

Technological Leadership

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CENTER FOR THE DEVELOPMENT OF TECHNOLOGICAL LEADERSHIP / INSTITUTE OF TECHNOLOGY



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CDTL contributing on many fronts



Massoud Amin
*H.W. Sweatt Chair in
Technological Leadership;
Director, Center for
the Development of
Technological Leadership;
Professor of Electrical
and Computer Engineering*

Welcome to the summer/fall 2008 issue of *Technological Leadership*. I am pleased to offer an update on our progress toward CDTL's goals during the last six months.

Greater reach and impact

- **Collaborations with Cairo/Nile University:** Our joint Management of Technology (MOT) graduate program at Nile University in Egypt, launched in January 2007, marks the first formal collaboration between the University of Minnesota and a North African or Middle Eastern country.

In May, Dr. Lockwood Carlson, James J. Renier Chair in Technological Leadership, delivered his second course, Technology Foresight and Forecasting, to 21 high-performing working professionals from industry and government. Dr. Tarun Soni and Professor Karl Smith also taught additional MOT courses. Mr. John Skovbrotten led a software project management course in spring 2008. During June and early July 2008, I returned to Egypt with Professor Alfred Marcus, Edson Spencer Chair at CDTL, for his Strategic Management of Technology class, the fifth MOT course in the series.

All involved reported positive experiences, strengthening connections between our universities and paving the way for future collaborations.

- **International MOT Project:** MOT students traveled to Delhi and Bangalore, March 22-April 5 for the MOT international residency. We enjoyed superb collaborations with colleagues from the Indian Institute of Technology (IIT) in Delhi, Indian Institute of Science (IISc) in Bangalore, the Ministry of Science and Technology, 3M, Honeywell, SAP, Hero Honda, and many other indigenous or transnational companies and organizations that graciously hosted us.

Organized in five focused teams, the 31 MOT students assessed new business opportunities or alliances with India for Minnesota organizations in areas such as renewable energy, medical/biotech, information technologies, infrastructure development, and research and development centers and innovation.

We were delighted that Commissioner Gopal Khanna, chief information officer for the state of Minnesota, participated in the final executive

debriefing on behalf of Governor Tim Pawlenty. In addition, the final reports and findings were shared with pertinent organizations in both India and Minnesota.

- **Capstone Project:** This key integrative course in the MOT and ISE programs allows students to apply what they have learned to workplace issues, often with significant real-life benefits. Each year, 30-35 MOT and 8-12 ISE capstone projects are completed. All 31 members of the MOT Class of 2008 completed their capstones before their May 9 commencement. The financial impact of MOT capstones per successful project ranged from more than \$100,000 to over \$10 million in increased revenues, cost savings, or product or process innovations.

Tailored offerings

CDTL continues to develop special offerings to meet and anticipate the needs of Minnesota organizations.

- **Signature Series:** CDTL and the University of Minnesota Rochester (UMR) will offer the 10th annual eight-day CDTL/UMR Signature Series Sept. 22-25 and Oct. 20-23, 2008, at UMR's new location at University Square. This series continues to be very well received by all participants.

- **Mn/DOT Pilot Program:** An 11-day pilot program, "Master Skills Development for Project Managers," was delivered to the Minnesota Department of Transportation (Mn/DOT) during January-March 2008 with the support of an outstanding team of colleagues and the Mn/DOT advisory committee. More courses are being developed and planned for early 2009.

Foresight After Four seminars

The Foresight After Four seminars remain a popular venue for the community. CDTL plans more events for fall and winter. The most recent speakers include:

On the cover: View of the bridge from CDTL's office in the University of Minnesota's West Bank Office Building (photo: Ann Bechtell) and aerial view of the bridge project looking west toward downtown Minneapolis (photo: Mn/DOT).

- **Mr. Scott Mix**, manager of situation awareness and infrastructure security, at the North American Electric Reliability Corporation, presented in January on the Electricity Reliability Organization, relationships with governments, the standards development process, and cyber security standards, as well as areas for collaborations in the cyber security of the Electric Power Grid.

- **Professor Vinayshil Gautam**, the Al-Sagar Chair Professor at the Indian Institute of Technology (IIT)-Delhi, first head of the Department of Management Studies and founder of IIT-Delhi's Entrepreneurship Program, conducted a June seminar on the character of innovations and investment in engineering business. In a holistic manner, he also explored the factors in favor of high-tech entrepreneurship in telecommunications.

- **Professor Sushil**, Department of Management Studies, IIT-Delhi, gave a July presentation on implementing a flowing stream strategy, crafting strategies that combine a proactive/intended strategy (new initiatives plus ongoing strategy), and a reactive/adaptive strategic management approach to accommodate changing global business circumstances.

