CONNECTIONS
College of Engineering, Computer Science, and Construction Management
Chico State 2013

Alumnus Bill Wattenburg
S P E A K S OUT

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CHANGE IN LEADERSHIP AT THE COLLEGE OF ECC
Dean Mike Ward Retires, Ben Juliano Takes the Reins

After more than 25 years of service at California State University, Chico, college dean Mike Ward is trading in his laptop for golf clubs. Ready to spend more time with his wife, Karen, and their grown children, Ward will be missed by colleagues and corporate partners of the college. “I have truly loved my time here at the University, but with Karen now retired and our first grandchild on the way, I want to have more time to spend with them,” says Ward.

First joining the engineering faculty at CSU, Chico in 1988, Ward has served at many different administrative levels within the College of ECC, first as chair of the department of Mechanical Engineering (1990–2000) and then as associate dean of the college (2001–2008). He served two terms as interim dean (2008–2009, 1992–1994) and has served as dean of the college since 2009. He also served one year as interim dean of the College of Business (2011–2012).

In August 2013, Ward’s longtime colleague Ben Juliano will take the reins as interim dean of the College of ECC. “Ben is truly the right person for the job,” says Ward. “As associate dean, he has done much of the heavy lifting that it takes to get the job done. He has the right attitude and values to help the college and its programs continue to improve.”

Juliano first joined the faculty in the Department of Computer Science in 1998. Since then, he has taught a variety of courses in computer science and conducted research in the areas of intelligent systems, autonomous robots for search and rescue, machine learning, data mining, agent technologies, intelligent sensor networks, and sensor fusion.

Juliano has served as the college’s associate dean since 2010, the interim chair and graduate coordinator of the Department of Electrical and Computer Engineering since 2011, and the college’s assessment coordinator since 2007. He is also the co-director of the college’s Institute for Research in Intelligent Systems.

Juliano looks forward to the coming year. “I look forward to working with my distinguished colleagues and long time friends in this capacity—those found within our college and around campus,” says Juliano. “We will all surely miss Mike, and I am fortunate to have had the opportunity to work for and with him. He has truly been a supportive mentor and a great friend.”
STEPPING UP

COLLEGE OF ECC BOARD MEMBERS TAKE ON NEW CHALLENGES

David McCallen

In January 2013, College of ECC board member David McCallen accepted an appointment as associate vice president of Laboratory Programs in the University of California’s Lab Management Office. In his new post, McCallen will lead the university’s oversight of the scientific and mission programs at Lawrence Berkeley, Lawrence Livermore, and Los Alamos National Laboratories, as well as other contractual responsibilities to the Department of Energy (DOE) and its National Nuclear Security Administration (NNSA). Announcing the appointment, Glenn Mara, vice president of Laboratory Management for the UC, cited McCallen’s successful management experience and strong technical credentials in programs relevant to the three UC-affiliated labs, his knowledge of and relationships within the DOE/NNSA community, and his demonstrated ability to build teamwork and collaborations with the academic community, commercial partners, and governmental agencies.

College of ECC Board Members

Mr. Gary Borders  
Retired—Hewlett-Packard Company

Mr. Andy Corzine  
Deputy Director, Research and Engineering—Naval Air Warfare Center, Weapons Division

Mr. Dana Davis  
President—Teichert Materials

Mr. Chris Digiorgio  
Managing Director, California—Accenture

Ms. Jeanne Beliveau-Dunn  
Vice President and General Manager, Learning at Cisco—Cisco Systems, Inc.
**Bob Linscheid**

In February 2013, ECC alumnus and board member Bob Linscheid was selected as the new president and chief executive officer of the San Francisco Chamber of Commerce. Linscheid is the former managing director of Innovate North State, a firm that works to develop key industry clusters including technology, cleantech, and manufacturing across Northern California. In addition to his new post with the San Francisco chamber, Linscheid is the current chairman of the California State University system’s Board of Trustees, overseeing budget, and programmatic and policy decisions for the 23-campus system—the largest statewide higher education system in the country.

**Rob White**

In September 2012, ECC alumnus and board member Rob White and 12 others were honored by the White House for committing themselves to creating a more open and innovative government through entrepreneurship. White was nominated for the honor by Livermore Mayor John Marchand for his leadership as a co-founder of the i-GATE iHub Initiative, a broad super-regional partnership that is focused on the Lawrence Livermore National Laboratory and Sandia National Laboratories as economic engines. In March 2013, White left his post as director of Economic Development for the City of Livermore to accept a new position as chief innovation officer for the City of Davis.
During the spring 2013 semester, more than 300 students from CSU, Chico got a little something extra for attending class—a Samsung Galaxy Note Tablet, unlimited access to Verizon’s 4G network, tablet accessories, and the opportunity to provide feedback to experienced industry professionals. These lucky students were included in a pilot project that would test and evaluate the use of tablets for courses that are—or could be—heavily reliant on digital content.

