Activity & Vision Summary

2011-12

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WPI
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Institutions of higher education have been among the most powerful contributors to global leadership of the United States. In fact, it was the discoveries at universities in the mid-last century that played a key role in the U.S. winning WWII. This repositioned universities as institutions that not only produced professionals with marketable skills but also generated new knowledge through research and discovery to address the critical needs of society. This led to the establishment of the National Science Foundation (NSF) in 1950 in support of university-based research.

This new identity has been adopted at varying levels and in the 60+ years since the inception of the NSF, there has been a distinct difference between so-called research universities that broadly meet the expectations of society and those that remained on a more traditional teaching track. Since doctoral degrees inherently imply research, research universities are identified as being those that offer doctoral degrees as opposed to non-doctoral institutions. In engineering, there are 325 engineering degree-granting institutions, of which 126 also offer doctoral degrees.

WPI is the third-oldest technological school in the country; its first PhD was granted in the 1960s. Hence, the same social expectations also apply to WPI. While WPI maintained its undergraduate educational functions at reasonable levels and developed innovative tools through project-based learning, at the graduate level (research and innovation) there exists a significant gap between our peer institutions. Considering the increasing tuition across the country and the intensifying scrutiny regarding institutions of higher education, it will be a strategic approach to close the gap between educational and research to improve our continuing marketability and our ability to service our students at all levels.

I joined WPI in January 2011 after serving as Dean of Engineering at Drexel University for 10 years during which Drexel became the largest private college of engineering in the country and also transformed itself into a premier national research university.

*Leadership develops the environment...  
Environment determines the behavior.*
As the dean of engineering at WPI, I am focusing on the following primary categories:

- Development of a shared vision for WPI Engineering
- Academic skills of faculty and faculty/program/department leaders
- Hiring new faculty and developing a support environment for their success
- Educational programs and development of additional opportunities for students
- Support for growth and prominence in research, innovation, and discovery
- Marketing, branding, and communication tools for increased awareness
- Fundraising and representation of WPI in the professional community

People are the main drivers in academia. So, not surprisingly, the majority of activities focus on hiring and professional development and growth of people from students to the senior faculty ranks. Some specific activities are as follows:

**Strategic Plan**

Development of a strategic plan is important to establish a common vision, to identify goals and to determine the tactical steps to achieve these goals. The WPI Engineering Strategic Plan was developed by the Engineering leadership teams in collaboration with all the department heads, program directors, and engineering faculty who had the opportunity to review and communicate their ideas/input at every stage. A shared vision developed jointly has much more probability of success than a top-down approach. The Strategic Plan was presented in joint faculty meetings as well as in individual departmental meetings. Input was sought from all constituents, including members of the WPI community outside engineering. It is now being prepared as a short document to be distributed widely to all our constituents to increase awareness and communicate our strategic goals for the next five years.

The WPI Engineering Strategic Plan covers five topical areas:

- Undergraduate Education
- Research & Scholarship
- Graduate Education
- Marketing & Branding
- Organizational Development

The professional quality, intellectual capacity and competence of its people create an institution’s image and reputation.

Academia is complex machinery with many moving parts.
The following sections are based on the principles outlined in the Strategic Plan and essentially form the tactical steps to achieve the program goals.

**Hiring**

**Hiring and Mentoring Department Heads:**
During the past two years, two new department heads have been hired; **Jamal Yagoobi** to lead the Department of Mechanical Engineering and **Yehia Massoud** to lead the Electrical and Computer Engineering Department. Both colleagues come with impressive professional credentials. Dr. Yagoobi received his PhD from the University of Illinois and was on the faculty at Texas A&M. More recently he was the department head at Illinois Institute of Technology in Chicago. With expertise in thermal sciences, he has made significant contributions to the field and has continued to be a prolific researcher here at WPI.

Dr. Massoud received his PhD from MIT and was on the faculty at Rice University. He most recently served as the department head of electrical engineering at the University of Alabama prior to joining WPI. His research focus is on ultra-low power signal processing, which finds broad applications, including neurosciences. He has made significant contributions to the field and is developing a new vision for the ECE department to place it among the top in the nation.

There are three principal expectations from the department heads:
- **Leadership**
- **Administrative Duties**
- **Personal Scholarship**

While all these activities are of vital importance to the functioning of the departments, providing effective leadership for all the constituents of the department is the most critical attribute that differentiates department heads in academia. Further expectations include identifying new research and educational initiatives, helping faculty in their professional development by identifying opportunities and providing support, developing research teams to seek external funding, implementing support, as well as providing mentorship for students to compete for national scholarships and launch their careers.
Department heads are expected to establish a strong vision for their units and provide the necessary oversight to ensure progress towards those goals. Connectivity at the broad professional platform and excellent judgment skills in every phase and form of faculty development are two of the attributes that are absolutely essential to succeed as a department head.

Faculty leadership development is not limited to department heads and/or program directors. One of the expectations from a dean is to identify faculty members who possess leadership skills and attributes, and then assist/support them in developing their skills to become future leaders in academia. Along these lines, I was instrumental for nominating Professor Terri Camesano to attend the leadership program of ELATE (Executive Leadership in Academic Technology and Engineering) run by Drexel University. This is a leadership development program focusing on supporting women in STEM fields to become academic leaders. Professor Camesano has been a member of the inaugural class of this program, which is concluding in March 2013. In fact, I was also instrumental in the development of this nationally recognized initiative while still at Drexel University. It is the expansion of an earlier program ELAM, which focused on leadership development in medical fields.