Classroom renovation

The main phase of a remodeling project for the total renovation of CDTL's executive education facility is scheduled for completion by mid-August. CDTL will host an open house this fall, and I hope that you will plan to visit our updated facilities and to meet alumni, board members, faculty, staff, students, and colleagues.

CDTL strategic plan

Nearly four years ago, CDTL successfully conducted its road mapping process to create and execute its strategic plan. We mobilized and picked the brains of our best assets—CDTL staff, faculty, board members, alumni, University administrators, and company executives, who collaborated in teams to research trends, organize focus groups, and analyze the results. These stakeholders offered valuable insights about educational needs and gaps in Minnesota.

Because CDTL did so well in the past two decades delivering on the center's founding vision as a place of interdisciplinary learning and leadership development, we were in a unique position to move forward in exploring new ways to serve our community, companies, and society. We considered several options, including international collaborations for our offerings.

We have made notable advances in reaching CDTL strategic plan goals to "shape technological leadership and management worldwide," and to "position CDTL" to develop and extend our global reach and to create world-class programs.

As we enter the fifth year of our strategic plan, it is time to build on our strong foundation and look forward as we update our roadmap for the future. We will again turn to our community for input, and we encourage and welcome your participation.

Centers such as CDTL bring disciplines together and make connections to industry, business, and government partners. We have an important role to play, and you play an important role in our shared vision and success. Thank you for your support of and contributions to CDTL and its mission.



(l to r) Patricia Simmons, chair, Board of Regents; Massoud Amin; Robert Bruininks, president, University of Minnesota.

CDTL Director Wins Teaching Award

Director of the Center for the Development of Technological Leadership (CDTL) and the H.W. Sweatt Chair in Technological Leadership, Massoud Amin received the University of Minnesota's Award for Outstanding Contributions to Postbaccalaureate, Graduate, and Professional Education in the spring.

The University grants this award annually to recognize and honor the outstanding contributions to graduate education by a select group of faculty members. In addition to his administrative and research responsibilities, Professor Amin serves as the director of graduate studies for the MOT program, and in the past 5 years has taught 14 courses in the ISE and MOT programs. The award recognizes "excellence in instruction, instructional program development, intellectual distinction, advising and mentoring, and involvement of students in research, scholarship, and professional development." As part of the award, Professor Amin was inducted into the University's Academy of Distinguished Teachers.

Alumni Leadership

On the surrounding banks of the Mississippi River near the University of Minnesota, the activity rarely stops. In less than a year, a city of sorts with an ever-changing landscape has taken shape, complete with a host of heavy-duty equipment, temporary on-site areas for casting and other tasks, and crews constantly at work.

On Aug. 1, 2007, tragedy struck when the I-35W bridge over the Mississippi River collapsed. The days and months that followed required extraordinary efforts from many, including graduates of the Master of Science in Infrastructure Systems Engineering (ISE) program at the University.

As a result of their experiences and expertise, a group of ISE alumni from different organizations became involved with the varied aspects of the bridge collapse and reconstruction—from emergency measures to planning for the new bridge to onsite engineering and quality assurance.

“The bridge collapse brings the importance of the critical infrastructure clearly into focus,” says Massoud Amin, director of the Center for the Development of Technological Leadership, which administers the ISE program in collaboration with the Department of Civil Engineering. “It is vitally important that we continue to explore infrastructure needs and innovative ways to address them.”

Broadening the knowledge, skills, and expertise of engineers only helps to strengthen the ability to respond to critical infrastructure issues, says Vaughan Voller, civil engineering professor and director of graduate studies for the ISE program.

“Advanced degrees play a role in expanding the abilities of the civil engineers who are addressing the diversity of infrastructure concerns,” he says. “We are very proud of our alumni for bringing their commitment and expertise to this important infrastructure project.”

Alumni did indeed draw on their experiences and their education to make their contributions to the bridge project.

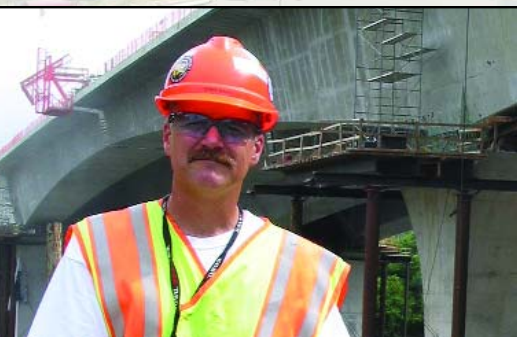
“You put your life on hold for a while”

The morning of Aug. 2, 2007, Terry Ward (ISE '05) drove from Rochester, Minn., for a meeting to discuss the delivery options and next steps for bridge reconstruction at the central office of the Minnesota Department of Transportation (Mn/DOT) in St. Paul.