Verizon Wireless was the first national wireless provider in the United States to build and operate a large-scale 4G LTE network—the most advanced wireless network technology available. The partnership with the CSU, Chico College of Business and College of Engineering, Computer Science, and Construction Management was initiated by Verizon in fall 2012 in response to the company’s belief that the education market is ripe for disruption. The project was forwarded by College of ECC assistant dean Jerry Hight.

The pilot test at CSU, Chico is one of three in the U.S. higher education market where Verizon is testing and evaluating a number of metrics around student utilization of a tablet/pad/mobile device as the core content delivery tool for specified courses.
Verizon is seeking ways to help improve the student and professor experience through the accelerated adaptation and use of mobile technologies. This project will help to demonstrate that the use of mobile technologies can enhance student learning, increase teacher efficiency, and facilitate greater interpersonal contact to improve the entire learning experience.

The pilot test at CSU, Chico is one of three in the U.S. higher education market where Verizon is testing and evaluating a number of metrics around student utilization of a tablet/pad/mobile device as the core content delivery tool for specified courses. Metrics to be studied include student academic progress, the user-interface experience, behavioral characteristics of device utilization, data consumption rates, and technical and device performance detail, as well as overall satisfaction levels with the experience. The project involves faculty and students enrolled in an Applied Computer Graphics and the Digital Photography course taught by Frank Pereira and Clarke Steinback. Students from Inspire High School who are taking the Principles of Engineering and Advanced Chemistry courses will also be included in the project.

Data will be collected to assess the results of the pilot project, and mid- and end-of-year focus groups will be conducted with both student and faculty participants to determine the extent to which use of the tablets has supported effective undergraduate education principles, which include providing students with prompt feedback, encouraging contact between students and faculty, and addressing varying learning styles. Outcomes will also be measured, including whether students achieved better grades, stayed interested in covered topics, and retained knowledge for the long term.

Samsung, the largest consumer electronics company in the world, has provided the tablets for use by the students included in the pilot project.

This year, 18 students from CSU, Chico’s Sustainable Manufacturing Program made the trip to Long Beach for the Society of Manufacturing Engineers-hosted competition. The five main presenters for the winning project were Joe Bauer, Ben Hoover, Hobie Jensen, Keith May-Davis, and Colton Wanner.

Putting in more than six months of work on the project, the students developed a manufacturing system that produces a cast 356 T6 aluminum cylinder head for a piston engine application for general aviation light aircraft. The redesigned cylinder head will permit general aviation light aircraft to operate on unleaded, lower-octane fuels as opposed to the standard leaded fuels used today.

The students used Solidworks Computer Aided Design (CAD) software to design the sand-cast pattern that produced the cylinder head. They used Surfcam Computer Aided Manufacturing (CAM) software for the programming components of the entry. The pattern was computer numerical control (CNC) machined and assembled by the students. The heads were cast in the CSU, Chico foundry.

Sustainable Manufacturing Program Coordinator Daren Otten was very pleased with his team’s entry. “The attention to detail in defining the project scope and documenting the complete process impressed the judges, and the extensive development of the manufacturing system, including a project management plan, was extremely professional and complete.”

Sixteen teams from 14 universities and colleges competed, including Cal Poly Pomona; Western Washington University; CSU, Los Angeles; and CSU, Northridge.
In 1985, the first commercial Internet domain name was registered, Cisco Systems was a promising tech start-up, Nintendo introduced the first Gamepad, and Mark Fitzpatrick walked across the platform at the CSU, Chico Commencement ceremony with high hopes for an exciting career in the emerging field of IT. The next 25 years would have its ups and downs, but in the end, it would be a great ride.