A significant part of my effort has been devoted to developing an effective team, allowing the department heads to achieve their full potential and develop a shared vision to elevate WPI Engineering. Complexities in academia can be dealt with with greater ease once a competent administrative team is developed.

Hiring New Faculty: Faculty hiring is the single most important function of any academic administrator who is engaged in this activity. Academic institutions, hence their faculty, are expected to excel in both educating future professionals and also conducting innovative, high-impact research that will lead to new discoveries. Neither one of these attributes is more important than the other in hiring the right faculty and excellent faculty typically and easily excel in both. Since joining WPI a significant portion of my time has been devoted to instilling this culture and identifying and attracting some of the best candidates available in the profession. In addition to the two new department heads, WPI Engineering hired 11 tenure-track faculty bringing the total to 92 T-TT faculty.

Academia is an individual sport played in a team format.
These new colleagues include the following: **ECE**: Lifeng Lai, Thomas Eisenbarth; **ME**: Maria Chierichetti, Çağdaş Önal; **BME**: Anjana Jain, Patrick Flaherty, Dirk Albrecht; **CHE**: Michael Timko, Amy Peterson, and **CEE**: Aaron Sakulich, and Nima Rahbar.

It is worth noting that these new colleagues join us with degrees from top institutions and with significant professional experience. In fact, three of them (Fan, Eisenbarth, and Rahbar) joined us having already received their NSF CAREER Grants. In addition to the 11 TT hires, we hired a number of full-time NTT faculty and a large number of part-time NTT faculty were appointed to meet some specific teaching needs, both through the regular programs and through the CPE Office.

The most important challenge was the development of a clear understanding of the importance of the hiring process and instilling the importance of expecting broad excellence as we add new colleagues to our fine engineering faculty ranks. Since our national rankings are still in the improvement phase, we face challenges that are not commonly shared with some of our peer institutions and require significantly more effort.
The follow-up phase of hiring top people is the development of a support strategy to ensure their professional success and positive contributions to WPI Engineering in the shortest time possible.

**Educational Programs:** Education of future professionals is the most important task universities have. All across the country universities try to attract the best students to their programs and take pride in the success of their alumni. Graduation rates for incoming classes, employment rates of graduating classes, and the opportunities that are offered to students during their education become the principal metrics by which the performance of universities are measured. The ever increasing cost of tuition and economic shifts also increase our liability as educators to ensure that those who spend significant resources for their education enjoy the benefits of their investment once they start their professional careers.

During the last two years, a new undergraduate degree program in architectural engineering was launched. Architectural engineering is defined as those activities related to the interaction between the people and their living envelopes. This program is becoming increasingly relevant due to world population growth and the dramatic shifts from dispersed living to high-density, high-rise living environments with many integrated features such as automation, energy, security, and transportation. WPI’s Architectural Engineering is the 18th such program in the nation and the only one in the New England area.

A new, modern Architectural Engineering Design Laboratory has been developed. This core facility will be used to educate our students using advanced simulation and design tools that will incorporate many important operational features, such as lighting, energy consumption, and visual developments.

*The Solar Decathlon* project is another major undertaking for a team of WPI undergraduate students. The team BEMANY (BElgium, MAssachusetts, NY), formed and led by a WPI group, will compete in China during the summer of 2013 which will involve a comprehensive evaluation of innovative house designs based on 10 different criteria. The project involves design, construction (modular), transportation, assembly, and on-site evaluation during the exhibition period. The following links provide additional information on this ongoing project. We are very hopeful that under the supervision of our capable faculty, and design/construction by our excellent students, WPI will have a strong presence in this major international event.

http://bemany.wpi.edu/contest.htm

www.youtube.com/watch?v=DumQIKxOn9c
Energy Project Center: One of the differentiating attributes for a WPI education is project-based learning. Starting in their freshmen year, WPI students are exposed to global problems such as energy, food and water supply, and healthcare. In response to national and global attention on energy, I chaired a committee in developing an educational strategy for WPI students. The recommendation of the committee was the formation of a virtual Center for Energy Projects that will serve as a clearinghouse for energy-related projects. The goal of the Center will be threefold:

- Web-based listing/Posting of all energy-related projects with brief descriptions and advisor names.
- Development of new energy-related projects and the establishment of new project centers outside WPI, notably in negotiation with national research centers.
- Search for external funding for undergraduate education, notably from the Department of Energy and NSF in support of energy-related student projects and associated travel and other discovery expenses.

Research & Scholarship: Research universities play an important role in our national leadership by addressing the critical needs of society. This is so important that various ranking systems/tools have been developed for comparative evaluation of doctoral universities. WPI Engineering is striving to be perceived as a major research institution; however, in a comparison with our peer institutions and with those we aspire to be, we see significant opportunities for further improvement. The main ingredients of successful research programs are the following:

- Faculty with innovative ideas who can also communicate these ideas broadly including through scholarly publications and proposals.
- Excellent and creative graduate students.
- External funding to conduct innovative research. This is a necessity without exception since students'/parents' hard-earned tuition money cannot be justifiably used to support long-term faculty research.
- High-impact research also necessitates significant infrastructure and instrumentation, which can be acquired by faculty through a number of external programs, such as NSF-MRI and DURIP. These activities are part of the expectations from faculty in engineering disciplines throughout the nation.
The issues on hiring research-capable, innovative new faculty with great teaching skills was covered earlier. However, many faculty need additional guidance to assist them with their efforts to get connected to funding opportunities. I have been very active creating new opportunities for WPI Engineering faculty. One such noticeable effort was in identifying and contractually engaging a top company, SMI (Strategic Marketing Innovations) in Washington, D.C. SMI has already been instrumental in assisting Professor Ki Chon with his last major Army Grant ($21.9M) as well as critically reviewing the Materials-Hub proposal ($125M) submitted under MIT leadership with WPI participation by Professor Diran Apelian. SMI is continuously bringing new opportunities to the attention of our faculty and is conducting periodic meetings both in Washington, D.C., and during their visits to our campus. There are a large number of initiatives and programs under discussion in collaboration with WPI faculty particularly in the areas of materials, manufacturing and communications/security.