Ward was asked to attend because of his experience as project manager for the department's first design-build, best-value project—the Highway 52 expansion in Rochester that began in 2002 and ended in 2005. The design-build process, where one contractor coordinates the simultaneous design and construction of a project, can reduce the project delivery time.

When Mn/DOT selected the design-build process for the bridge, the department also wanted Ward to play a key role. As a member of the bridge project management team, Ward and the Mn/DOT team looked at numerous project issues to develop and complete the request for proposals. He also evaluated the final proposals as part of the panel that reviewed responses.

On Sept. 19, less than two months after the bridge collapse, the department let the project, authorizing work to begin. “It was a very condensed time-frame,” says Ward. “Our goal was to safely build a high-quality project with a



Terry Ward



Heidi Hamilton



Val Svensson



Joe Nietfeld

very accelerated timeframe while being under intense scrutiny."

To move the project forward quickly meant long hours with few breaks for Ward and other Mn/DOT staff. As the contractor started its operations, he assumed an onsite role to oversee the construction aspects of the job.

"It involves working with the contractor and field staff, coordinating all field issues," says Ward, deputy project manager for construction. "I have a staff that does inspections. We verify the quality of the work and the quality of materials while making sure the intent of the design is carried out in the field."

The onsite collaboration among experts has been one of the keys to the bridge's progress, he says. Ward also credits the ISE program for enhancing his skills and confidence.

"The ISE program really allowed me to take a step back and look at things differently," he says. "I feel that I gained a new level of confidence in my ability to work in teams and to solve problems. I also did my capstone on the design-build procurement methodology and clearly that helped me on the I-35W design-build project."

Ward's home and family are in Rochester, and it has been an additional personal challenge as work on the bridge project demands that Ward spend most of his time in the Twin Cities. "The people on the project are what have made this project what it is. There are many people making tremendous sacrifices toward a shared common goal.

"You put your life on hold for a while," he says. But Ward finds it satisfying to be part of such a significant project that means so much to the community. "I look forward to taking what I have learned in this job and applying it to the future."

All-consuming emergency

As the municipality that is home to the bridge, the city of Minneapolis was impacted in many ways by the collapse.

At the city's public works department, staff immediately began assessing the short- and long-term traffic issues, as well as coordinating with other city departments and Mn/DOT.

Heidi Hamilton (ISE '04), deputy director of public works for the City of Minneapolis, spent many hours during the summer and fall of 2007 on aspects of the bridge project.

The early days of the tragedy consumed city staff as Minneapolis faced the loss of a major bridge. During the intense months of August and September, she helped organize staff efforts and assisted with planning to deal with increased demand on city streets.

"We had a significant change to our transportation system," she says. "There was a lot of work that had to be done as soon as possible to improve the situation for the traveling public."

She also worked with Mn/DOT to ensure that requests for proposals addressed city needs and served on the team that evaluated the proposals for the bridge reconstruction.

"We were interested in the design of the bridge," she says, as well as the impact on property, land use, and city streets.

Although Hamilton is not involved on a day-to-day basis any more, public works staff members continue to coordinate with Mn/DOT on issues that affect the city.

Hamilton believes that her experience in the ISE program continues to help her with on-the-job challenges. "There's no doubt that my education broadened my perspectives and increased my confidence in dealing with issues that arose."

Detailed tracking and reporting

The large binders in Val Svensson's (ISE '06) office represent an investment of many long hours and tell the story of the expenditures that are reimbursable by the federal government for emergency operations and bridge reconstruction.

Svensson works as resource engineer for program delivery in Mn/DOT's metropolitan district. In the wake of the bridge collapse, the engineers and staff members in the district office at Water's Edge began planning and executing a number of traffic re-routing projects, as well as conducting preliminary investigation for the bridge reconstruction.

Contributors

The construction of the new I-35W bridge involves many professionals, including the following list of CDTL alumni who have lent their expertise to the project:

B. J. Bonin, ISE '05
Charles Cadenhead, ISE '04
Jon Carlson, MOT '99
Brian Connolly, ISE '06
Petra DeWall, ISE '02
Pete Jenkins, ISE '08
Heidi Hamilton, ISE '04
Brian Kamnikar, ISE '03
Joe Nietfeld, ISE '07
Chris Roy, ISE '02
Michael Schadegg, ISE '03
Val Svensson, ISE '06
Terry Ward, ISE '05

"The ISE program really allowed me to take a step back and look at things differently. I feel that I gained a new level of confidence in my ability to work in teams and to solve problems. I also did my capstone on the design-build procurement methodology and clearly that helped me on the I-35W design-build project."

