



Spring 2013

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An animatronic Mister Rogers created for the Heinz Historical Museum in Pittsburgh. Used with permission.

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EDITOR'S NOTE

The So-Far Unimagined

When a group of students walk in late to class, when directions are rapidly repeated five times, when half the class is absent (again), and when blank stares greet me as I face the room, I question the security of the future. I worry today's young people—my college students—won't meet the challenges facing them in the not-so-distant future. Then, *ciWeek* comes along, and my worries ease.

The buzz for *ciWeek* among students is profound. Each year, I marvel at my student's curiosity and excitement. They plan which speakers they want to hear, they chat about which sessions sound fun, and, despite their best efforts to blend in with their classmates, they just can't help but be eager.

After *ciWeek*, we reconvene as classes and discuss how it went. Students compare notes about who they saw and what they learned. They chatter about the best, most fascinating speakers, and do not hold back about the speakers they didn't enjoy. Most compellingly, they share ideas they have about building a better future, ranging from products they want to invent to government policies for ending poverty. Inevitably, many of my students share the same concern: *ciWeek* taught them they have great ideas, but they're clueless on turning those ideas into realities. What is it that they must do to move from conceptual to tangible? It is from this magazine's featured articles that students can find inspiration, discipline, and action.

At the foundation of turning thoughts into actuality is thinking in new ways. Barbara Stennes' article "Change the Way You Think" encourages readers to shake the funk from their grey matter. Stennes calls for breaking out of stagnant idea-generation methods by connecting innovation to Edward de Bono's teachings on creative thinking. Combined with the never-ending rewards of networking, the average college student has much to gain from her sharing of de Bono's

works. Students can break themselves of the same old "what do I do" to "how do I do it."

Making that shift, however, is wrought with challenges; building a better future certainly will not come easy. This is something today's college student can learn to weather.

Who better to learn from than NASA? As detailed in Cassie Kloberdanz's piece "Back to a Better Future," NASA reinvented its role in space exploration after a seemingly damning change in purpose. By working with commercial space exploration companies, NASA took on a consulting role allowing them to remain relevant and keep their ideas moving. Their atmospheric influence on daily lives is immeasurable: meteorology, satellite technology, computing, and, robotics. Combining NASA's experience and knowledge with financially-independent companies like SpaceX can only bring further creative improvements, and, in turn, show a discouraged future engineer sitting in the back of the classroom that not all forks in the road end in a brick wall.

Or maybe said future engineer has a fascination with robots and animation but cannot imagine a way to connect the two. Maybe that young student visited Disney World as a child and was both scared and captivated by the singing pirates with the Monty Python mouths. Through Dr. Gene Poor's article—"The Illusion of Life"—about animatronics, that up-and-coming engineer can see how to build and apply those seemingly disconnected aspirations. Instead of jerky, menacing, shiny-faced pirates singing yo-ho-ho and bottles o' rum, the student can see how convincingly lifelike animatronics are now. (See the cover image and the article for mind-blowing visuals.) Furthermore, the student could connect animatronics with the massive prospective uses for artificial intelligence, hence discovering the so-far unimagined.

It is, indeed, the unimagined that can motivate more computer-oriented students. Make no mistake, in nearly every classroom sits a young thinker who knows exactly how to repair . . . and destroy a company's computer systems. Hacking is not necessarily considered a crime by everyone; to some, it is a skill. But instead of using that skill destructively, that student could build a better future by developing an interest in Dr. Doug Jacobson's concern as shared in his article "Cybersecurity." It goes without saying people are technologically dependent but not all are technologically savvy, and the proud, self-professed computer nerd knows this. What better way to improve the future than to apply those hacking skills to out-hack the ill-intended?

As DMACC West Campus embarks upon the 2013 *ciWeek* with subjects of creative thinking, space exploration, animatronics, cybersecurity, and countless others at the forefront, the potential for idea-building and creativity will be most fervent as students return to their classrooms and reflect on what they learned. They'll share their ideas for innovations and, maybe, will have built the mental bridges to make their abstract ideas concrete. And I cannot help but think . . . there is hope yet.



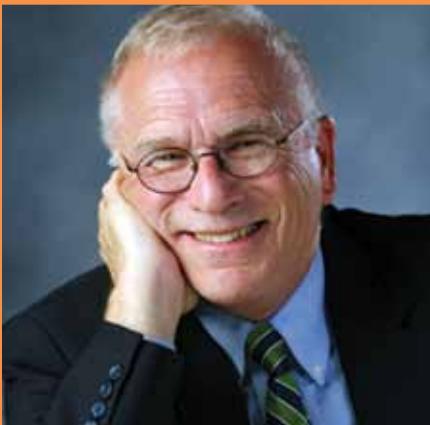
Seeta Mangra-Stubbs teaches English at the DMACC West Campus. She may be reached at smangrastubbs@dmacc.edu.



innovation



An artist puts the final touches on a clay sculpture. It will be used to mold silicone skin for an animatronic character. Used with permission.