A good example of my involvement in faculty activities is the NSF-IGERT grant. This prestigious program provides a block-grant to an institution in support of domestic (U.S.) graduate students who want to pursue doctoral studies. There have been several earlier attempts, but last year a team led by Professor Terri Camesano succeeded in receiving the first IGERT grant for WPI. I was very pleased to be able to work with this team to assist them in fine-tuning their proposal based on my earlier experiences with the same program.

One of the key elements of a successful doctoral program is the ability to attract first-rate graduate students. Academic research environment is well aware of this fact, which makes attracting excellent graduate students to our programs very competitive. Based on my previous experience at Drexel, where I truly changed the profile of the graduate program, I have embarked on a proactive initiative to assist our potential graduate students to compete for the prestigious NSF-GRFP and NDSEG fellowships. These programs provide substantial financial support to graduate students and about 1,200 of them are available annually in the fields of engineering and science. It was surprising to notice the initial unawareness of this exceptional opportunity, so I have personally worked with one of our exceptional students, Julie Bliss, to provide effective mentorship for her to receive one of these fellowships. This year there was a noticeable
increase, as a few progressive faculty worked with our students in preparing them for these fellowships. I have personally worked with three students, as well. I have developed a new initiative whereby working with our students to prepare them for national fellowships is now part of the performance evaluation for department heads and academic leaders.

One of the active areas of focus is the development of centralized research facilities, which will house advanced instrumentation for material characterization and other functions in support of faculty research. This facility is envisioned as part of the repurposing of Alumni Gymnasium and a model will be followed that is commonly adopted in many research universities whereby the facility also serves as a regional resource for high-tech industries and becomes an element of broader economic development.

**Marketing and Branding:** Marketing has become an important element in academia. With all due emphasis on rankings, the recruitment of outstanding faculty and attracting top students to both undergraduate and graduate levels led to the proliferation of printed and web-based material. These materials help to communicate institutional strengths and opportunities with individuals considering engagement with WPI or in positions of decision making in areas such as hiring and ranking. WPI never had a dean of engineering and has not been represented in academic circles that involved engineering deans. Furthermore, while people thought of WPI as an engineering school, they did not receive any informational material and were kept unaware of the many wonderful things happening at WPI. One of the initial priorities for me was the development of effective communication tools to inform external constituents about the activities at WPI. This was initially met with unexpected resistance. However, more recently the need for such material was acknowledged and some attractive publications are becoming available.

Of the two most significant initiatives, one is the WPI Engineering eNewsletter that reaches out to about 16,000 recipients, including all our faculty, students, alumni, engineering deans, and the members of the National Academy. We have a significant opening rate for this distribution and have received favorable feedback from many of those who expressed their pleasure for being informed of many of the worthwhile things happening at WPI Engineering.
The second major initiative is a more comprehensive 68-page brochure that is at the print stage and 13,000 copies will become available during January 2013. This attractive document has extensive information on our project-based education, global outreach, faculty research, and alumni activities.

**Fundraising and Alumni Relations:** One of the most important tasks for me and my administrative team is the development of resources to support the programs and growth of a university. A well-managed, high-quality operation that is bound toward growth and prominence is key for resource development and fundraising. Aligning the institutional needs with specifics of fundraising opportunities requires careful evaluation and matching of the opportunities, as well as superior interpersonal skills. Development of a compelling story along the lines of institutional goals, and articulation of these goals to potentially “loyal” and “passionate” donors and to ensure them of the impact of their investment in their institution requires finely tuned skills that should be a part of a dean’s identity. Naturally, marketing is also an important part of fundraising.

I have been very active in fundraising. Donna Stock, the WPI Engineering director of academic advancement, and I have made numerous visits to locations such as Colorado, Texas, Pennsylvania, California, and New York, as well as participating in large number of local activities. Several of these prospects were contacted and visited for the first time. A selection of these contacts is presented below:

*Thomas Arseneault ECE ’85* is president of the Electronic Solutions business within BAE Systems’ Electronics, Intelligence & Support (EI&S) operating group, leading the group’s work in major areas of defense electronics, including electronic warfare; electro-optical and infrared sensor systems; communications, navigation, and identification; surveillance systems; precision targeting; space systems; and advanced technologies. Arseneault supervises some 2,000 engineers and is responsible for BAE Systems PLC's performance by managing the systems and design engineering functions. He led the Electronics & Integrated work in state-of-the-art infrared imaging, precision targeting solutions, space systems and electronics, integrated sensor and signal processing, and identification and surveillance.

*Allan Brockett (FRD)* is vice president of engineering, Module Centers, for Pratt & Whitney, East Hartford. During his 34-year career with the company, he has held positions in systems and module center engineering, and operations.