**TERRY WARD, DEPUTY PROJECT MANAGER FOR CONSTRUCTION
I-35W ST. ANTHONY FALLS BRIDGE; MN/DOT**

While she also contributed to many of these early efforts, Svensson was tapped for another key role—tracking and documenting the different types of associated costs to meet the reporting requirements of the federal agencies that are reimbursing Mn/DOT.

Tackling the task requires understanding both the needs of the federal agencies and all the related activities at Mn/DOT.

"It's a very complex process," says Svensson. "You have to provide clear documentation of what, why, when, and how."

Her experience with many aspects of project delivery—design, water resources, and traffic engineering, for example—help her to more clearly explain the diverse activities.

"I know the work that people do and how that work relates to the project," she says. Svensson finds that several aspects of the ISE program are proving helpful to her assignment, including a well-rounded perspective.

"The pieces that I applied were around the management of a large volume of information and the importance of financial management and good documentation," she says. "It's key to keep the larger picture in mind as well."

A strong foundation

When Joe Nietfeld entered the ISE program in 2006, he didn't expect that he also would take part in one of the state's most significant infrastructure projects while juggling his responsibilities as a student.

But the opportunity to participate as part of the large group of professionals

working on the I-35W bridge reconstruction project did present itself.

Flatiron Constructors invited Braun Intertec, a firm in the Twin Cities that specializes in geotechnical and environmental engineering, to lend its expert services to the larger proposal. As an engineer at Braun, Nietfeld first helped prepare part of the proposal that was ultimately selected for the project. Nietfeld then set to work as part of a team to test and explore the most optimal locations for the bridge foundations.

From September to January, he worked full time on the project. "My work included coordinating the drilling of a test shaft approximately 120 feet into the underlying bedrock," says Nietfeld.

He also helped analyze the results of testing and assisted with the design of the foundation systems for all structures that are associated with the bridge, including the piers, abutments, overhead signs, retaining walls, slopes, and monuments.

Although chaotic, his classes and the project did mesh well. "While I was working on the project, I also was taking project management with Professor Karl Smith," he says. "I actually used some of the project management techniques I was learning in class to coordinate parts of our project. We also used the geotechnical activities of the 35W bridge project as a group case study in class."

The collaboration and quality of the engineers, professionals, and crews are amazing, says Nietfeld. "It was great to work with such talented people on this critical project."

On the Move

Infrastructure Systems Engineering

Mike Boex, P.E. (ISE '03) Associate, Bonestroo

B.J. Bonin (ISE '05) Project Engineer and Geologist, WSB & Associates

Charles Cadenhead, Jr. (ISE '04) Construction Engineer, Anoka County

Ryan Capelle (ISE '02) Project Manager, Bonestroo

Mohammad Dehdashti, P.E. (ISE '02) Design Engineer, Metropolitan District, Mn/DOT

Sean Delmore (ISE '05) Senior Transportation Engineer, Earth Tech Inc

Jenn Edison (ISE '07) Engineer 2, Bonestroo

Ed Hally (ISE '01) Retired from his position as Civil Engineer for the City of St. Paul

Heidi Hamilton (ISE '04) Deputy Director, City of Minneapolis

Kim Hayden (ISE '07) Engineer 2, Bonestroo

Matt Jensen (ISE '06) Structural Engineer, Kimley-Horn & Associates

Tyler Newhall (ISE '06) Construction Manager, Bonestroo

Brian Olson (ISE '05) EIT, Bonestroo

Management of Technology

Catherine Bambenek Myers (MOT '01) Owner, Solution Advisors LLC

Denny Cronin (MOT '06) Director, Applied Technology, Goodrich Sensors & Integrated Systems

Patrick Dierking (MOT '07) CIO, Minneapolis Community & Technical College

Keith Hofkens (MOT '09) Advanced Systems Engineer, Global Traffic Technologies

Arnie Johnson (MOT '92) Director of Systems Engineering, BAE Systems

Blake Larson (MOT '93) Executive Vice President, Alliant Techsystems Inc

Bob Mallett (MOT '92) Director of Engineering, Global Electric Motorcars

Ed Matthees (MOT '02) Program Director, St. Jude Medical Inc

Scott Matzke (MOT '05) Group Manager, Beckman Coulter

Mehrdad Sarlak (MOT '00) Senior Account Executive, Honeywell

Mike Siegler (MOT '09) Engineering Manager, GE Security

John Tomczyk (MOT '03) Vice President of Innovation, IGH Solutions Inc

Ed Valencia (MOT '05) CTO/Enterprise Architect, State of Minnesota

Pete Wentzel (MOT '03) Facilities Director, Seagate Technology

Dan Whalen (MOT '05) Senior Program Manager for Renewable Energy, Remmele Engineering

Jon Wood (MOT '09) Sr. Innovation Partnership Manager, Coloplast

Andy Yung (MOT '03) Manager, Target Corp

In the Strike Zone

The recently completed building that anchors the Bonestroo headquarters in Roseville is a testament to the firm's growth and its commitment to improve places and lives. ■ Bonestroo also is committed to a different kind of growth—the professional development of its staff—and throughout the years has supported more than a half-dozen of the firm's engineers in their pursuit of the Master of Science in Infrastructure Systems Engineering (ISE).