Fresh out of school and eager to show what he could do, the computer science grad rolled up his sleeves and went to work for Data General, a Westborough, Massachusetts, computer company with a strong Silicon Valley presence that manufactured multiuser computer systems. During the minicomputer boom of the 1970s, Data General was one of the fastest-growing companies in the United States, hiring many Chico computer science grads to continue its growth. Fitzpatrick cut his “tech teeth” at Data General as a rookie systems engineer, staying with the company until 1988, when he was hired as a systems engineer by Sun Microsystems. At both Data General and Sun, Fitzpatrick used the technical proficiencies and team skills he developed at CSU, Chico to establish himself as a guy that could get things done. Fitzpatrick recalls, “What Chico made you do to get a degree built up your programming endurance. That’s what it took to get a new product up and over the wall.”

In 1992, Fitzpatrick got a call from a headhunter who was looking for a systems engineer at NeXT Computers, a computer platform development company founded in 1985 by Steve Jobs. In equal measures brilliant and hard to please, Jobs had left...
Apple computers and founded NeXT after losing one too many battles with Apple’s board of directors. Liquidating his Apple stock to get NeXT off the ground, Jobs was determined to recreate the success of Apple—this time doing it his own way.

Fitzpatrick was hired by Jobs to work on an innovative object-oriented application development environment created at NeXT called OpenStep, a system that is still active and influential in the field today. Both OSX and iOS operating systems are built on the OpenStep foundation. Says Fitzpatrick, “When you look at a Mac now, it says OSX when you turn it on—that’s NeXT technology.”

Asked about the culture at NeXT, the laid-back Fitzpatrick explained that he and Jobs got along well but conceded that Jobs’ trademark brusque communication style and perfectionism was not for everyone. “When you worked on a project for Steve, he would say something like, ‘Yeah, that was what I asked for, but it’s still not right.’ If that bothers you, you could never work there,” Fitzpatrick explains.

Fitzpatrick did well at NeXT, but his tenure with the company didn’t last long. While NeXT had plenty of capital, experienced engineers, good ideas, and a charismatic leader, the company struggled to develop its market potential. Sales of NeXT computers failed to take off, and in 1993 the company was forced to withdraw from the hardware business to concentrate on software, marketing its own OpenStep implementation. More than half of the NeXT staff was let go, including Fitzpatrick. “I’ll never forget that time at NeXT,” Fitzpatrick recalls. “It became a very dark place to be.”

“As fun as it would have been staying on with Jobs and moving over to Apple, I think having my own company was a lot more fun.”

—Mark Fitzpatrick
The atmosphere was grim as more than 300 people found themselves out of a job. Would-be millionaires saw their hopes go down the drain. “This wasn’t just a company,” he says. “It was a religion for many of the people who worked there. Then everybody was getting laid off, and they were literally sick.”

While it was disappointing at the time, the layoff would provide the impetus for Fitzpatrick to take his career to a whole new level. “It turned out to be a blessing,” he explains. “If I had continued to work for Jobs, as fun as that would have been, I wouldn’t have had time to work on my own venture.”

He had been playing around with an idea for an innovative software program with Tony Siress, a 28-year-old sales, marketing, and business development professional that Fitzpatrick had met while at Sun. Fitzpatrick decided to dedicate himself to the project on a full-time basis. Recalling how it felt to make that decision, Fitzpatrick says, “It was really hard to quit my job. I had just gotten married and we had a mortgage. We knew what we wanted to do, but it was scary.”

Fitzpatrick and Siress, along with fellow Chico computer science grad Steve Gearing, dedicated the next several months to the development of FirstWatch, a high availability software program that would reduce system downtime and ensure a prearranged level of operational performance. The program would maximize the overall availability of business-critical servers, applications, and data.

“The product we created is based on what is now referred to as ‘clustering,’” Fitzpatrick says. “It’s common now, but it was novel then.” At the time, government, business, and social service organizations were relying more and more heavily on technology to manage their work and maintain their records. The need for systems that could support business functions continuously (without interruption) for increasingly longer periods of time had become critical. Every minute that a system within a large company was down would cost millions of dollars. FirstWatch could provide the guaranteed uptime they were looking for.

“Companies could purchase two servers and the FirstWatch solution,” Fitzpatrick explains, “When system A was down, system B could impersonate its network and keep the data available.”

They knew they had a good idea, and Fitzpatrick had the programming skills to translate their idea into a product that Siress could sell. They formed Tidalwave Technologies to productize FirstWatch, and they were off to the races. The pace of their success surprised them. Says Fitzpatrick, “We never even had an office. I was programming out of my spare bedroom. We went from nothing to something like half a million dollars in revenue in about nine months.”

