optimization, practiced over the millions years of evolution. Paul Bogdan of EE researches ants, pigeons and bacteria to develop a series of algorithms that can actually quantify the degree of complexity within swarms. These algorithms could potentially contribute to the design of collaborative robots, improving their performance by helping them adapt, operate and evolve as part of a group. Nature improving engineering design.

Again, interesting, novel questions arise when X represents a discipline or process dominated not by logic or the natural sciences, but rather by social sciences, by emotions, or by legal or ethical considerations or by character. What are the E2X, EUX and X2E pathways then? Increasingly rapid advances are being made in the E2X pathway, for example, related to behavioral informatics, neuroscience and psychology, entertainment, human-machine interaction, and the built environment-human interaction. Professor Shri Narayan of EE has been a pioneer in such human-centric signal processing. Just last week, his behavioral informatics work sponsored by the Geena Davis Institute and Google led to the creation of the “inclusion
index”, which measures how demographic groups, e.g. women, are portrayed in films and videos. Such tools can be very powerful in decoding context, including implicit biases in digital media. In many ways, Shri’s work helps transform digital media in the “mass spectrometer” of social sciences. Consider this as an example of Engineering + Communications.

As technology continues its exponential march, ethical and moral questions will inevitably arise— with vast ramifications. Consider ethics and decision-making in the operation of autonomous systems, such as drones or driverless cars. Or other human-machine interfaces. Our new decision making center DECIDE, joint with the Price School, led by ISE Professor Ali Abbas, is devoted to many such issues.

Engineering +, Convergence are the most promising ways for solving the Grand Challenges of our times. We are all familiar with the NAE Grand Challenges, for example in sustainability, health, security and the joy of living, which this school has championed from the very beginning. But they are also important for the solution of X-type grand challenges (such as the recently articulated Social Work Grand Challenges, inspired by the NAE Grand Challenges here at USC). I believe that progress towards the solution of such societal challenges can only be realistically be achieved if technology and engineering, in their most general sense, are brought to bear. My argument rests on the notion that human nature has remained unchanged over the years, while technology has experienced exponential gains. It is such empowerment that can be used to the benefit of solving such grand challenges.

Connectedness is the second “C” word. We live in the era where everything and everyone is (or will be) connected to everything and everyone. For an engineering school in particular, this provides vast opportunities to revolutionize the way we interact, teach, research, and manage. The wonderful recent book, “The Platform Revolution,” compellingly argues that platforms, powered by engineering and connectivity, are revolutionizing those business, where information is the commodity being exchanged. Consider Uber, Amazon, Google, Apple and Facebook. Platforms have appended and permanently disrupted the traditional linear pipeline business models. Empowered by digital technology and sophisticated software platform tools, these enable value-creating frictionless interactions between distributed producers and consumers. Here is another word, although it does not start with C: frictionless. The platform revolution, in the words of the book’s authors, is “producing results that are little short of miraculous.” It is based on a few important principles: Frictionless interactions, low barrier to entry, value through each interaction. Let’s recall that education is in many (but not all) ways, an information business. And so is management and administration. We exchange information between faculty and students, between students and administrators, between colleagues with one another, between faculty and staff. And these interactions define our culture (our third C word)! I am convinced that platforms present important opportunities to all of us. Therefore, I challenge all of you to (1) read the book (!), and (2) find ways to implement platform models that are frictionless, with low barrier to entry and with value exchanged through each interaction. Frictionless should govern all our interactions: think of emails that are prompt and add value, and not go unanswered or unattended… Which brings me to the third C word: Culture.

We are in the business of higher education (a non-profit endeavor) for one and one only reason: To serve our constituencies (in a wide interpretation). This culture that serves, seamlessly and frictionlessly, students, faculty, staff, alumni, parents, the corporate world, academia and all our friends should be treasured. And should be enhanced. Consider that in many ways, each one of us, certainly administrators and staff, are a monopoly. We only have one Dean’s office, one VBA, one Marcom, one Advancement team, etc. If these
offices or representatives act capriciously, our constituents have no other recourse. To compensate for this absence of a market mechanism I suggest a culture of service. I am proud to say that such a culture exists indeed in our school, and we should all be proud about it. Marilee Reynolds, who just retired last week, expressed such a sentiment most eloquently at her retirement reception. Let us always be conscious of our obligation to serve our constituencies- in a frictionless manner.