BY DR. GENE WILLIAM POOR

THE ILLUSION OF LIFE:

Lifelike Robotics

Bill Gates recently stated robotics are where computers were 30 years ago. Ponder that thought! Around the world, engineers and scientists are participating in the race to create the first intelligent robot. This new generation of smart robots will act like (and maybe resemble) human beings. Currently, human-like robots (animatronics) are used to teach, sell, entertain, and persuade. Walt Disney imagined the process of creating lifelike robots as the perfect marriage of art and technology. This article examines that art/technology marriage and how creativity plays an integral part of creating the illusion of life.



An artist-craftsman prepares a chair for a Sesame Street ride at Universal Park in Singapore while Ernie supervises. Used with permission.

For thousands of years, humans have been fascinated with machines that give the illusion of life. The word “automaton” generally is used to describe early attempts at reproducing living beings. The word comes from the Greek “automatos,” which means “that which moves itself.” Very early automatons were water-powered with simple body movements. Later automatons performed one or two predetermined tasks such as drawing a picture or writing a few words. Still later, automatons became complex mechanisms able to perform an entire intricate act, which included such human skills as handstands, flips, rolls, sleight of hands, and illusions of levitation.

The word “robot” first appeared in a 1920 play entitled *Rossum’s Universal Robots* (R.U.R.). The Czech author Karel Capek used the word “robot,” a derivative of the word “robota,” which means “forced labor.” In Capek’s play,

*Animatronic
characters can say
and do things humans
can’t and shouldn’t.
Have guts. Get edgy!*

humans create robots to relieve the day-to-day necessity of work. Eventually, humans use robots to fight wars until the robots decide to kill all humans except for the robots’ founder. In the play’s conclusion, a humanized robot couple walks off into the distance, and “robot-kind” is saved from extinction.

The word “robot” eventually replaced automaton and today is found in almost all languages. “Robot” first appeared in *Webster’s Dictionary* in 1934, defined there as “any automatic apparatus or device that performs functions ordinarily

ascribed to human beings, or operates with what appears to be human intelligence.” In subsequent editions of various dictionaries, robots often are described as having humanlike forms.

The Disney Contributions

By the early 1950s, advancements in hydraulics, pneumatics, electronics, and controllers provided an innovator named Walt Disney with his long-sought technology to create lifelike, full-size, three-dimensional animated figures. Disney trademarked his newly created technology “audio-animatronics,” which combined audio, animation, and electronics into one descriptive phrase.

At the 1964 World’s Fair in New York, Disney unveiled the first commercial application of lifelike audio-animatronics, the animated character of President Abraham Lincoln. The Illinois Pavilion, where the animated character appeared, became one of the most memorable

exhibits at the fair. After the fair closed, an improved version was built for a similar attraction at Disneyland. Over the years, the attraction evolved into an experience that includes all of the presidents as audio-animatronic characters. Today, sophisticated compliant hydraulic technology enables incredible lifelike movement.

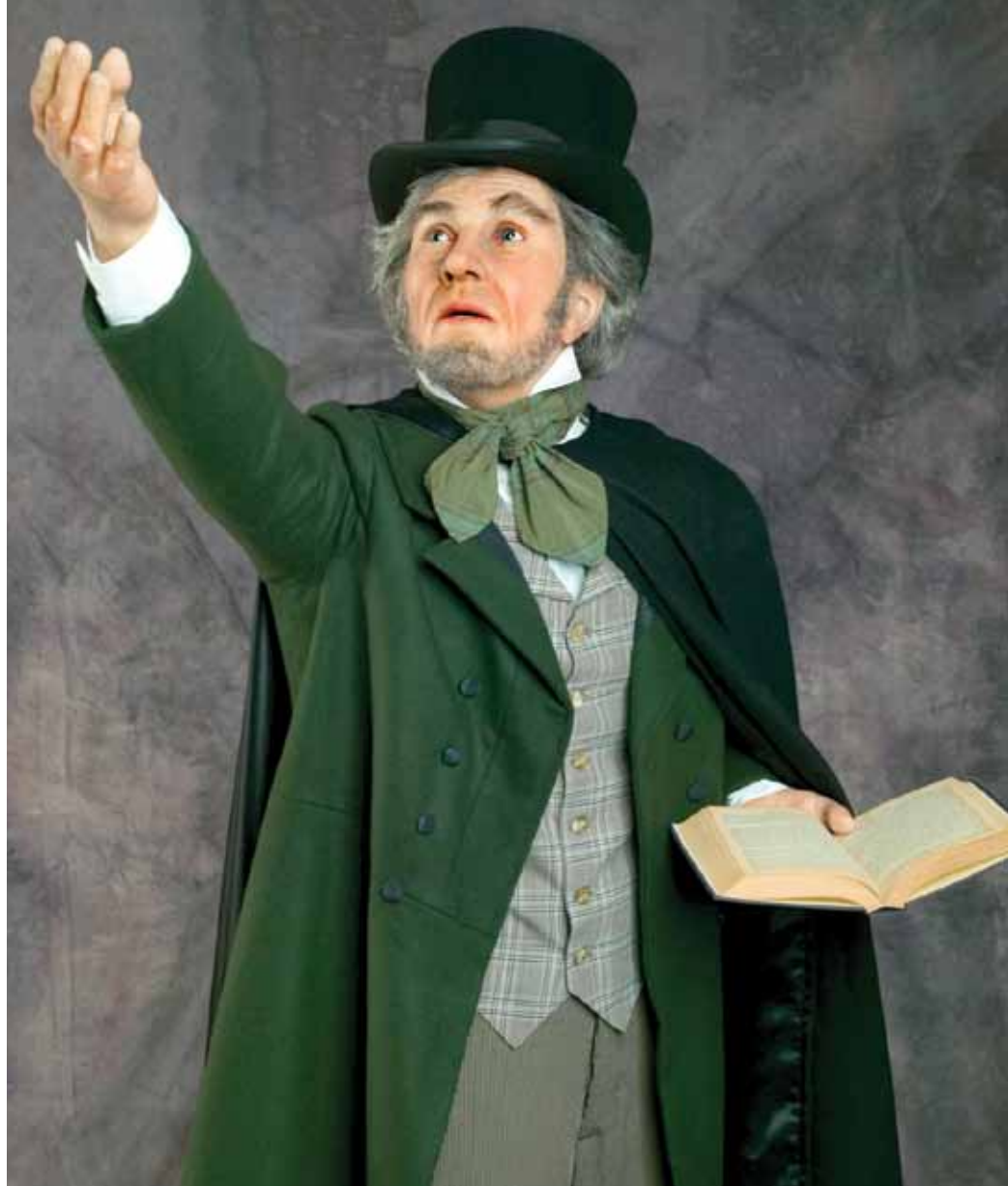
As filmmakers, puppeteers, and animation companies became more involved with the sophisticated technology, they coined the word “animatronics,” combining components of animation and electronics. As naturally and smoothly as an animatronic character moves, it has to look realistic first, which remains a major concern of animatronic designers and fabricators.