Fitzpatrick credits his education at CSU, Chico for their ability to get FirstWatch to market quickly. Because it was before browsers, the interface was super simple, which helped. More importantly, he was a veteran programmer who had paid his dues as a student of the computer science program at CSU, Chico. “In most of my classes, the real work was on projects,” Fitzpatrick says. “You’d cram for the tests and take them and then go right back to your project.” He applied himself to FirstWatch with that same intensity, programming every day and well into the night.

The initial FirstWatch customers were found within the energy and finance industries and in the health care field. One large children’s hospital in the eastern United States purchased FirstWatch to run systems that supported critical patient care functions. “That was the day I stopped sleeping,” recalls Fitzpatrick, “because I realized that our product was being used in the ICU. Our software had to make sure that everything was up and running all the time.” In 1994, FirstWatch was responsible for keeping all of the systems available at the World Cup Soccer Championships. The product had delivered on its promise and sales soared.

More interested in creating an innovative and useful product than running a company, Fitzpatrick and Siress sold Tidalwave Technologies in 1995 to Veritas, a Silicon Valley software company that marketed file systems. Fitzpatrick stayed on with Veritas through the transition as a senior staff engineer. “They were good guys and we felt welcome there, but I didn’t want to stop coding,” he says. So Fitzpatrick left Veritas and took on an even greater challenge.

In 2000, the pastor of St. Matthew’s Catholic Church in San Mateo, California, asked him to help out with a program that prepared high school students to receive the Catholic Church’s sacrament of confirmation. “Try getting spiritual with 60 high school kids on a cold Monday night in an auditorium,” Fitzpatrick says. “It’s the hardest thing I’ve ever done in my life—way harder than developing high availability software.” Despite the
Challenges, Fitzpatrick fell in love with the kids and has been running the program for the past 14 years.

Meanwhile, Fitzpatrick and Siress continue to collaborate on products that apply new technology to unsolved problems. In 2003, they formed YouService LLC and launched YOUnite, a patented, platform-independent software solution that provides privacy of personal content through selective sharing. YOUnite technology presents a means to securely distribute data as soon as it is updated. Using YOUnite’s application programming interfaces (APIs), developers can create applications that will propagate information between multiple devices, users, and organizations without requiring data to be stored in a central repository. Users, businesses, and organizations can choose where they want their data stored, who it will be shared with, and what they want to share down to the attribute level. Both Fitzpatrick and Siress are currently working on start-ups that will utilize YOUnite technology. Siress is creating an app that will help users keep mobile address books up to date while Fitzpatrick is creating a solution called Fitzform that takes the drudgery out of filling out paper forms.

In addition to working on his own start-ups, Fitzpatrick is an advisor to various strategists and business development efforts for Hitachi Ltd. He is also on the board of Peachjar, a company that serves schools by taking staff and teachers out of the flyer delivery business. Peachjar posts school flyers online and delivers them straight to parents’ computers and smartphones.

Fitzpatrick is grateful for the time he spent in Chico, citing the close-knit campus community that he so much enjoyed as a unique and life-changing environment. “It’s really about relationships,” he says. “That’s what I thought about as I drove away from Chico when I graduated. You don’t think about how you got through compiler theory, you remember your friends.”

When asked what advice he has for today’s students, Fitzpatrick replied, “Value the friendships and don’t shoot for just accomplishment, shoot for true happiness. True happiness comes when you’re doing nice things for other people, putting other people first. In Chico, you can do that.”
Bill Wattenburg has earned the respect of scientists, politicians, and educators throughout the world for his research and innovative solutions in the areas of national security, public safety, and humanitarianism. Possessing an overabundance of both energy and intellect, he is also an accomplished author and the host of the popular syndicated radio talk show The Open Line to America.

First attracting attention from scientists for his groundbreaking work in the area of national security, Wattenburg impressed the national media with his expertise and straightforward explanations when appearing as an expert on nuclear technology. In 1972, he was offered a job as host of a late-night news talk program on KGO (San Francisco), and he remains on the air today. He has maintained careers in both the scientific and entertainment communities for the past 40 years, deftly combining his grasp of engineering and physics with a down-to-earth communication style and common-sense approach to problem solving that is both effective and highly relatable.

Born in Chico, Wattenburg grew up in the logging and farming communities of northeastern California. He was a double major at CSU, Chico, earning bachelor’s degrees in electrical engineering and physics. He continued his studies at the University of California, Berkeley, where he specialized in the design of digital computers for computations in nuclear physics, studying under renowned physicist Edward Teller (known to many as the “father” of the hydrogen bomb). He received a doctorate in electrical engineering and nuclear physics from UC Berkeley at the age of 25 and joined the faculty immediately after his graduation in 1961.