*Paul Wyman ME ’85* leads Lockheed Martin’s Smart Grid Solutions Line of Business. He has brought to market Lockheed Martin’s Smart Energy Enterprise Suite Smart Grid Command & Control products and services that provide an integration framework of smart grid applications and integration services focused on the efficient and effective use of energy on the grid and customer side of the meter. Wyman has more than 20 years of domestic and international experience in technology, software, and engineering. He has also served as senior vice president AMI, TMG Consulting, responsible for advanced metering infrastructure advisory consulting services for TMG; vice president, sales, QT Technologies, a wireless point of sale SaaS (Software as a Service) capability serving the oil and gas industry, where he created a new category capability for QT Technologies, who traditionally served the FOB general aviation sector; principle and partner at The Borska Group, a strategy consulting firm to the utility sector; vice president, sales and marketing, for Cayenta, Inc.; and spent 13 years with Raytheon.
Arthur T. Katsaros CM ’69 is retired group VP, Engineered Systems & Development, at Air Products & Chemicals, Inc. Katsaros also serves on the Advisory Board of WPI Chemical Engineering.

Antony (Tony) Koblish ME ’87 is former vice president and general manager, Stryker Orthovita, located in Malvern, Pa. He serves on the board of Pennsylvania Bio, a trade association representing Pennsylvania’s biosciences community. His former company, Orthovita, was acquired in May 2011. In his previous position as CEO at Orthovita, he directed where the firm’s spine/orthopedic surgical biomaterials innovations funding was allocated.

Peter Lando, Esq. (FRD) is one of the founding partners of Lando & Anastasi, LLP, and has served the firm in many leadership capacities since its inception. He’s held positions with Wolf, Greenfield & Sacks, Shareholder/Partner BASF Chemicals, Engineering/Product Development.

Edward D’Alba, CE ’72 is president and chief executive officer of Urban Engineers, Inc., an employee-owned, Philadelphia-based, 475-person firm of consulting engineers, planners, and construction managers. Founded in 1960, the firm has 12 offices in six states. D’Alba was instrumental in broadening Urban Engineers’ profile through diversification into construction inspection and construction management services. Today, the organization is consistently ranked as one of the top regional engineering firms and a national leader in planning, engineering, construction management, and construction inspection of major transportation infrastructure including airports, highways, bridges, transit, and marine facilities.

Jeff White ECE ’84, after his involvement as an investor and board member, joined Ecospan as president in January 2011. Ecospan is a materials science, design, development, and manufacturing company producing durable goods made from bio-based plastics. In his past ventures he served as president of Napro Bio, where he assisted with the sale of its Therapeutic Cancer business. He also served as CEO of RCD, where he led several rounds of multimillion dollar financing and eventual commercialization of its proprietary RFID technology, and CEO of Fingerworks, a “touch pad” input device provider, where he developed strategic partnerships that led to the eventual merger with Apple – its multi-touch platform became the foundation for the iPhone and iPad. He began his career at Hewlett-Packard in a variety of senior management positions.

Bill Mitchell (FRD) is chairman, president, CEO, and director of Environmental Tectonics Corporation (ETC). He has been with the company he founded since 1969. His primary interests revolve around remaining an active and contributing member of the aviation training and research community. Focusing on promoting awareness of the advantages and need for more effective advanced flight training utilizing true physiological stress, he drives the effort behind ETC’s R&D and production of simulators for this use setting an industry precedent in how research and training is conducted for the newest aircraft coming on the market.

Greg Cipriano ECE ’76 is the founder and principal of Internexsys. He has spent the last 10 years in the clean energy field and has over 30 years experience in high tech. He has worked in a number of senior executive positions in both large and small companies, including product development, marketing, and business development. He has successfully started and exited two companies and has practical hands-on experience launching new technical products into early markets. He has raised over $500 million worth of business. He is also involved in developing and funding large renewable energy projects.

Tom Daly ECE ’04 is chief scientist and co-founder of Dyn. He is a member of the Dean's Advisory Council for WPI Engineering. He is responsible for setting the vision and architecture of the company’s Infrastructure-as-a-Service (IaaS) offerings, including Managed DNS and Email Delivery platforms. With over 10 years experience in designing and deploying Dyn’s global anycast network, he is well-versed with the internals of how the Internet works at scale, and is an expert in global Internet architecture, the Domain Name System (DNS), email, and network security. He also oversees Dyn’s research and development department: Dyn Labs. Labs is Dyn’s technology playground, designed to investigate potential technology offerings for clients and Internet users worldwide.

Tom Pajonas ME ’78 is currently senior vice president and president, Flow Control Division, at Flowserve Corporation, located in Irving, Texas. He previously served as senior VP of ABB (Asea Brown Boveri) and Alstom Transport.

Peter (Pete) Fenner EE ’65 is president at Fenner Investments, LTD, located in Richardson, Texas. He has been semi-retired since the ’80s and has continued to work in computer systems consulting.
Clifford (Cliff) Weiner PH ’81, is currently president and chief executive officer of ORIX Municipal Finance at ORIX USA Corporation, located in Dallas. His business interests include investment strategies for commercial and industrial development, government infrastructure, and other public projects.

James (Jim) Diemer CE ’82, is managing director and executive vice president at Pace Global Energy Services, located in Houston. Prior to the recent acquisition by Siemens Industry, Inc., he led Pace Global’s consulting practice. His experience and expertise spans all energy forms, but is principally focused on natural gas markets and procurement across the full supply chain.

Campus Visit with MITRE with Lou Metzger, Corporate Chief Engineer. Metzger is responsible for the quality of MITRE's engineering and for ensuring that MITRE's work and products reflect the excellent technical quality its customers have come to expect. During the course of the campus visit, he and Marie Francesca, director of corporate engineering operations, outlined MITRE's current focus areas and their work with emerging and enabling technologies.