Convergence, Connectedness, Culture!

But I am not done with the C words! We all believe that Engineering empowers the world. This enabling Changes the Conversation about engineering. Consider the NAE Grand Challenges, a set of aspirational goals. It is not about a new formula. It is about how to solve problems that have great societal impact. It is about convergence. Changing the conversation along these lines is most important to position our discipline in the most fundamental position in today’s world. And to help change the face of engineering, by attracting a truly wonderful and diverse group of faculty and students. We already see the great effect of such messaging in our own students: this year, the fraction of women in our freshman class is 40%, the highest ever in our history- not to mention that it is the brightest in our history, with a 19 SAT points increase. Increased excellence through increased women participation in engineering. Could one really do any better?

Much maligned in other places as moving at a glacial pace, our academic engineering culture at USC Viterbi is changing at an accelerated pace. I see this most vividly in our junior faculty- a group of amazingly talented young women and men engineers, diverse, brilliant. They understand the changing nature of engineering, the change in our times. And with such a new canvas of increasing student and faculty diversity on which to paint, we are approaching a percolation threshold, a tipping point that signals a phase transition. A new phase of engineering- with a new face of engineering.

We are changing the conversation about engineering, of what engineers do, who they are and what they look like. Our amazing female faculty members prove that every day. Consider:

- The “MIT Technology Review” recently named Kelly Sanders and Nora Ayanian to its prestigious TR-35 list as two of the world’s leading innovators under the age of 35. In the last 7 years, 12 faculty of USC Viterbi were chosen in that list- of which eight (3/4ths) have been women. Incidentally, USC Viterbi is likely among the top two or three institutions worldwide with as many such distinctions.
- Stacey Finley was recognized as a 2016 “CMBE Journal” Young Innovator.
- Yolanda Gill has been named President-Elect, Association for the Advancement of Artificial Intelligence.

During the last several years I have been the chair of the diversity committee of the Engineering Deans Council. We have a led a diversity initiative across the nation. Here is an important D word. And I am pleased to say that this initiative is now signed by more than 175 Dean's nationwide. What does it entail?

- Commit to an ambitious, institution-specific plan.
- Reach out to non-research institutions and community colleges.
- Reach out to K-12 to change the conversation.
- Actively enhance faculty culture and diversity.
In this same context, I am pleased to announce that Dr. Brandi Jones, currently dean of graduate studies in engineering at Princeton will join USC Viterbi in November to lead our Diversity and Strategic Initiatives. Brandi selected USC Viterbi instead of a competitive Ivy League offer.

So, 112 years since our founding, the USC Viterbi School of Engineering is redefining what engineers do, who they are, and what they look like. And as we take stock of where USC Viterbi is and where it is going, I would like to remind you of our four pillars, which guide our strategy:

I. Attract top talent, whether students, faculty or staff, from anywhere in the world; and create the environment for them to flourish. TALENT

II. Continuously add value in the curriculum, programs, and infrastructure. VALUE

III. Lead globally to solve world challenges and enrich life, from sustainability, to health, to security to the elevation of the world’s standard of living. THOUGHT LEADERSHIP

IV. Be the catalyst for the innovations (exponential, digital, combinatorial) that will fuel the economic growth of Los Angeles, Southern California, and the world. IMPACT

It is now time to give you a very brief glimpse of where we stand in these four pillars, with the most recent developments in the last 4 months.

Just like last year, and the year before, and the year before, (and the year before…) our freshman class is the best in its history. The first derivative is positive! Here are a few numbers that might interest you:

The entering class of about 420 is one of the most selective ever, with more than 12,000 applications received. 163 students in our entering class are University Scholars; 56 are National Merit Scholars. The average SAT at USC Viterbi has increased by almost 100 points in the last 10 years. (With a whopping 19 points gain this year.)