"We want to develop and support our staff to reach their potential," says David Bonestroo, CFO of Bonestroo, a Twin Cities-based engineering and planning firm founded on providing engineering services to municipalities.

"There are a number of ways to do that, but the ISE program is right in the strike zone for us," he says. "We look at it as an investment in our people to develop the talent needed to lead the firm and provide technical skills and excellence and dedication to our clients."

The Center for the Development of Technological Leadership (CDTL) at the

University of Minnesota in collaboration with the civil engineering department launched the ISE program to better prepare engineers to meet infrastructure challenges. ISE students can attend classes and complete the program in two years while continuing to work full time.

"The ISE program helps our staff to provide a high level of service to our clients," says Bonestroo. "Our ISE graduates are well-rounded. They take a bigger picture view."

The firm's founders have a long history of supporting the University, volunteer-

ing their time and expertise as well as providing financial support. "It's always been this firm's wish to give back and encourage advanced education in the field," says Bonestroo.

As a company, Bonestroo supported and contributed to the development of the program, says Maureen O'Malley Rehfuess, Bonestroo vice president of human resources. The firm benefits from the broader thinking of its ISE graduates, she says. "The ISE program is integral to educating our current engineers to successfully respond to market-driven change. It's a great program."

Front row (l to r): Massoud Amin, Vaughan Voller, Kellie Schlegel (standing). Back row (l to r): Jenn Edison, Ryan Capelle, Joe Maurer, Dave Bonestroo, Mike Boex, Kim Hayden, Jason Quisberg (not pictured: Tyler Newhall and Brian Olson)



"The ISE program is right in the strike zone for us. We look at it as an investment in our people to develop the talent needed to lead the firm and provide technical skills and excellence and dedication to our clients."

DAVID BONESTROO, CFO, BONESTROO

Current relevance: Joe Maurer (ISE '08)

Inspired by the Bonestroo alumni of the ISE program, Joe Maurer decided to pursue the degree also.

"Bonestroo employees talked about the program, and it sounded like what I needed," says Maurer, currently a student in the ISE program. "I liked what I heard about the program and its focus on real-life situations and the experiences of the other students who also work in the field."

Maurer had a long-standing interest in engineering, and completed his civil engineering degree at the University after transferring from the University of Minnesota Duluth. He started his career at Bonestroo as a civil engineer, and he currently conducts field inspections of construction projects in the summer and assists with design during off-construction periods.

The infrastructure systems engineering management course particularly interested him, because of its attention to the big picture and relevant topics of the day. "It helps to understand the many points of view. Understanding different approaches to infrastructure challenges can better meet our clients' needs."

As he works with the growing cities of Apple Valley and Farmington, that understanding gives him an edge in looking at infrastructure issues, he says, as well as taking into account environmental and sustainability issues.

"What I am learning in school, I am applying on the job," he says. The company will benefit from his ability to analyze issues and consider solutions. "I know that I would recommend the program to other friends and colleagues."

Expanding value: Jennifer Edison (ISE '07)

ISE graduate Jennifer Edison agrees and appreciated the opportunity to attend the ISE program.

As an undergraduate at the University of Minnesota, Edison first wanted to pursue architecture. "But I found that I was more interested in the structure and engineering of the building, and I decided to pursue engineering instead."

An internship program led her to Bonestroo. She so enjoyed her internship that she continued working part time and, after graduation, started full time as a field inspector in Apple Valley.

Edison liked her work, but also wanted to expand her education. "A goal of mine was to further my education at some point in time," she says. "Because of Bonestroo's encouragement to further my professional development, the ISE program was a great choice for me."

Edison's classes helped her as she worked with different cities. For example, the financial management class explored funding and financial requirements for cities, and the infrastructure systems engineering management course helped her better understand the many aspects of the infrastructure and their connections.

As a result of her education, Edison says that she is able to offer more value to her clients. "Overall the knowledge that you bring to the table makes a difference."

Many ways to learn: Kellie Schlegel (ISE '06)

With an interest and degree in math, Kellie Schlegel was thinking about her career options when her mother suggested civil engineering. She decided

to pursue a civil engineering degree at the University.

"I loved it," she says. "It showed me the impact of engineering, how my profession provides service to communities—I found what I wanted to do."

Schlegel worked at several engineering firms gaining diverse experiences and was halfway through her ISE program before joining Bonestroo. Schlegel liked the idea of continuing her education while working, and the content of the ISE program also appealed to her.