Campus visit with FM Global included Louis Gritzo, vice president and manager of research, and Sergey Dorofeev, group manager of fire dynamics and explosions. FM Global provides comprehensive global commercial and industrial property insurance, engineering-driven underwriting and risk management solutions, groundbreaking property loss prevention research, and prompt, professional claims handling. Gritzo also oversees activities at FM Global’s US$125-million, 1,600-acre, one-of-a-kind research campus in West Gloucester, R.I., the world’s largest center for property loss prevention research.

Cari Windt ME/Aerospace ’91 is currently working in Human Resources for Bank of America. She was formerly senior vice president for GE Commercial Finance Corporate Services. She worked for the Private Equity Funds with their industrial clients around the country on a primarily consulting basis.

Lawrence Livermore National Labs Visits included meetings with Diane Chinn, director of engineering, Technologies Division; Betsy Cantwell, section leader, NIF Microtechnology Center; Joshua Kuntz, materials scientist; Eric Duoss, research staff member, Center for Micro- and Nanotechnolgies; Buck Koonce, director of economic development; and Doug Rotman, energy and environmental security program director. LLNL has a mission to strengthen United States security through development and application of world-class science and technology, to enhance the nation’s defense, reduce the global threat from terrorism and weapons of mass destruction, and respond with vision, quality, integrity, and technical excellence to scientific issues of national importance.

Carl and Sarah Rosendahl Carl is currently a consultant and faculty lecturer for the Entertainment Technology Center of Carnegie Mellon University, located in Silicon Valley. He also consults for a number of companies, where he specializes in helping to direct and manage creative organizations that are technology based. He was formerly CEO and founder of Uth TV, a teen-oriented television, art-sharing, and broadband outlet used to foster the next generation of filmmakers; he served as managing director of Mobius Venture Capital; and he was founder of Pacific Data Images. PDI became one of the pioneering and most highly innovative creators of computer animation for film and television. During his 20 years of leading the organization, PDI produced over 700 commercials, worked on visual effects for over 70 feature films and, in partnership with DreamWorks SKG, produced the hit animated film Antz and the Academy Award-winning Shrek. In early 2000 he sold PDI to DreamWorks SKG. Sarah is currently chief legislative aide for Supervisor Don Horsley in San Mateo County. An active community member, she serves as president of the Southern California Coordinating Council and member of the national board, based in Washington, D.C.; a Board member of Advocates for Children, San Mateo County's CASA program, Women's Foundation of California's Women of Silicon Valley Fund, and as investment advisor, Silicon Valley Community Foundations' Fostering the Future Fund. Youth and Family Assistance, Steering and Advocacy Committees of the San Mateo County Council of Nonprofits, Advisory Board of BoardNet, and Advisory Board of the Peninsula Conflict Resolution Center.

Robert Sherburne ECE ’79 has over 20 years of industry and academic experience focusing on the design of microprocessors, graphics processors, digital signal processors, and analog sampled data systems including CCD’s. During the 12 years prior to joining Airify, he architected and designed graphics subsystems for SGI, including Indigo, Indy, Nintendo64, and VPro products. Prior to SGI he was with Pixar, where he initiated and led the CMOS/ECL ASIC effort for the Pixar Image Computer. He also worked with Integrated Circuit Systems, Inc. on design of a single-chip PDP-11 (T11), and at the GE Corporate Research and Development Center on CCDs.
**Robert Koerner (FRD)** is professor emeritus of civil, architectural and environmental engineering. Throughout his over 40-year career, he has established a sterling reputation as a technological innovator, educator and engineering practitioner. He has authored hundreds of journal papers and books and spoken at national and international conferences on topics spanning soil deformation, waste containment facility construction, and the use of geosynthetics in erosion, filtration, and drainage control. Koerner is a Distinguished Member of the American Society of Civil Engineers and was elected to the National Academy of Engineering in 1998, and a Distinguished Member, Hero, and Diplomat of the Geo-Institute.

**Campus Visit with National Fire Protection Association** included Jim Shannon, president and chief executive officer; Kathleen Almand, executive director of the Research Foundation; Gary Keith, vice president of field operations and education. The mission of NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. The Fire Protection Research Foundation responds to current challenges with activities in a number of areas, including detection and signaling, hazardous materials, electrical safety, fire suppression, storage of commodities, and firefighter protective clothing and equipment.

**Jeff Smith CE ’81,** is senior vice president of defense, National Security, and IT Services for Data Computer Corporation of America (DCCA), Inc. DCCA is a 30-year-old VOSB government IT services firm based in Columbia, Md., with over 140 professionals, with the majority holding TS/SCI with poly clearances. DCCA primary customers are the NSA, DoD, and HHS. He is a professionally recognized expert in business capture, mission effectiveness, cost reductions, private-public partnerships, cyber defense and electronic warfare, solving highly complex business, technology and transformation challenges for the U.S. Federal Government, Military, and many of the world’s largest enterprises. He has worked with and advised the Air Force (U.S., NATO, Poland), Army (Canadian MOD and U.S.), Australia MOD, Boeing, DFAS, DHS, DOJ, General Electric, General Motors, IBM, JFCOM, Lockheed Martin, the U.S. Marine Corp, MDA, Navy (U.S. and UK), NGA, NRO, NSA, Raytheon, Serco, Singapore MOD, TRANSCOM, UK MOD, Veterans Affairs, 38 of the Fortune 50, and sits on the boards of directors and advisors for several government and commercial entities. Additionally, he holds several patents in the areas of cyber security, cyber defense, logistics, supply chain network optimization, neural networks, and financial investment analytics.