This notion of realism is what distinguishes an animated character from an industrial robot. The major distinction and focus of industrial robots is how accurately they move, not how lifelike they look. Industrial robots, by their very definition and application, are designed to perform tasks to close tolerances; often those tolerances are within one-thousandth of an inch.

Lifelike animatronic characters, on the other hand, are designed to move like humans. The accuracy of their performance generally is not the primary consideration because they are not designed (or able) to perform precise tasks. They typically exist only to be believable for educational, entertainment, and sales purposes.

Animatronic Technology

Animatronic characters fall into four categories of movement actuation: mechanical, electrical, pneumatic, and hydraulic. Depending on the particular application, it is not unusual for characters to utilize all these devices to control various movements. However, most lifelike animatronics are built with just one medium of actuation, and



An animatronic German minister, Concordia Historical Institute in Clayton, Missouri. Used with permission.

pneumatic (air-driven) control is the most common form in the animation industry. Pneumatic actuation is reliable, relatively inexpensive, quiet in operation, easy to maintain, and when compared to hydraulic control (oil), not nearly as messy if a leak occurs.

Unlike humans, lifelike animatronic characters have limited capabilities and are designed only to perform specific tasks. In the design process, the client and the builder establish how many movements are necessary and what those individual movements will be. A move (sometimes referred to as a “degree of freedom”) is defined as a simple action an animatronic character

can perform such as an eye blink, a foot tap, a head turn, or a wrist bend. Animatronic characters can perform as few as one move (such as a mouth move) or as many as fifty-plus moves.

The simplest movement is a digital (or binary) move. A digital move either is on or off (like a toggle light switch). For example, a digital foot tap moves up, down, or somewhere in between in its travel stroke. The speed movement is preset, and the movement cannot be stopped and held at mid-stroke. The majority of animatronic characters are designed and built with mostly digital moves. These are the least expensive animatronics to build and the easiest to maintain.



An animatronic British soldier, Halifax Historical Society in South Boston, Virginia. Used with permission.

On the other hand, an analog move has more precise control over both the speed and where the move stops along its stroke (such as a dimmer light switch). For example, a head can be turned at virtually any speed and stopped anywhere between its right and left extremes. However, analog moves are more complex and expensive to design, build, and maintain. When budgets allow, designers often include one or two analog moves to give a more human quality to an animatronic character.

A relatively new move control circuit, compliant feedback, occasionally is applied to the analog movement of an animatronic character. Compliant feedback reduces the undesirable shaking or oscillation of an animatronic move when it comes to a complete stop or suddenly changes directions. This shaking problem, known as “boing,” is a major concern, especially when a move is fast and has heavy mass such as when moving an animatronic arm. Compliant feedback is achieved electronically by

placing a load-sensing cell on the move or within the actuation line, which allows the animatronic character to “give” a little before stopping or reversing direction, hence making the character appear to be more fluid and humanly realistic. Compliant feedback also allows greater movement speed.