"I liked that it was more technically oriented," she says. "The program helped to broaden my viewpoint and my knowledge base. As an undergraduate, you learn the basics of what you need, but it is a small percentage of the larger picture."

Schlegel also learned much from her fellow students, who freely shared their experiences and advice.

As a project engineer at Bonestroo, she continues to apply classroom knowledge at work. It has come in handy when developing and reviewing pavement management plans, as well as in developing solutions to other complex city issues.

"I think it makes you a more valuable employee in many ways," she says. "It's a great way to enhance your career."

Direct application: Kim Hayden (ISE '07)

For her capstone project, Kim Hayden studied a topic that relates directly to cities—special assessments for infrastructure improvements such as sewer, water, and streets.

"Assessments happen all the time," says Hayden, engineer at Bonestroo. "But I wanted a deeper understanding of what most of the cities were doing when it came to assessments."

Hayden surveyed about 50 cities to compare their practices. "It appeared that every city has its own assessment process," she says. "There is not really one approach."

She created a spreadsheet based on her research that helps summarize the results and allows for further analysis.

She also has shared the information with others in Bonestroo, who are using it for insight on funding options. "It was an interesting project," she says.

It was not the only way that her work in the ISE program impacted her, as she also took what she learned from pavement, project management, and other classes and incorporated it into her projects.

Hayden's interests in engineering began early in school when she took drafting and engineering-related classes. She received her degree from the University, interning at Bonestroo while in college, and joining the firm after graduation.

The ISE program's emphasis on application was appealing to Hayden, who also benefited from understanding more about

infrastructure management and policies that influence infrastructure.

"It was an eye-opening experience to go to class one day and see how you can use the information on a project at work the next day."

Better perspective: Tyler Newhall (ISE '06)

Tyler Newhall joined Bonestroo right after he graduated from the University in 2003. As a construction manager, he designs and supervises the firm's construction projects for the city of Chaska.

"I am in constant contact with the city, residents, and contractors to ensure that all projects are completed in an acceptable and timely fashion," says Newhall. "I head a team that varies from about four to six inspection personnel."

He was looking to further his education in the field and "gain a vast knowledge of the different aspects of infrastructure management" when he entered the ISE program.

The program delivered on his expectations.

"On a day-to-day basis, I feel that the most important thing I have gained is a better perspective on solving infrastructure problems and considering the big picture," he says. "Overall I feel that I have more confidence in my engineering ability and a greater ability to find solutions to problems. I believe I am a much better contributor to Bonestroo's clients and our project teams."

CDTL welcomes new manager of external relations and educational services



In January 2008, Ms. Ginny Levi joined the Center for the Development of Technological Leadership (CDTL) as the manager of external relations and educational services. Levi brings a broad professional background to CDTL, including extensive experience in higher education and leadership roles.

She received her bachelor's degree in religion from Oberlin College and a master's degree in higher education administration from Case Western Reserve University. Most recently, Levi served as associate director of the Jewish Community Foundation of the Minneapolis Jewish Federation, where she was instrumental in growing the foundation substantially and providing exceptional service to the foundation's donors.

Levi spent her early career in northeastern Ohio, working in admissions at Oberlin College. There, she developed the Alumni Admissions Representative Program in addition to her responsibilities for recruiting and assessing new students.

After moving to Cleveland, Ohio, she joined the president's office at Case Western Reserve University, providing staff support for upper administration search processes, and coordinating studies of current and potential new academic programs, as well as other administrative activities.

While playing a leadership role in the non-profit community in Cleveland, she worked with major, international philanthropic organizations as administrator for a group of corporate and family foundations. Levi also served as a development officer for the Greater Cleveland Chapter of the American Red Cross, where she was responsible for doubling fund-raising results from corporations and foundations.

Director Amin added: "Ms. Levi's abilities and experience impressed us as a remarkable fit for the requirements of this key CDTL leadership role. We are pleased to welcome her to our team at CDTL and the University of Minnesota."

Excellent Additions

His 24 years in Silicon Valley demonstrated to Kirk Froggatt the importance of effectively blending technology expertise with business acumen and personal leadership skills. ■ Recently, as the Gemini Chair in Technology Management at the Center for the Development of Technological Leadership (CDTL), Froggatt helped a group of talented undergraduates to better integrate their technical skills and knowledge with the business and leadership fundamentals needed to commercialize technologies and succeed in the business world.

Education in the business of innovation

Froggatt joined CDTL in August 2007, drawn to the position by the opportunity to teach. As Gemini Chair, he developed and led a new course on technology leadership for undergraduate engineers who soon will enter the workforce.