**Ted Lynch, NE ’71 (MS)** founded Strategic Marketing Innovations (SMI) in 2001 following a 25-year career in advanced materials development. He started his advanced materials career as an Air Force captain and project manager investigating the properties of a broad range of high temperature composite materials. He is member of the Executive Cabinet of the Society for the Advancement of Material and Process Engineering (SAMPE), where he has been a member for over 40 years. SMI is a technology-based company. The technologies that SMI has helped clients develop and advance range from materials, to electronics, to renewable energy, to a wide range of health care technologies. They represent many leading United States high technology firms. Also, SMI manages the United States Advanced Ceramics Association (USACA) comprised of leaders in the field of high-temperature materials for aerospace and for energy generation.

**Bob Brown ME ’78** is former chief executive officer at Goss International Corporation located in Dover, N.H., and is currently serving on the board of Markethank.

**Mike Grilli CE ’66** is chairman and CEO of BETA Group, Inc. He has more than 45 years of engineering and management experience in the planning, design, and construction of multimillion dollar projects in the water, wastewater, storm drainage, solid waste, and transportation fields. He is responsible for overseeing all aspects of BETA and its continued growth and expansion since 1982, with clients throughout New England. He provides a team of highly skilled professionals with decisive guidance and a commitment to excellence.

**Campus Visit with United Laboratories** included Paul Brown, assistant general counsel; Tom Chapin, vice president, corporate research; Pravin Gandhi, director, corporate research; Gus Schaefer, senior vice president and public safety officer.
Ted Fredericks ME ’72 is currently president, COO, and partner of Mohr Partners in Dallas. He worked for Riley Stock and Software Spectrum for a number of years, which was eventually purchased by Level3 Technology. He has been with Mohr for 16 years and focuses his efforts on project management around the globe, coordinating all infrastructure and business. Previously he served as vice president of operations with Quicksilver Resources, Production/Operation Manager for Devon Energy, and held a variety of technical and managerial roles with Mitchell Energy and Shell Oil. Notably he led the team of engineers at Mitchell Energy, who applied new stimulation techniques to unlock the shale gas potential in the Barnett Shale formation in the Fort Worth Basin.

George Vittas CE ’64 is currently principal at Vittas Aviation Consulting in Bedford, Texas, after retiring as senior vice president of global aviation from AECOM Technology Corporation in December 2011. He held previous positions at DMJM Aviation and Turner Collie & Braden, Inc.

Campus Visit with Kathy Loftus ME ’86 Kathy is global leader of sustainable engineering and energy management at Whole Foods Market, Inc. located in Cambridge, Mass. She is in charge of coordinating sustainability programs, including overall company impact reporting. She also directs engineering, energy management and maintenance best practices, and green building and strategic energy procurement efforts for Whole Foods. She has been in the role for more than six years and also sits on the Steering Committee for the U.S. DOE’s Commercial Buildings Energy Alliance. Loftus also coordinates EPA Program partnerships and has served as an advisor for the grocery sector for the USGBC’s LEED program. In addition to roles as director of business development for a start-up energy technology firm and an electric utility company, she spent eight years as director of energy and environmental management for Shaw's Supermarkets. She served as chairperson of FMI’s Energy & Technical Services Committee, and as a participant on the 2005 New England Roundtable on Federal Renewable Energy Policy. This visit also included meetings with Jamal Yagoobi and Art Heinricher.
In addition to individual contacts, there have been a number of special events organized to bring WPI alumni and friends together. In these events I had the opportunity to share my vision for WPI Engineering through formal presentations. Included in these events:

- Denver, September 2012, Denver Museum of Science
- Denver, September 2012, event hosted by Mr. & Mrs. Steve Halsted ’68
- Philadelphia, September 2012, Waterworks
- Philadelphia, November, 2011, event hosted by Robert Beckett ’57
- Houston, April 2012, Houstonian Hotel
- Dallas, August 2012, event hosted by Mr. & Mrs. Michael Dolan ’75

**Advisory Council:** It is a common practice in academia that an external body of prominent professionals forms a committee to assist the dean at an advisory capacity in planning, strategic development, fundraising and other matters that are relevant to the operation of the college. This was a peculiar situation considering that all 326 colleges of engineering across the United States are led by their respective deans while WPI did not have a dean of engineering, despite the fact that it has been perceived as an engineering school. One of the tasks in developing the operational elements for WPI Engineering was the establishment of an Advisory Council made up of prominent members of the WPI engineering community. This distinguished group includes individuals such as **Capt. Christopher Ferguson**, commander of the last Space Shuttle flight (Atlantis, STS-235); **Cato Laurencin**, member of two national academies: Engineering (NAE) and Health; **Robert Koerner**, a member of the NAE, who established the Koerner Family Fellowships at WPI two years ago.