Pseudo-analog movement, essentially a digital move configuration with locking positioning devices, offers a third option for controlling animatronic character moves. However, movement speed is typically not controllable, and programming the movement is not as easy as either purely digital or analog moves.

Animatronic Control

Contemporary animatronic controllers are computer-controlled encoder and decoder devices. Some are designed as single, stand-alone units, and others are designed as two separate components. The encoder provides a programming unit that allows the operator to interface with buttons, sliders, joysticks, and rotary switches. Most animatronics are programmed in real time. This means the programmer actually watches the animatronic character perform moves (one or two at a time) while he or she triggers each action in synchronization to a scripted soundtrack. During playback, the decoder interprets those electronic signals generated during the programming session and converts them into appropriate animatronic movements.

Most programmers begin by programming the mouth. To activate mouth movement, the programmer pushes the appropriate button assigned to that particular move in sound synchronization to the mouth opening and closing, much the way a puppeteer would activate a puppet’s mouth. Typical programming controllers allow the programmer to “punch-in and punch-out” to make corrections along the way, so the programmer does not



Artists poke individual hairs into the silicone head to create the hairline and eyebrows. Beards and mustaches are created with the same painstaking care. Used with permission.

have to redo the whole sequence to repair a small section.

This programming process continues through the entire animatronic move list, and it can take hours, days, even weeks to complete the process, depending on the complexity of the character, length of the show, number of characters, lighting, and special effects. An animatronic programming session offers the experience of watching a character “come alive” in front of the programmer.

The Design and Build Process

Because they are design-driven, animatronic characters simply can't incorporate all possible human moves, which means the client and manufacturer typically establish what they want the character to do and look like. The desired result may be as simple as “we want a famous character standing

Scripting, voice talent, and personality are critical to character believability. These components work hand-in-hand to form the character's soul.

next to his invention while describing the process” or as complex as a detailed set of engineered drawings with an exact maquette. In either case, it's a starting point for the dream-versus-budget, tug-of-war process of budgeting.

Creating an animatronic character is an intricate process that involves many fields of expertise. Disney referred

to his audio-animatronics as the “perfect marriage between art and technology.” Hence, the incredible skill and craftsmanship involved in making an animatronic character is generally spread through a number of departments: design and engineering, sculpting, mold-making, skin fabrication, painting, adding hair, armature and movement development, plumbing, final assembly, prop and scenic creation, costuming, sound production, special effect development, and programming. All of these departments synchronize through a series of meetings and approval loops between client and manufacturer.

The process begins with a meeting to determine the project objective and audience profile. Establishing the specific purpose of the animatronic character is crucial to assure its ultimate success. During the design process, the client and manufacturer decide on the final appearance, scale, location of the



A control technician programs a character move by move in synchronization to the audio presentation. Used with permission.

moves, and type of moves (analog or digital). Budgets, timelines, checkpoints, and signoffs are all established. Scriptwriting and voice talent selection are also acknowledged and assigned for

production. Once solidified, the actual character projects move into production.

The Ten Laws of Animatronics

Animatronic characters that perform successfully are almost always in alignment with some fundamental notions, which can be crafted into ten basic laws:

ONE: The Law of Distance. The greater the distance between audience and animatronic character, the more leeway allowed in believability.

TWO: The Law of Time. The less time a character is viewed, the less sophisticated an animatronic character needs to be.

THREE: The Law of Numbers. The more characters performing or the more movements each character has increases the amount of time the audience pays attention.

FOUR: The Law of Non-Human. Non-human animatronic characters are not judged as critically as human lifelike ones. None of us really knows what a talking dog or singing chicken looks like.

FIVE: The Law of Surprises. Revelations keep the audience's attention. These surprises can be additional character moves, special effects, or an unusual, clever trick.

SIX: The Law of Singing. Audiences are addicted to animatronic characters that sing. There is something mesmerizing about things that sing but are not human.

SEVEN: The Law of Personality. Scripting, voice talent, and personality are critical to character believability. These components work hand-in-hand to form the character's soul.

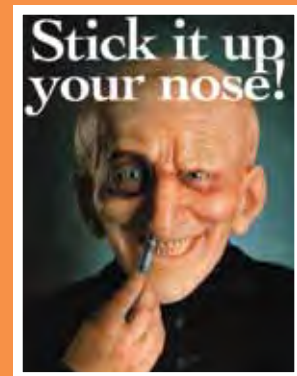
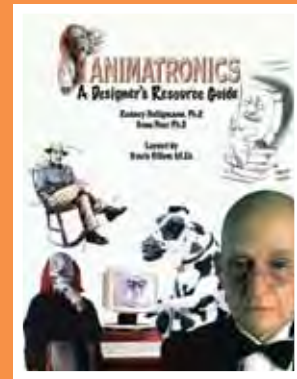
EIGHT: The Law of Brevity. Brevity in performances leaves the audience wanting more. A performance limited to a minute per character is a good starting point that generates curiosity.



An animatronic President Abraham Lincoln, Lincoln Library and Museum in Springfield, Illinois. Used with permission.