Nearly 40 percent of the entering freshmen are women- an amazing statistic, making the overall Viterbi women average to more than 1/3 women. Our students come from 20 different countries; 41 different states; and have incredibly diverse backgrounds and interests. Thanks go to Sr. Associate Dean Louise Yates and her amazing staff for a great job in tailoring a fantastic freshman class.

Curriculum and program innovations continue at a rapid pace, with new courses and degree programs. I am very pleased to tell you that ABET accredited all our UG programs submitted for accreditation to the maximum 6 years. ABET singled out our Engineering+ emphasis and the iPodia program among the important assets of the school. Vice Dean Jim Moore, capably guided the process. Jim was also instrumental, as IIE President, to change the conversation about IIE- and rename it as ISE! Kudos, Jim!

Developing skills outside the curriculum is a key and important part of the student’s experience. A number of engineering schools nationwide have adapted a new model of engineering education for a select number of undergraduate students, the Grand Challenges Scholars Program (GCSP). GCSP involves five components, in addition to the traditional engineering curriculum:
1. Research or a hands-on project on a topic related to the NAE Grand Challenges.
2. Interdisciplinary curriculum and mentoring.
3. Engagement in an innovation and entrepreneurship venture.
5. Service learning through outreach to the community and/or social entrepreneurship.

This program is robust and growing at USC Viterbi, where it was co-conceived in 2009 together with our former USC colleagues Rick Miller, President of Olin College and Tom Katsouleas, then dean of engineering at Duke University. I am very proud to say that I will be organizing and chairing the first ever GCSP Summit at the NAS Building in DC on October 7, followed by a session at the OSTP of the White House in the afternoon. A GCSP designed to produce Change Makers.

Many other activities outside the curriculum abound at USC Viterbi. Our Hyperloop student team qualified for the final competition. Club VRSC is one of the first student-run virtual reality organizations of its kind in the country. It counts more than 300 members. It uses VR to tackle a variety of issues, ranging from improving memory to designing cities to helping patients with diabetic retinopathy.

In April, a team of researchers from the USC Data Science Laboratory, including several USC Viterbi Ph.D. students, took first place, along with $10,000, in the Target Data Challenge. The USC group, which defeated over 20 other teams, came up with an algorithm that most closely predicted shoppers’ future purchases.

Our graduate programs are as robust as ever. We again hit an all-time high of more than 14,000 applications both for our DEN@Viterbi and on-campus program, making this Fall’s graduate classes the most selective in USC Viterbi’s history. Sr. Associate Dean Kelly Goulis and her team do a fantastic job in administering skillfully that program. Last spring, Brandon Schlinker was named one of only 12 - out of hundreds of international applicants - to be awarded a coveted Facebook Fellowship. The third-year Ph.D. student in USC Viterbi’s Department of Computer Science works with Professor Ethan Katz-Bassett and the Networked Systems Lab to improve the Internet’s performance, reliability, and security.

One of the strategic priorities of the university is engagement with active military and veterans. Through GAPP, we have made this a top priority. Some examples:

- Over 85 active military and veterans are now enrolled in our graduate programs, mostly through DEN.
- Through a strategic partnership with the Pentagon, we have now five mid-career officers in our M.S. and Ph.D. programs.
- In October, we will launch a training program for the US Army’s CYBER COMMAND in the area of Data Informatics.
- And most exciting of all, we have introduced a program to provide to an UNLIMITED number of partial scholarships to veterans admitted to our M.S. programs and on the GI Bill/ through the Yellow Ribbon program.

This semester, East met West with the launch of USC Viterbi-Tsinghua University dual-degree master of science program, which allows USC and THU students to experience both cultures and academic institutions.
Participants complete at least two-thirds of their studies at their home universities and the other third overseas at the host institution. Thanks go to Vice Dean Raghavendra for implementing this and other global initiatives.

Under Mike Crowley’s continued strong leadership, ITP continues to flourish and be an integral part of the Viterbi School. I want from this podium to express my warmest appreciation to all ITP faculty and staff for the fantastic work they do, year after year.