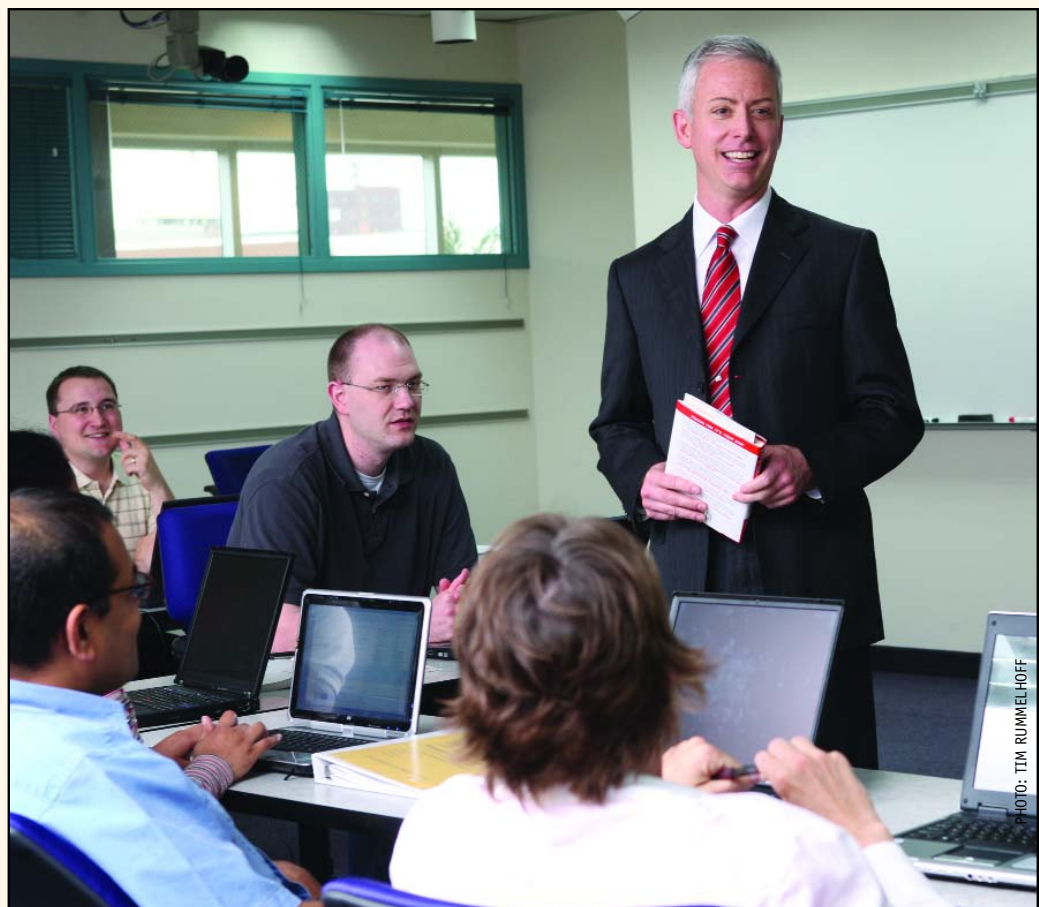
"I have always loved learning and teaching," says Froggatt. "I am an avid learner, and I love the educational environment. The best way to keep learning is to teach."

Froggatt brings a wealth of experience to the classroom, serving in senior roles for several high-technology pioneers.

He began his career at Hewlett Packard in training and development and human resources planning. He joined Silicon Graphics, just as the company pioneered 3D graphics and scalable supercomputing technology, eventually serving as vice president of human resources. He also served as vice president of global human resources at Yahoo!, and most recently, as vice president, learning and leadership development, at Agilent Technologies, a multinational test and measurement instrument company.

For the new course, Technology Leadership Development: Leadership, Professionalism, and Business Basics for Engineers, Froggatt focused on several key areas—interpersonal and team effectiveness, business fundamentals, and the business of innovation.

To experience the trials and tribulations of qualifying and commercializing technical ideas, he helped students along a journey where they worked in teams to



Kirk Froggatt, CDTL's Gemini Chair, began his career at Hewlett Packard; he also held vice president positions at Agilent Technologies, Yahoo! and Silicon Graphics.

select an intriguing technical idea, identify the value proposition and market potential, develop the basic product concept, and explore its business viability. At the course's end, the teams presented their innovation design proposals to a panel of industry experts.

In the first class that debuted in spring 2008, students looked at the viability of several very diverse innova-

tions, including a "bionic contact lens" with embedded microchips enabling real-time information display, a one-stop web site to simplify all wedding planning needs, and an environmental consulting firm to help universities go green.

"It's been a very interesting experience," he says. "All in all, it's gone quite well. Students are quite enthusiastic

about the course and their eyes have been opened in a significant way."