He put his early research to work in 1962 when he took a leave of absence from his teaching to join the physics division of the Lawrence Livermore National Laboratory (LLNL), a premier research and development institution established in 1952 by UC Berkeley. LLNL describes its principal responsibility as “ensuring the safety, security, and reliability of the nation’s nuclear weapons through the application of advanced science, engineering, and technology.” While at LLNL, Wattenburg tested warhead designs and helped to develop and improve underground nuclear-testing technology. In 1964, Wattenburg returned to his teaching at UC Berkeley. In 1966, he partnered with Nobel prize-winning physicist Donald Glaser to establish Berkeley Scientific Laboratories, serving as its president from 1966 to 1975.

Wattenburg has served as a consultant to LLNL since 1975 and remains a prolific researcher. Over his career, he has made significant contributions to national security, public safety, and humanitarian efforts, including the development of a method to measure explosive yields for underground nuclear tests, stopping the waste of blood collected at blood banks, fixing the
BART train control system for the State of California, improving the security of magnetic strips on bank cards, and developing a plan for extinguishing oil-well fires in Kuwait. He is well regarded by senior members of Congress as a respected scientist and well-informed individual on the frontiers of U.S. technology in the areas of the military, space, and medicine. Over the course of his career, Wattenburg has published dozens of scientific research papers and technical articles and has been awarded several U.S. and foreign patents.

Though he spent many years living in the San Francisco Bay Area, Wattenburg has continued to stay connected to Chico. He is a research scientist at the CSU, Chico Research Foundation, where, in 2001, he designed and tested a device at the request of the governor’s office and the California Highway Patrol that would enable police or highway patrol officers to stop a runaway or hijacked truck on the highway. Since that initial project, Wattenburg has continued to work on a wide variety of projects with the California Mechatronics Group in the College of Engineering, Computer Science, and Construction Management in collaboration with Lawrence Livermore National Laboratory. The projects focus on developing and applying technical solutions to problems such as remote robotic inspection of hazardous sites. This technology can be applied in such places as nuclear power plants.

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Energy is the biggest focus right now. I’ve been heavy into that in the last 10 years. It’s the basis of national security. You cut off the energy supply, and we don’t have anything. You can’t fly planes, sail ships, go in space—nothing. The big quest now is controlled thermonuclear power. You’ve heard of fusion—that’s the biggest project at Livermore, and the toughest. That’s been the main preoccupation.

So, what’s the potential, and what are the problems with that?

The problem is we’ve been at it for 60 years and we haven’t been able to achieve it. But we’re getting closer. It’s a very, very difficult problem.

Are we forerunners in that area?

Yes, we are, though the Russians and the French and others have been working on it for a long time. There’s an international consortium trying to build a big prototype facility in France, but they’re 10 years behind Livermore. Livermore is probably in the forefront of creating the reaction of the sun here on earth—to fuse hydrogen without making a bomb. It’s easy to do if you’re making a hydrogen bomb. That’s not difficult. But to harness fusion energy and use it slowly is very difficult. It hasn’t been done.

Do you see that happening in the near term?

I see it in 10–20 years. It is a very big team effort.

What about the other energy options?

The biggest one is natural gas. It is the biggest resource we have. It just hasn’t been used in transportation as much as it should. The new secretary of energy is going to move in that direction. It very rapidly could replace most of the oil we’re burning. The interesting thing is that the distribution channel is already in place. Natural gas is piped into 80 percent of the country. What you need are filling stations, and they are going in rapidly. In fact, you can actually fuel your car.
at home by natural gas. The same line that goes into your water heater and stove can fuel your car. That’s been around for a long time; it’s just been expensive to put in your own home. But cars have been running on natural gas for 60 years around the world.

**DW** You think that natural gas has more potential than solar?

**BW** Oh yeah, solar is tiny compared to natural gas in terms of cost and availability. You could plaster your roof with solar panels and you get about 1 percent the amount of energy that you’d get from the natural gas line into your home.

**DW** So why aren’t we moving in that direction faster?

**BW** It’s just been lack of momentum and no government leadership to do it. We’re getting that now. The states and companies all over the country are moving very rapidly. Big truckers are trying to get converted because the cost is half or less the cost of diesel and is actually more convenient.

**DW** And no more dangerous to use?

**BW** Oh, no. Pakistan, Argentina, and many other places have been running on natural gas for 50 years, and there’s been no greater incident of accidents or anything else.