NINE: The Law of Scale. Changing the scale of a thing helps grab attention. For instance, make small things BIG. Consider an animatronic baby as big as a car. Such a sight will definitely stop people in their tracks.

TEN: The Law of the Edge. When possible and appropriate, go over the top with an animatronic character—push the boundaries. Animatronic characters can say and do things humans can't and shouldn't. Have guts. Get edgy!



Dr. Gene Pool is the first Scott Hamilton Endowed Professor of Entrepreneurship in the College of Business Administration at Bowling Green State University and director of the entrepreneur program. He also serves as professor emeritus in the College of Technology, where he conceived and launched the visual communication program. In addition to his academic roles, Dr. Pool also founded LifeFormations—an innovative animatronic company that designs and builds lifelike characters for theme parks, visitor centers, museums, and retail establishments. He has received numerous awards and citations including the Student Alumni Association Master Teacher (considered the highest honor given to BGSU faculty), the Kent State University Distinguished Alumni Award, and the Ernst & Young Entrepreneur of the Year. Dr. Pool has given hundreds of presentations worldwide and written nine books and numerous articles.



For more information, visit
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DR. GENE POOL WILL PRESENT *ANIMATRONICS: THE ILLUSION OF LIFE* AT THE DMACC WEST CAMPUS ON WEDNESDAY, MARCH 6 AT 6:00pm (MAIN STAGE) AND THURSDAY, MARCH 7 AT 8:15am (AUDITORIUM).

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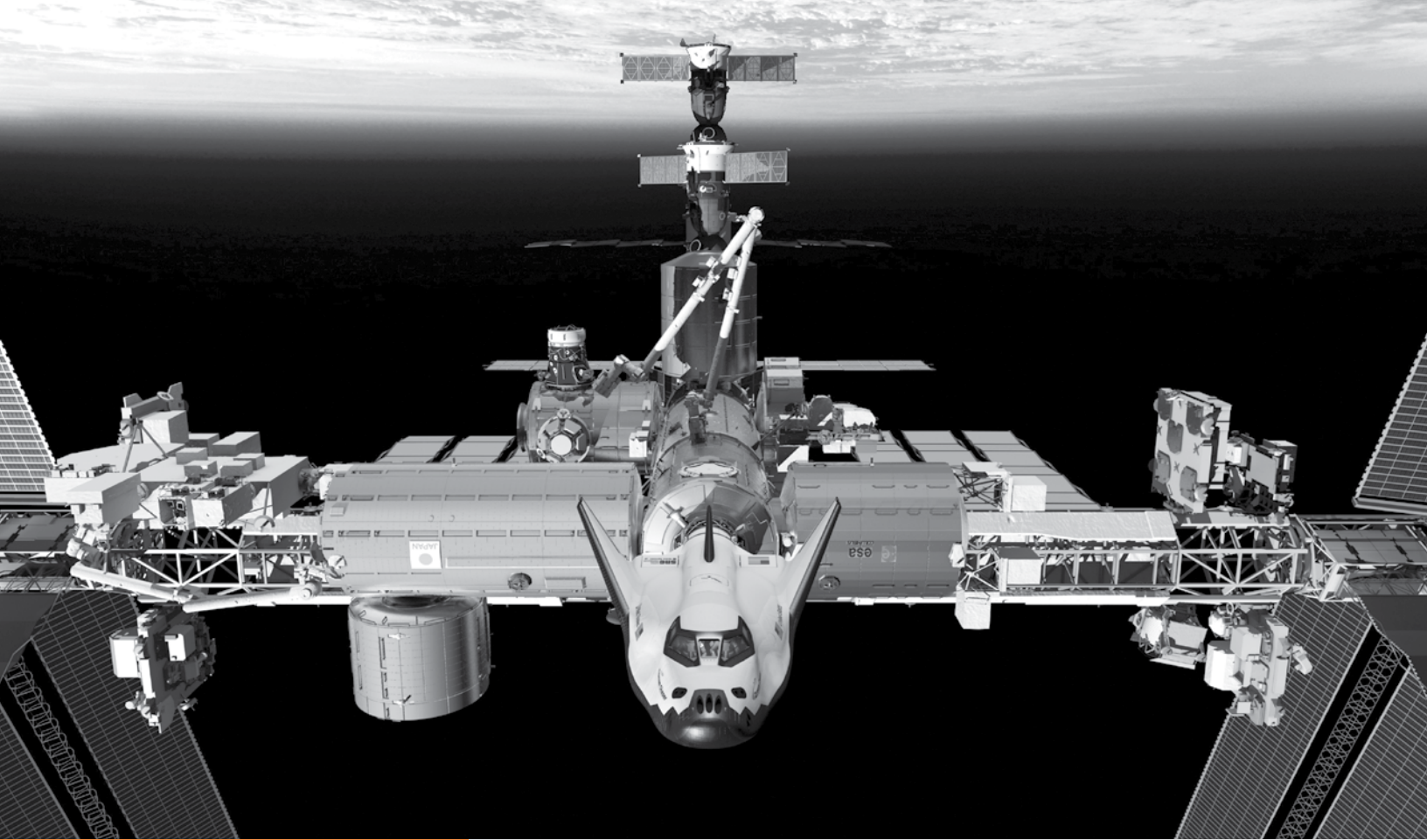
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Rendering of Dream Chaser docked to the International Space Station. Used with permission.