The Advisory Council is scheduled to meet twice a year. The first meeting was held on February 20, 2012 and the second on October 19, 2012. The next meeting is scheduled for March 29, 2013.
## Membership of WPI Engineering Advisory Council

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
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</thead>
<tbody>
<tr>
<td>Richard K. Allen, Esq. '76</td>
<td>Senior Vice President &amp; Chief Operating Officer</td>
<td>Stantec, Inc.</td>
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<tr>
<td>Thomas A. Arseneault '85</td>
<td>Executive Vice President</td>
<td>Product Sectors, BAE Systems</td>
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<tr>
<td>Michael E. Aspinwall '75</td>
<td>Managing Partner</td>
<td>CCP Equity Partners</td>
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<tr>
<td>Allan Brockeett</td>
<td>Vice President, Engineering - Module Centers</td>
<td>Pratt &amp; Whitney</td>
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<tr>
<td>Curtis R. Carlson '67</td>
<td>President &amp; CEO</td>
<td>SRI International</td>
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<tr>
<td>Yet-Ming Chiang</td>
<td>Professor, Materials Science and Engineering</td>
<td>MIT</td>
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<tr>
<td>Michael J. Cima, PhD</td>
<td>Sumitomo Professor of Engineering</td>
<td>MIT</td>
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<tr>
<td>Arthur J. Coury, PhD</td>
<td>Principal</td>
<td>Coury Consulting Services</td>
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<tr>
<td>Edward M. D’Alba, P.E. '73</td>
<td>President, CEO &amp; Principal Owner</td>
<td>Urban Engineers, Inc.</td>
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<tr>
<td>Thomas J. Daly '04</td>
<td>Chief Scientist and Co-Founder</td>
<td>Dyn</td>
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<tr>
<td>Carlos M. del Sol</td>
<td>Retired Vice President, Global Engineering</td>
<td>Campbell Soup Company</td>
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<tr>
<td>Robert I. Desourdis, Jr. '77, M'79</td>
<td>Vice President for Technology</td>
<td>SAIC</td>
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<tr>
<td>Tomás Diaz de la Rubia</td>
<td>Consultant</td>
<td>YDS International Consulting</td>
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<tr>
<td>Christopher J. Ferguson</td>
<td>Crew &amp; Mission Operations Director</td>
<td>Boeing Company</td>
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<tr>
<td>Christopher Fey</td>
<td>Chairman, Chief Executive Officer</td>
<td>U.S. Preventive Medicine, Inc.</td>
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<tr>
<td>William A. Fitzgerald, III '83</td>
<td>Vice President &amp; General Manager</td>
<td>GE Aviation</td>
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<td>Alfred Grasso M'93</td>
<td>President and Chief Executive Officer</td>
<td>MITRE Corporation</td>
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<tr>
<td>Michael E. Grilli '66</td>
<td>Founder, Chairman &amp; CEO</td>
<td>Beta Group, Inc.</td>
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<td>Louis Gritzo, Ph.D.</td>
<td>Vice President, Manager of Research</td>
<td>FM Global Technologies LLC</td>
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<tr>
<td>Roger J. Hajjar, M.D.</td>
<td>Director of the Cardiovascular Research Center</td>
<td>Mount Sinai School of Medicine</td>
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<td>Nafig Karabudak</td>
<td>Manager, Corporate Technology Initiatives</td>
<td>Lockheed Martin Corporation</td>
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<tr>
<td>David P. Kelly '82</td>
<td>President &amp; CEO</td>
<td>Bluefin Robotics Corporation</td>
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<tr>
<td>Robert M. Koerner</td>
<td>President &amp; Director</td>
<td>The Geosynthetic Institute</td>
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<tr>
<td>Peter C. Lando, Esq.</td>
<td>Partner</td>
<td>Lando &amp; Anastasi, LLC</td>
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<tr>
<td>Caio T. Laurencin, M.D., Ph.D.</td>
<td>Director, Institute for Regenerative Engineering</td>
<td>Univ. of Connecticut</td>
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<tr>
<td>William F. Mitchell</td>
<td>President</td>
<td>ETC Corporate Headquarters</td>
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<tr>
<td>Michael A. Nallen '82</td>
<td>President</td>
<td>Thermatool Corporation</td>
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<tr>
<td>Can Ozdemir</td>
<td>President</td>
<td>Dizel Turbo, Ltd.</td>
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<tr>
<td>Martin H. Reiss, PE, FSFPE</td>
<td>President &amp; CEO</td>
<td>Rolf Jensen &amp; Associates, Inc.</td>
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<tr>
<td>Rodney Riek</td>
<td>Principal Engineer, Product Development Center</td>
<td>Harley-Davidson USA</td>
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<tr>
<td>Carl O. Rosendahl</td>
<td>Co-Director, Entertainment Technology Center</td>
<td>Carnegie Mellon, California</td>
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<tr>
<td>Tariq Samad</td>
<td>Corporate Fellow, Automation and Control</td>
<td>Honeywell</td>
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<tr>
<td>Jeffrey E. Smith ’81</td>
<td>Senior Vice President</td>
<td>DCCA</td>
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<tr>
<td>Pearson M. Spaght</td>
<td>President</td>
<td>Fletcher Spaght</td>
</tr>
<tr>
<td>David B. Spencer</td>
<td>Founder, CEO &amp; Chief Technology Officer</td>
<td>wTe Corporation</td>
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<tr>
<td>Giancarlo Spinelli</td>
<td>Rector's Delegate for International Relations</td>
<td>Politecnico Di Milano</td>
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<tr>
<td>Vanessa Vardon</td>
<td>Vice President, Business Development</td>
<td>Simit + Smith</td>
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<tr>
<td>Jeffrey D. White '84</td>
<td>Owner/Board Member</td>
<td>Ecospan, LLC</td>
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<tr>
<td>Richard D. Willett ’91</td>
<td>Chief Executive Officer</td>
<td>Ascend Learning, LLC</td>
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<tr>
<td>Paul M. Wyman ’85</td>
<td>General Manager, Smart Grid Solutions</td>
<td>Lockheed Martin</td>
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### International Relations:

Globalization has become part of our lifestyle and professional environment. It is important that both our faculty and students enjoy the opportunity to develop their skills and connectivity according to this new reality. Based on my long-standing relation with key international institutions, I have been instrumental in forging several new relationships on behalf of our faculty. Most notably, an MOU was signed...
between WPI and Politecnico di Milano toward developing joint programs and to intensify student/faculty exchange programs. A team of WPI faculty—Professors Camesano, Billiar, Gaudette, and Chon—visited PoliMilan to explore a broad range of opportunities. This includes development of joint proposals to international funding agencies, most notable for the DoE-EU supported Atlantis program. The WPI-PoliMilan arrangement is also a component of our successful NSF-IGERT program.