**DW** So what about the big energy companies? Are they on board with natural gas?

**BW** They love the idea. Turn on your TV news. Most of them are running ads about the future of natural gas because they are the big owners of natural gas. It’s a standard companion to oil. In fact, the biggest drilling is going after natural gas.

**DW** So when you find one, you find the other?

**BW** Yes. From most oil wells, you get both gas and oil coming out of it, and it’s separated at the wellhead. They stick the natural gas in pipelines, and if they don’t have pipelines, they set it on fire to get rid of it. That’s a horrible waste. When you drill, you use the same drill to get natural gas as oil. Quite often you go through different strata to give you both.

**DW** Is there any political pressure to slow that down?

**BW** There’s been objections to the fracking process which have been way overblown. The National Academy of Sciences and others have reported that. But you can’t do anything without some pollution. You simply have to use good practices and contain it.

**DW** So what’s the solution?

**BW** The only way to solve the energy problem is to use less and develop what we have instead of buying foreign oil. The idea of electric cars is nice, but it’s a pipe dream in many cases too because you have to charge the batteries. You have to buy electricity from somewhere, and most of our electricity is produced by burning fossil fuels.

**DW** Will people in the United States accept the expense and limited driving range associated with electric cars?

**BW** That’s the problem. The reason there aren’t too many of them out there is the cost of utility. And the thing that even top environmentalists are realizing is that we abandoned nuclear power when we shouldn’t have. We should have been improving it, because it’s the only nonpolluting big source of energy. That’s why it’s coming back. There was so much hype that we stopped all work. Other countries have raced ahead of us. The cleanest industrialized country in the world is France because they are 85 percent nuclear power. They did a very simple thing. They took our best design from 30 years ago, improved it, and standardized it throughout the country.

**DW** Do you see a time when our country will rely more on public transportation than private cars?

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In early March 2013, at their annual convention in Palm Springs, members of the Associated General Contractors of America (AGC) honored California State University, Chico’s AGC chapter with its first-place Outstanding Student Chapter award. CSU, Chico’s AGC student chapter has earned recognition as an outstanding chapter for the past four years, winning third place in 2011, first place in 2010 and second place in 2009.

“Chico State’s construction management program is one of the largest in America, and these national awards by the Associated General Contractors of America certify that its students are among the most active,” said Rovane Younger, chair of the Department of Construction Management. “This ranking is also acknowledged by the 70-plus construction companies that come to campus throughout the year to recruit construction management graduates and interns.”

The AGC student chapter at CSU, Chico creates and promotes an environment that brings students, industry professionals, and community members together in the common interest of advancing construction ideals and practices within the University and community.
No, because we’re so spread out. You can’t afford mass transportation for rural areas. You can’t run railroad tracks out to every suburb. I think there’s mass transit in this country for about 4 percent of the people. The rest have to drive.

How have other countries made that work?

Well, in countries like China, they just don’t have transportation between villages. Between big cities, of course, they do, but not in rural areas. In Europe, they built the railroad before they built the towns. People don’t realize that the most densely populated area is not found in Asia. It’s Europe. There is very little dead space, and almost every village is connected by a rail line. They put the rail line out, and the people followed it, instead of the other way around. In the case of the United States, we didn’t do that. The best you can ever imagine in this country is that maybe 8 percent of the population will have mass transit near their homes. You can’t put mass transit somewhere where people are scattered a half-mile apart.

What are your thoughts about the link between national security and workforce development? How does our ability to stay globally competitive in areas such as manufacturing affect national security?

We’re slipping way behind for the simple reason that when you lose your manufacturing capability, you lose the value of your country. If we become just a service economy—selling insurance, doing banking, writing computer programs—we’ve had it, because China and India are training 25 times the engineers, computer scientists, and scientists that we are. The big danger is that you if lose your manufacturing capability, you lose your trained workforce to make products, and then you go downhill.

So, how did we lose our way?