This year we celebrated the 10th anniversary of our very own GamePipe Laboratory, the brainchild of Mike Zyda. More than 1500 GamePipe alumni have played prominent roles in some of the most amazing gaming experiences, including: “Call of Duty,” “World of Witchcraft,” “God of War” and many others. The Princeton Review has named USC Games, a collaboration between USC Viterbi’s Department of Computer Science and the USC School of Cinematic Arts, as the No. 1 video game program for six consecutive years. Even though most rankings are not to be trusted, I cannot but single out the Department of Computer Science, which was ranked 9th in the world by Microsoft’s academic research rankings, with the AI program ranked 4th. Hao Li, Assistant Professor of CS, was singled out as the best computer graphics person in the world. Not much better than this distinction.

This brings me to the other most important pillar for attracting talent and enabling it to flourish.

In the past faculty recruitment cycle, we hired 13 new tenure-track faculty, of whom four are women and two Hispanic. The TT pool comprised nearly 2,500 applicants. Vice Dean Timothy Pinkston and his team masterfully coordinated this process.

Eun Ji Chung, assistant professor in BME, earned her Ph.D. at Northwestern University. She joins us from the University of Chicago, after her stint as an American Heart Association Postdoctoral Fellow; Bora Gencturk, assistant professor in civil and environmental engineering, joins us from the University of Houston, where he was an assistant professor in the Civil and Environmental Engineering Department and the winner of an NSF Career Award; Naveed Muhammed, assistant professor in computer science, earned his Ph.D. at the University of Illinois at Urbana-Champaign. Among Naveed’s awards are the 2015 Google Ph.D. Fellowship in Security; Dina El-Damak, assistant professor in EE - EP, earned her Ph.D. at MIT, where she also spent one year as a postdoctoral associate at MIT’s Microsystems Technology Laboratories; Pierluigi Nuzzo, assistant professor in EE-S, earned his doctorate at the University of California at Berkeley; Insoo Yang, assistant professor in EE-ES, also comes to us from Berkeley. In 2015, he received the Eli Jury Award for outstanding achievement in the area of systems, communication and control; Meisam Razaviyayn, assistant professor in ISE, was a postdoctoral research fellow in the Electrical Engineering Department at Stanford before joining us. In 2015, he was the recipient of the Signal Processing Society Young Author Best Paper Award; Sze-Chuan Suen, assistant professor in ISE, received her Ph.D. in the Department of Management Science and Engineering from Stanford. She has received two Lusted Awards for outstanding research from the Society for Medical Decision Making (SMDM) for her work on modeling tuberculosis in India to improve disease control policy; Chao Wang, assistant professor in CS, was an assistant professor of Electrical and Computer Engineering at Virginia Tech prior to joining USC Viterbi.

In addition several new faculty members plan to join us next year:
Christina Zavaleta, assistant professor of BME, will come to us from Stanford, where she is currently a Postdoctoral Fellow in Radiology and Molecular Imaging. Shaama Sharada, assistant professor in the Mork Family Department, earned her Ph.D. at the University of California at Berkeley and will also join us in Fall 2017. She is currently a Postdoctoral Fellow in the Center for Interface Science and Catalysis; Daniel McCurry, assistant professor in civil and environmental engineering, earned his Ph.D. at Stanford University, supported by an NSF Graduate Research Fellowship. He will join us in Spring 2017; Paulo Branicio, an assistant professor in the Mork Family Department, comes to us from the Institute of High Performance Computing in Singapore, where he’s been a senior scientist. He will join us in Spring 2017; Joseph Lim, assistant professor in computer science, is joining us from Stanford, where he’s been a postdoctoral scholar in the Stanford Artificial Intelligence Laboratory. He will also start USC in Spring 2017; Finally, Mihailo Jovanovic, formerly a professor of Electrical and Computer Engineering at the University of Minnesota, will become a USC Viterbi professor in EE-S.