BACK TO A BETTER FUTURE:

BY CASSIE KLOBERDANZ

Rebuilding America's Space Program

The Dream Chaser Space System Reaches into NASA's Archives to Return Astronauts to Space

The United States of America has put men on the Moon, built a groundbreaking orbiting science laboratory, and stood as the global leader in space exploration for decades. But today, that position is threatened by one simple fact: the U.S. cannot put a human into space on a U.S. vehicle. The American Government must pay Russia approximately \$60 million per person to put its own astronauts into orbit to reach a space station that the U.S. spent billions to create. This sobering fact surprises most people.



Rendering of Dream Chaser on an Atlas V rocket during ascent. Used with permission.

Grounded

Over the last three decades, it seems the majority of Americans have not paid much attention to the space program, not caring about the 135 flights of the Space Shuttle unless there was a major accident and assuming the hard part of space exploration was a thing of the distant past with the moon landing in 1969. But the truth is spaceflight is not easy, and it is not routine.

The Space Shuttle Program flew its last flight in 2011. With its retirement, the U.S. lost its capability to launch astronauts into space. This begs the question: why did NASA—the agency responsible for assuring that the U.S. remains on the forefront of science and space exploration—retire its only mode of human space transportation? The answer is a mix of the political and technical. Of the most practical reasons, the Space Shuttle was no longer the most efficient solution to meet the

agency's needs. The system was sized to take sections of the International Space Station to orbit, and with the completion of the station, that capability was no longer necessary. This would be like renting a moving van to move across the country, then keeping it to take the kids to school or run to the grocery store. While incredibly useful for creating the most complicated construction project ever undertaken, a vehicle the size and complexity of the Space Shuttle no longer met NASA's needs. Also, the Space Shuttle Program was expensive. The amortized cost over the Space Shuttle's 135 missions was on the order of \$1 billion per flight.

A New Way of Doing Business

The retirement of the Space Shuttle Program led to a popular misunderstanding that NASA retired right along with it. The good news is NASA is alive and well, but—just like

many Americans—NASA is struggling to accomplish all of its responsibilities with an ever-shrinking budget. Among NASA's extensive list of priorities, assured access to space remains among the most controversial. The concept of assured access to space requires that NASA have a variety of options for the transportation of crew and cargo, such that an accident or failure would not leave the agency without means to reach orbit. Questions have arisen from the highest levels of Congress over the need for a variety of space transportation options. But, just as the U.S. needs a variety of ships in the Navy or airplanes in the Air Force, options assure that capability is available when needed and allow the agency to save time and money by purchasing only the services required, all while simultaneously nurturing a redefined commercial aerospace industry in the U.S.

To drive the development of commercial solutions to space transportation, NASA divided its needs into two



Dream Chaser structural test article. Used with permission.

categories—cargo transportation and crew transportation—and employed a commercial concept to select its service providers: competition. The agency set up these competitions in a way that ensures taxpayers get the most for their money, requiring the commercial companies to co-invest with the U.S. Government in the design and development of cargo and crew space transportation concepts. The result: a groundbreaking public-private partnership that has spurred innovation and allowed NASA to purchase services, rather than incur the cost of designing, developing, and maintaining its own space transportation vehicles.

The first round of competition began in 2006 to select cargo providers for the International Space Station. NASA chose two companies: Space Exploration Technologies (SpaceX) of Hawthorne, California, and Orbital Sciences Corp. of Dulles, Virginia. To date, the program has proved successful

The good news is NASA is alive and well . . .

with SpaceX already making commercial cargo deliveries to the station and Orbital Sciences scheduled to follow suit in mid-2013. This commercial model frees NASA's finite resources to look beyond the space station and focus on pushing the boundaries of science and space exploration.

With the deliveries of supplies and other cargo on the books, NASA turned its attention toward creating a competition to regain the capability to deliver astronauts to the International Space Station. The agency's Commercial Crew Program selected three companies—SpaceX, winner of one of the cargo transportation contracts; Boeing, a household name in commercial

aviation and aerospace; and Sierra Nevada Corporation (SNC), a privately held company with a 50-year history in aerospace—to compete for a fully funded contract to deliver astronauts to the International Space Station. While SpaceX and Boeing are working on capsule vehicle designs that call to mind the historic Gemini and Apollo programs of early human spaceflight, only Sierra Nevada Corporation is creating a unique “lifting body” vehicle design that builds upon a decade of NASA research and offers unprecedented capabilities for crewed flights to the International Space Station.

What Once Was Old Is New Again

Sierra Nevada Corporation's entrant into NASA's commercial crew competition is the Dream Chaser, a lifting body orbital crew vehicle named for the lift provided by the vehicle's body shape (not just from wings like a traditional airplane). The Dream Chaser is a reusable, low-cost vehicle that offers both safety and performance advantages over a traditional capsule spacecraft design.