Well, we went for the cheap labor overseas. We outsourced it, and people are now realizing the consequences of that. You can hope that you start seeing manufacturing here in this country, but it’s going to be a while. It will take a whole generation to do it. In the meantime, you’re in trouble. Right now, there are hardly any machinists left in this country. That’s one of the biggest dangers for the country. Today you have a generation most of whom have not been trained in the trades. They either have to do labor work or hopefully they can get into high-tech work. Well, there’s no high-tech work left that they’re not doing in Japan or India. They are making a lot of the breakthroughs we used to make. They don’t need us. We’ve survived by staying with the high-end, high-ticket products. They are not labor intensive. We’ve practically given up consumer goods. This is a warning I’ve been giving on national radio shows—it’s the demise of the middle class. If you abandon the trades and manufacturing, there goes 60–70 percent of your jobs.
Just as enabling technologies within the computer gaming and animation industries have evolved over the last two decades, so has the Applied Computer Graphics (APCG) Program at CSU, Chico. In early 2013, Dr. Clarke Steinback, program coordinator, undergraduate advisor, and key architect in the creation of the APCG, set out to make it clear to employers and prospective students just what the program offers and how it prepares students for jobs within the growing entertainment and video game industries. His efforts resulted in a name change that reflects the program’s growth and its alignment with an industry that’s evolving at warp speed.
graphic artists, storyboard artists, game programmers, or other graphics experts. The program combines art and technology, providing students with an opportunity to put their imaginations to work in a collaborative team environment creating multimedia experiences.

The degree program is designed to enable students to develop their skills in a particular area of interest such as computer graphics, computer animation, web development, graphics software engineering, and computer game design and programming. Enrolled students draw upon the expertise of faculty from a variety of departments across the CSU, Chico campus and work in collaborative project teams.

Program courses build skills for students who seek a career in the area of animation. Courses include Digital Animation, 3-D Computer Modeling, 3-D Character Modeling, and Advanced Animation Pre-Production and Story Development. Students who enroll in the 3-D Character Animation course learn about concepts of motion, timing, and acting as they apply to animated characters. Students enrolled in the Advanced Animation production course complete an animated short with accompanying sound, music, and visual effects. In the Advanced Animation Post-Production course, students learn how to complete animation projects in the post-production environment, including editing, music, sound effects, and other post-production elements associated with successfully completing professional-level short animations.

Students who choose to focus on game development take courses that provide them with experience and training in video game design, the video game industry, communications, project collaboration, and video game production. Courses teach fundamental and advanced concepts in areas such as the role of the designer, the structure of games, formal and dramatic elements of games, conceptualization, prototyping, play-testing, balance, working in teams, and the production pipeline.

“We hope to introduce a Mobile Game Development class in fall 2013,” says Steinback.

Every student enrolled in the program is provided with skills and training in communication and collaboration through completion of realistic team-based projects. Students from the program team up with students from other majors who are preparing for careers as recording artists or graphic designers to complete a project within a single academic year. The finished products are posted to the Chico State Game Studios website (www.chicostategamestudios.com) to provide others with access to the student-produced games.

Established in 2005 by the program faculty, Chico State Game Studios was established to assist students as they develop games with original artwork and audio.

“The studio was created to mirror a real production studio,” says Steinback. While not every project results in a finished product, many do. One shining example is the

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student, produced 40 Stories game. With 40 different levels of play, 40 Stories is a puzzle game where you create duplicates of yourself to escape 40 challenging floors. More than 60 CSU, Chico students from the APCG Program, computer science program, and recording arts department worked together to develop the game.

While the APCG curriculum continues to evolve to keep up with the industry, the program moniker hasn’t. With both the industry and the program leap years ahead of where they started decades ago, Steinback wanted the program’s name to more closely reflect the program as it is today. “The name Applied Computer Graphics made it hard for employers and prospective students to recognize the program for what it really is,” says Steinback. “They weren’t sure what the program teaches and have thought it’s overly technical or more about graphic design.”

So, earlier this year, Steinback and College of Engineering, Computer Science, and Construction Management dean Mike Ward worked with the university to facilitate a name change that would make it easier for students to find their way to the program through a review of the university catalog or online searches.

If you would like to learn more about the Computer Animation and Game Development Program, contact Professor Steinback at 530.898.4891 or visit www.csuchico.edu/acg.
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Questions?
Please contact Advancement Associate Hope Shapiro at 530-898-3012 or heshapiro@csuchico.edu.
On March 27, Daren Otten, assistant professor and coordinator of the Sustainable Manufacturing Program at CSU, Chico, served as a moderator for the California Advanced Manufacturing Summit (CAMS). Hosted by the California Governor’s Office of Business and Economic Development, the invitation-only event gathered industry leaders, governmental agencies, researchers, and academics to explore strategies for harnessing California’s competitive advantage in advanced manufacturing. Otten led an afternoon session that focused on what is needed to grow manufacturing jobs in California, identification of new strategies for tapping into increasing manufacturing output growth, and exploration of strategies to commercialize R&D and keep manufacturing in the state.