The research achievements of our faculty are many and distinguished. Our faculty continue to receive widespread recognition for their excellence in research and scholarship. Our awards office under Vice Dean Maja Mataric and interim Vice Dean Mahta Moghaddam’s leadership has been instrumental in promoting our faculty for awards. I will only name awards received after April last year.

As I mentioned before, with Kelly Sanders and Nora Ayanian’s selection to TR-35, USC Viterbi has now had 12 faculty members on the list since 2009. Popular Science recently named John Carlsson to its “Brilliant 10” list, citing him one of the “10 most brilliant people of 2016” under the age of 38.

Alan Willner landed a very prestigious National Security Science and Engineering Faculty Fellowship, following his 2016 induction to the NAE; Emilio Ferrara received the DARPA Young Faculty Award; Gisele Ragusa received the Vanguard Award, HENAAC/Great Minds in STEM; Patrick Lynett was named Outstanding Civil Engineer in Research by ASCE, LA Chapter; William Lindsey won the IEEE Eric E. Summer Award; Milind Tambe’s team penned the AAMAS Best Paper 2016; Other award winners include Najmedin Meshkati for the Ernest Amory Codman Award Lectureship; C. –C. Jay Kuo, the Taylor L. Booth Education Award; Mike Gruntman was elected to the International Academy of Astronautics; Shri Narayanan received multiple best paper awards; and Professor Azad Madni was recognized by Boeing for his leadership in Systems Engineering.

Under Prem Natarajan’s fantastic leadership, ISI has been winning multiple, multimillion dollars awards in areas such as Forecasting, NLP, and Quantum Computing. Both the school and the Provost have committed a significant amount of funds to help ISI become the best institute of its kind in the world. I am indebted to Prem for his outstanding leadership.

Finally, I could not but single out Professor Andrea Armani’s ingenuity. Andrea went to Northrop Grumman for a sabbatical. She returned to USC with a new NG-USC Center on photonic materials! This first of its kind partnership between NG and a university has been the brainchild of Andrea’s and the Aerospace Systems division President Tom Vice, on our Board of Councilors.

With a goal of providing our students and faculty with the best facilities found anywhere, I am pleased to announce that the university has approved the start of a fundraising effort for a new computer science building to be located between Kaprielian Hall and the USC Michelson Center for Convergent Bioscience. Such a
building will provide the physical environment to support research, teaching and collaborative spaces for our CS students and faculty. The expected $90-million facility would consolidate all CS programs, classrooms and research spaces. A naming gift of $50M will start construction. Mary Ann Schwartz is waiting for your checks or those of your rich friends!

With an eye toward giving our students more hands-on learning opportunities, we have also begun raising money for the Science and Engineering Undergraduate Maker Space. As envisioned, we will integrate the USC Viterbi Design/Build program (DBSP) into the library building. The potential exists to transform the Science & Engineering Library into a hub of creative activity, and the physical expression of the university’s cutting-edge approach to engineering education and library services.

Construction continues on the USC Michelson Center for Convergent Bioscience. The center, which is expected to be completed in 2017, will bring together engineers and scientists to tackle grand challenges in health-related fields, also including bioengineering and materials science. We look forward to its grand opening- of the largest and biggest science and engineering building on the USC campus.

Not last is the completion of a new warehouse off-campus to house our new Center in Advanced Manufacturing, to be led by AME Professor SK Gupta. I am thrilled with SK’s remarkable leadership. And I would like to single out Linda Rock, who has masterfully guided our complex space and HR issues. Believe me, hers is the most difficult job in the school!

As President Nikias often says, our ambition exceeds our ability to pay for it. So, to help us solve this conundrum, we have embarked on one of the most ambitious fundraising campaigns ever undertaken by an engineering school. Our fundraising goal set in 2010 was to raise $500 million by 2018. This follows a successful $300M campaign completed in 2008. In the broadest sense, we will invest our donors’ gifts to support the four pillars by attracting world-class professors and students; endowing chairs; providing student scholarships, creating new programs; naming and endowing departments and programs; and building best-in-class facilities to advance research and our commitment to innovation and entrepreneurship.