The Dream Chaser crew vehicle shares a long history with NASA. At the beginning of the agency's human spaceflight program, lifting bodies were identified as a promising vehicle configuration, offering safe reentry from Earth orbit with added capability over other designs. In the 1960s, NASA built and flight-tested several prototypes. While NASA's first crewed lifting body program ended in 1975, the agency confirmed the design offered a good shape for reentry, balanced aerodynamic handling qualities with thermal constraints, and provided a useful amount of capacity for crew and cargo.

In the late 1980s, a team at NASA's Langley Research Center reinvigorated the engineering effort to develop a lifting body vehicle with the Horizontal



Dream Chaser cockpit-based flight simulator. Used with permission.

Lander 20 (HL-20) vehicle program. The HL-20 underwent more than 1,200 wind tunnel tests along with flight trajectory studies, simulated pilot-in-the-loop vehicle handling evaluations, emergency landing simulation flights, ergonomics and egress studies with a full-scale vehicle mockup, and two detailed studies of HL-20 fabrication and operations. Significant progress was made on the design until the program's suspension in 1995.

Ten years later, SpaceDev Inc., later acquired by SNC, began developing its own lifting body concept for human spaceflight called the Dream Chaser. Preliminary analysis suggested the previous HL-20 design could be readily adapted as a foundation to meet NASA's goals for next-generation orbital crew transportation. The extensive work performed by NASA on maturing the HL-20 concept has enabled rapid development of the Dream Chaser vehicle.

Standing on the Shoulders of Giants

SNC has spent the last eight years building upon the HL-20 design and lessons learned from the Space Shuttle Program to create the Dream Chaser orbital crew vehicle. Engineers at SNC are designing this new system to offer astronauts an additional level of safety and reliability over heritage systems, all while being easy to maintain and costing taxpayers a fraction of the Space Shuttle Program. The Dream Chaser boasts significant improvements in technology over the original HL-20 design including nontoxic propulsion systems, modern composite materials, and new construction techniques. However, the team still works closely with NASA to leverage the knowledge and expertise of the agency's engineers.

The Dream Chaser Space System operates much like the Space Shuttle with a vertical launch and horizontal

landing. The Dream Chaser orbital crew vehicle is being designed to launch on a United Launch Alliance Atlas V launch vehicle from Cape Canaveral Air Force Station in Florida for missions to the International Space Station. Another feature of the Dream Chaser is its onboard motors. SNC is developing its own nontoxic hybrid propulsion, run on laughing gas and tire rubber, which allows the vehicle added maneuverability while in orbit and provides additional safety for both onboard astronauts and the vehicle's ground crew.

One of the unique safety features of the Dream Chaser lifting body allows the vehicle to reach a runway landing at any point during flight with very low reentry forces experienced by the crew and cargo carried inside. The Dream Chaser's primary mission lands the vehicle at NASA's Shuttle Landing Facility in Florida; however, the vehicle can touch down on any runway that can

support a conventional 737 airplane and requires no specialized equipment. Due to the runway landing capability and nontoxic propellant, the Dream Chaser boasts a capability not even the Space Shuttle could offer: immediate access to crew and cargo post-landing. This is important for two reasons: foremost, it allows medical teams to reach crew who may be ill from long-duration flight on the space station, but it also offers immediate access to critical science cargo, some of which may be time-critical. As the International Space Station evolves from an on-orbit observatory to a fully functioning laboratory, this capability for immediate access is increasingly important for scientists throughout the world.

To date, the Dream Chaser has won four NASA-funded competitions worth nearly \$350 million. With the added support of internal funding, SNC's vehicle development program continues to mature through ongoing analysis and simulation, as well as ground and flight testing. In 2010, the Dream Chaser flight test program began with the first

SNC is striving to provide commercial crew and cargo transportation to the International Space Station for NASA as early as 2017.

sub-scale model flight of the vehicle. By 2012, a full-scale Dream Chaser flew suspended under a carrier aircraft to test aerodynamic characteristics and evaluate operations for future testing. Near-term milestones for the program include the first full-scale free flight test series in 2013 at Edwards Air Force Base in California. The Dream Chaser's

"Approach and Landing" tests will closely mirror a portion of the flight test program designed by NASA for the Space Shuttle. Through an extensive flight test and verification program, SNC is striving to provide commercial crew and cargo transportation to the International Space Station for NASA as early as 2017.

The Dream Chaser Program's success as part of NASA's Commercial Crew competition has fueled SNC's primary mission to provide safe, reusable, and cost-effective transportation of crew and cargo to and from the International Space Station. However, the Dream Chaser vehicle is also designed to serve as a flexible alternative for other piloted or automated low-Earth-orbit space operations. The Dream Chaser vehicle could potentially offer services that include delivery and return of crew and cargo to other orbiting facilities, operation as a short-term independent orbiting laboratory for government agencies or commercial entities, and orbital space tourism.