Otten has served as the coordinator of the Sustainable Manufacturing Program at CSU, Chico since 2006. Within the industry, he has worked both domestically and abroad in contract manufacturing, providing engineering, manufacturing, supplier qualification, and project management support to companies such as HP, GM, Hamilton Beach, Teledyne, Meraki, Jacuzzi Brothers, and Epson. Otten has also served as the interim CEO for a green plastics firm based in San Diego and as president of a product development and contract manufacturing firm based in Northern California.

His expertise in the area of sustainable manufacturing has earned him the respect of academics and industry professionals. Most recently, he was a featured speaker at the American Repatriation Manufacturing Summit on May 9 in Chico and at the Plastics News Conference Workforce West Conference June 4–5 in Los Angeles, where he presented “Education, Workforce & Economic Development—Coordinating the Three Pillars to Effect Change.”
In March 2013, at their 94th annual convention in Palm Springs, members of the Associated General Contractors of America (AGC) named CSU, Chico Construction Management Program faculty member David Shirah the AGC Education and Resource Foundation’s 2013 Outstanding Educator. The honor carried with it a $5,000 cash award and the privilege of naming two students as recipients of $2,500 scholarships from AGC for the coming academic year. Shirah previously received AGC’s Outstanding Student Organization Advisor Award for 2010–2011.

“As a construction contractor with a great deal of experience in our industry, David has a depth of knowledge that is essential to educating our future professionals,” said Jack Kelley, president of the AGC Education and Research Foundation. “In addition to the very demanding classroom role as educator and mentor, he has gone the extra mile (extra 10 miles in David’s case) outside the classroom to give his charges every possible exposure to our industry. His dedication to the education process and his students is truly outstanding.”
Tanya Komas, associate professor and director of the CSU, Chico Concrete Industry Management Program (CIM), has dedicated the last seven years of her life to building a program at CSU, Chico that would elevate and transform the concrete industry. Her hard work and accomplishments were recognized by *Concrete Construction* magazine, published by Hanley Wood LLC, in the February 2013 issue, which named Komas one of the five most influential people in the concrete industry.

Colleagues and students looked on as Komas was formally recognized on Feb. 5 during the World of Concrete’s annual trade show in Las Vegas for her work with the CIM program and associated Alcatraz Island Field School internship program. The 2013 trade show was attended by 55,000 people.

Komas has led the development of the CIM program, which prepares students for management careers in the concrete industry. The course curriculum blends business training with technical instruction and hands-on experience with all forms of concrete. The students learn about manufactured concrete products, ready mix, construction contracting, and the proper use of heavy construction materials and tools. Business courses, such as project management, facilities management, and operations management provide students with the skills they need to manage complex projects for the employers who hire them. The College of Engineering, Computer Science, and Construction Management provides administrative oversight for the CSU, Chico CIM program, one of just four programs of its kind in the United States.

Komas also oversees a partnership with the National Park Service that provides many CIM students with summer internships for their work with the Preservation Field School at Alcatraz Island in San Francisco. Each summer, students from the CIM program facilitate repairs to the Alcatraz Island facilities, which were once used to house notorious criminals such as Al Capone and George “Machine Gun” Kelly. In 1963, the federal government closed the famous prison. Today, Alcatraz serves as a popular tourist destination. Komas and her students work on the aging buildings and hardscape on the island.

Komas joined the CSU, Chico faculty in 2006. She teaches and conducts academic and professional research in concrete evaluation and repair, sustainable aspects of concrete, decorative concrete, new concrete materials testing, and historic building rehabilitation. She is a member of the Western Bridge Preservation Partnership through Caltrans and is on the Board of Directors for the International Concrete Repair Institute (ICRI). She is also an active member of both the American Concrete Institute’s Strategic Development Council and the Association for Preservation Technology International.
In April 2012, the Campaign for College Opportunity released a report detailing key findings of a study called “California’s Economic Payoff: Investing in College Access and Completion.” The report covers a wide number of compelling reasons why it is extremely important and beneficial for the State of California to continue investing in higher education. Key findings include the following:

- For every $1 California invests in students who graduate, it will receive a net return on investment of $4.50.
- Past graduates of UC and CSU return $12 billion annually to the state.
- By entering and completing college, the average Californian will spend four fewer years in poverty, reducing the expected number of years they receive cash aid by more than two years.
- By the time a college graduate reaches 38 years old, the state’s initial investment is repaid in full.