To-date, we have raised very close to $400M- about 80% on the way to our goal. More than 12,300 unique donors have given so far in this campaign, led by Mary Ann Schwartz, our Senior Associate Dean of Advancement, and her Advancement team. Among the most recent gifts I am pleased to announce two endowed chairs, one for a professorship and the other for an Early Career. A memo will come out shortly.

Last year, in particular, was the best fundraising year in our history, with cash and pledges exceeding $100M. We are hoping for two more years of strong performance, which will be needed to close our goal.

We are also changing the conversation about innovation. We are nurturing the growth of an ecosystem of innovation that I like to call SCilicon Beach. That’s with an “SC.” With two of our research powerhouses — the Information Sciences Institute and the Institute for Creative Technologies — located in the heart of Silicon Beach, we are greatly positioned to be the premier private research university driving technology innovation in Southern California. Vice Dean Andrea Belz is transforming our Technology Innovation and Entrepreneurship pillar 4, through initiatives on Teach, Think, Launch, Link.

SCilicon Beach has the potential to dismantle stereotypes and change the conversation on tech entrepreneurship by including the entire vibrant spectrum of ethnically and culturally diverse talent in
Southern California.

Two years ago, as you know, USC became the home to a new National Science Foundation Innovation Corps Node (one of only seven in the nation) aimed at helping high-tech university spinoffs succeed. Our I-Corps node has placed USC at the center of the Silicon Beach technology ecosystem. To date we have taught 200 teams from 20 universities customer development and financial analysis. We have also introduced approximately 40 teams to investors through our signature events, including our Technology Scouting Workshop and The Real Deal featuring General David Petraeus. Under the direction of Professor Andrea Belz, USC Viterbi has helped raise grants and private investment totaling $1.5 million for approximately 20 teams connected to the Node.

MEPC, our business model competition headed by Professor Peter Beerel, himself a successful entrepreneur, continues to produce impressive companies. NoseKnows, which builds an app to make it easier to find lost pets, won this year’s MEPC, along with the $50,000 grand prize. Sports analytics firm Second Spectrum, the competition’s 2013 winner, counts the Los Angeles Clippers and Boston Celtics among its NBA clients for its Big Data-derived sports’ analytics. According to Bloomberg News, Second Spectrum appears on the verge of a $250 million overall deal with the NBA.

Finally, FlexSpecs, the winner of our inaugural Min Family Engineering Social Entrepreneurship Challenge, promises to bring affordable eyeglasses to the masses. The startup plans to produce inexpensive glasses with adjustable lenses that require no prescription – selling for just $20 a pair. These glasses could make a huge difference in the lives of millions of Americans who cannot afford annual eye exams and prescription glasses.

Finally, our budget this year is strong, thanks in part to the innovation in our programs and the quality of our faculty and the support of our friends- and the stewardship of our CFO David Murphy.

So, as you can see from this short, OK, relatively short, review, the State of the School is strong. It is strong because of all of you, faculty and staff.

But I would be remiss if I did not single out and thank from this forum, Executive Vice Dean John O’Brien, a remarkable person, whose fingerprints are behind every Viterbi success. I am indebted to him. And I would also like to thank Cassandra Nash, for helping set up this great event today.

When I started as a Dean I articulated the following vision: To be:

- First at USC
- A leader in the nation
- Constantly rising quality
- Excellence in all our endeavors

So that we can all say: I am fortunate to be part of the Viterbi School. This vision remains as strong as ever.

Thanks to you, the school has scaled unprecedented heights in teaching, research and innovation and now attracts the best and brightest talent from anywhere.
As I close, I am reminded of the book, *The Beginning of Infinity*, by Oxford quantum physicist David Deutsch. He states:

1) Problems (I prefer to say, challenges) are inevitable.
2) But all problems are solvable.

Indeed, there will always be problems, because they represent collisions of ideas and because as you move ahead, the challenges become greater. But I absolutely share in the belief that all problems are solvable. I invite you to share this mindset and add to your vocabulary this other word—solvable—starting with the letter S.

Thank you and fight on!