Another important connection was established with the Tsinghua University in Beijing, China. Professors Camesano, Gaudette, and Billiar visited both Tsinghua and PoliMilan to explore the opportunities for WPI to work with these two fine institutions. I also established new relations with Skoltek Institute, located in Moscow. Michael Timko, a new faculty member in Chemical Engineering, is actively pursuing a major collaborative research project jointly with Skoltek, MIT, and WPI.

I was also instrumental in developing connections with the NATO Science for Peace program, with which I had substantial experience. Connectivities were established for funding an international collaborative research in the security of embedded systems. Professor Wyglinski visited the program directors in Brussels and had a very favorable response. A proposal is being submitted for consideration by NATO. Professor Camesano has submitted a proposal to hold an international workshop on the timely subject of biological warfare. Her proposal is currently being evaluated and if the outcome is positive, this will bring additional international exposure to our programs.

**Operational Information:**

Accurate information is very important in decision making. Compulsive decisions based on ad-hoc approaches do not always give desired results. WPI is known as an engineering school. Strength of the engineering programs is pivotal to its continuing reputation and financial stability as an institution. Currently, of about 3,500 total WPI undergraduates, 2,300 of them are enrolled in engineering programs (not counting Industrial and Robotics Engineering). The last count shows that there are 240 tenured/tenure-track faculty in WPI of which 92 are in engineering. Faculty resources, space resources, and various support resources need to be in alignment with the factual operational data. Scrutiny of engineering programs goes beyond rankings. ABET visits that occur every six years review all the elements that contribute to effective education of future professionals. The next ABET accreditation visit is planned for fall of 2014 and it will be a major external assessment of our activities and of our position in training the next generation of engineering professionals. Factual data play an important role in these reviews. Hence, identifying and implementing necessary
adjustments to changing dynamics, both internally and externally, is part of the responsibility of the dean. Major shifts between the programs, development of new programs and initiatives require significant coordination and communication. Deans should play a critical role in closing gaps and bringing connectivity among various decision makers.

I have been most active in generating quantifying data and sharing this data with both the faculty and administrators through faculty meetings and respective department heads. I have been communicating suggestions with the decision makers to determine some of the critical underlying issues and how to better position WPI Engineering as a premier education and research operation. This extensive data is part of the Annual Report and not included here. The next few years will be critical to the level of support engineering receives and the resulting impact.

Since the Dean of Engineering office did not exist prior to my arrival, I had to build the office from the ground up. I developed an office infrastructure bringing on Christine Haas as director of operations. Over the next year the office expanded with the needs of the departments and required reorganization. As a result, I created two new positions, hiring Pam St. Louis, who, as manager of operations, handles finances and human resources, and Karla Cinquanta, who, as manager of special projects, oversees special events and marketing.

Summary

The position of Dean of Engineering is not a new concept, because most institutions of higher education that offer a degree in engineering have a dean. Neither the Engineering Dean’s position nor the Office of Engineering Dean existed at WPI prior to my arrival (WPI and Brown University were the two exceptions until recently).

Deans serve as visionary and administrative leaders of their respective units. Deans are not expected to replace the functions of the faculty, but rather enable all faculty to fulfill their obligations to their institution and to their profession. Among the myriad functions, deans provide vision, connectivity, new opportunities, awareness of existing opportunities, encouragement, mentorship, and support for the faculty. However, how to make best use of them largely depends on the faculty. In short, success of a dean cannot be considered an isolated matter and is measured primarily by the success of its constituents.

Like any other profession, engineering education and research is under constant scrutiny and evaluation. Several ranking instruments are widely available and WPI’s current standing indicates much room for improvement. It is of greatest importance that we maintain and improve our value proposition to the society through our educational and innovative research activities not only to ensure proper assessment by our peers but also to ensure financial stability that is so important to support our growth and
increasing prominence. Assessment of our current needs, in part, is indicative of absence of a dean for the engineering programs.

We have many challenges ahead of us. Attracting and hiring the best faculty, improving the way we serve our students in and out of classroom, improvement and development of infrastructure in support of our faculty and students, significantly building of our innovative research enterprise, and exploration of revenue sources are part of the agenda for several years to come. In January 2013, I completed my second year serving as the Bernard M. Gordon Dean of Engineering at WPI. This report briefly summarizes some of the activities that I have been engaged in since joining WPI. It is not possible to evaluate leadership based on discrete acts and events. True leadership is in the creation of an environment that is conducive of excellence in everything we do. Administrators should be able to bring the best of each and every one of its constituents to make the sum greater than the sum of individual components. Hence, leadership develops the environment and the environment determines behavior.

I have enjoyed my two years working with the finest colleagues in the profession and I look forward to years ahead in jointly carrying WPI Engineering to new highs and prominence.