Froggatt is also involved in other CDTL initiatives, including participating in custom training programs for firms that want to develop their technical professionals and designing a set of leadership and change management modules for the Management of Technology (MOT) program. He looks forward to teaching the undergraduate course again in fall 2008.

"I have seen time and time again the need for a course like this," says Froggatt. "While technical skills are absolutely essential for success, it usually is the complement of leadership ability and business acumen that distinguishes those technical professionals who excel in their careers."

Expertise in emerging technologies

As the new Honeywell/W.R. Sweatt Chair in Management of Technology, Dennis Polla has enjoyed a long history with CDTL. In fact, he was one of the original faculty members when CDTL launched the MOT program in 1990.

"I helped teach the first Pivotal Technologies course, and I have been involved every year since," says Polla, whose expertise in nanotechnologies and other emerging technological areas is well recognized and far-reaching.

Most recently, Polla has served as a program manager in the Microsystems Technology Office at the Defense Advanced Research Projects Agency (DARPA) and the Department of Defense. In this role, he helps identify promising research on next-generation microelectromechanical systems (MEMS) and nanotechnology applications to be funded.

Previously, as a faculty member at the University of Minnesota, he pursued interdisciplinary initiatives with joint academic appointments in the Department of Electrical and Computer Engineering, the Department of Laboratory Medicine and Pathology, and the Department of Biomedical Engineering as the Earl E. Bakken Endowed Chair. He was director of the Microtechnology Laboratory, director of the Biomedical Engineer-

"What I find most enjoyable is their passion for what they are trying to accomplish. They know that the MOT program is a way to grow professionally and distinguish themselves. They really roll up their sleeves."

DENNIS POLLA

ing Institute, and founding head of the Department of Biomedical Engineering.

As chair, his involvement with CDTL has expanded to include teaching the Science and Technology Policy course, coordinating MOT capstones and the international residency, conducting research and consulting, and contributing to the CDTL community.

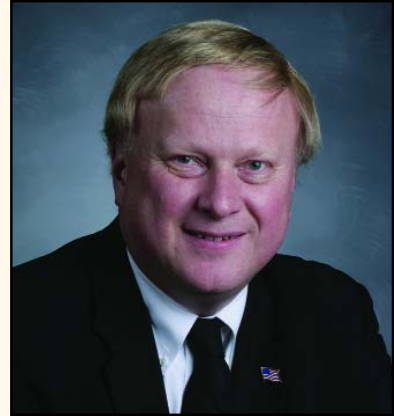
"The MOT program is unique in its approach," says Polla. "I was very excited to expand my involvement with CDTL and the MOT program and to contribute to the continuing success of the MOT program. It's been a great experience for me over the past year."

In the Pivotal Technologies course, Polla draws on his past research and new perspectives at the Department of Defense to share with students the possibilities of emerging technologies, such as MEMS and nanotechnologies. In fact, MEMS already has taken flight since researchers first mounted it on a silicon chip in the late 1980s, with commercial applications in products such as the inkjet print cartridge and key features of the new Apple iPhone. The combination of MEMS and nanotechnologies also offers powerful potential. "I think we are just at the tip of the iceberg," says Polla.

Through the course, MOT students gain a foundation in exploring these technologies and potential applications, as well as their impact on the market. "I think it's important for MOT students to understand technology on a deeper level."

Polla also enjoys working with the MOT students who are eager to leverage their significant professional experiences. The program's capstone project offers the opportunity for them to integrate their new knowledge and skills with their real-world issues.

"What I find most enjoyable is their passion for what they are trying to accomplish," he says. "They know that the MOT program is a way to grow professionally and distinguish themselves. They really roll up their sleeves."



Dennis Polla, CDTL's W. R. Sweatt Chair, also served as president and CEO of SurroMed Ltd.; director, Institute of Bioengineering and Nanotechnology, Singapore; and national security advisor for the Defense Science Board and U.S. departments of Defense and Energy.

Significant assets

The new CDTL chairs are making many contributions to CDTL and the broader community, says Massoud Amin, CDTL director.

"Mr. Froggatt brings relevant and timely experience in the areas of organizational behavior and management. His leadership development courses help participants translate technical ideas into solutions that address customer needs and deliver economic value to an organization. In addition, Prof. Polla brings world-class MOT knowledge and experience to CDTL," says Amin. "His capabilities and expertise are especially pertinent for future business leaders that need to grasp international, governmental, and business issues impacting technology-based professionals and industries.

"We are fortunate to find absolutely top-notch faculty to join our superb CDTL faculty team. Our faculty contribute as educators, researchers, scholars, experts, innovators and leaders—also as human beings who care about each other personally as well as professionally. We are delighted to welcome Mr. Froggatt and Prof. Polla to CDTL."



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