The Shared Dream

Regardless of the U.S. vehicle (or vehicles) selected to return American astronauts to space, it is important to remember that spaceflight is not easy, and it is not routine. As NASA once again strives to become the world leader in access to space and cutting-edge space exploration, SNC and others participating in the agency's Commercial Crew Program competition are all working toward the same goal: to provide a safe, reliable, American-made solution to return the nation's astronauts to space for decades to come.

Cassie Kloberdanz is the Manager of Business Development for Sierra Nevada Corporation's Dream Chaser® Space System and an assistant professor at the University of Colorado at Boulder in aerospace sciences. Her expertise includes a variety of engineering disciplines as well as technical and crisis communications. Formerly head of external relations at SpaceX, Kloberdanz began her career as an engineer with positions at NASA's Marshall Space Flight Center and Kennedy Space Center. She holds an M.A. from the University of Colorado and a B.S. from the University of Iowa. Kloberdanz is a native of West Des Moines, Iowa.



For more information, visit

◀ www.sncorp.com/snc_ss.php



◀ www.dmacc.edu/ciweek

CASSIE KLOBERDANZ WILL PRESENT *DREAM CHASER®: THE FUTURE OF COMMERCIAL HUMAN SPACEFLIGHT* AT THE DMACC WEST CAMPUS ON WEDNESDAY, MARCH 6 AT 9:30am (AUDITORIUM).

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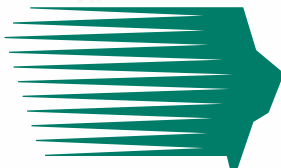
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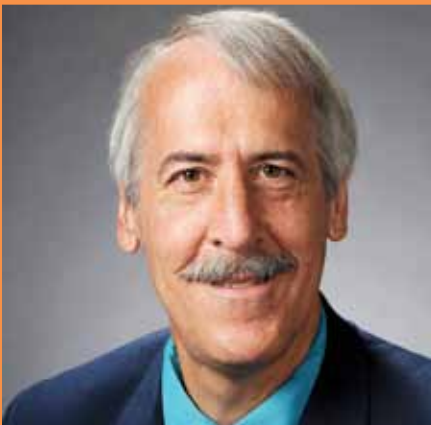
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A bird's eye view of the largest, single cyber defense competition in the United States. Used with permission.



BY DR. DOUG JACOBSON

CYBER SECURITY:

What to Do about It

Over the past 15 years, cyberspace and the Internet have become an integral part of the fabric of United States commerce, utilities, communication, and entertainment. The pervasive nature of cyberspace is evident in the lives of citizens' personal and professional activities and daily use of services. This dependency emphasizes our country's need for secure and properly functioning computers, networks, and communication systems. Furthermore, in the past five years, handheld devices and mobile access have drastically increased our reliance upon networks and intellectual resources.



An IT event for high school students. Used with permission.

Unfortunately, during this rapid explosion of dependence on networked systems, the threats and dangers of cyberspace have followed suit, evolving and increasing in overall impact. This poses great danger to our citizens, government, and corporate America, as well as to the production and control of intellectual content and the most basic critical services. These dangers provide an ongoing, persistent risk and show no sign of abating. At stake is the availability of networks and Internet services, integrity of identities, and confidentiality of information.

2013 marks the 25th anniversary of the Morris worm being released into the Internet; some would argue we are no more secure today than we were then. If we think of the Morris worm as signaling the dawn of the cybersecurity industry, then we must depict ourselves at high noon in the O.K. Corral of the cybersecurity shootout. We continue to see advances in technology solutions and escalations of technological exploits of these solutions. As IT professionals implement the newest piece of hardware or software to protect us from the latest threat, cybercriminals are already working to

find shortcomings in these systems that allow access to personal data, credit cards, bank accounts, critical infrastructure, which disrupt our daily lives. While advances in technology plugged holes or slowed the bleeding, they also caused criminals to become more savvy in approach and execution.

*The user is the
weakest link in the
security chain, a fact
long recognized by
security experts*

We are all tired of seeing the same headlines—"The U.S. is Losing the Information War," "Cyber Space is the Next Battleground," "Money Motivates Today's Hacks"—recycled in newsprint and magazines; blasted over the airwaves, cable news channels; and Internet. Such articles reveal the plight of the American public, business, and government when encountering new

vulnerabilities, exploits, credit card frauds, and/or viruses. But are the threats and vulnerabilities truly new? Or are we seeing an ongoing recurrence of the same problems because we do not properly address security and incorporate long-term solutions? Are we, in fact, doomed to repeat history because we fail to recognize patterns and avoid past mistakes?

Why do we continue to struggle with problems eerily similar to those observed nearly a quarter century ago? In the simplest terms, we treat security as a "bolt-on" feature rather than a core product or function. Because cybersecurity is an obvious priority, we appoint committees, add meetings, require cybersecurity certification standards, and send people to training. Yet security still is viewed as a separate issue. Rarely do we approach a design or system problem with the intent to include security from the start.

It has also become obvious technology alone won't fix security; people remain the way to make inroads in protecting cyberspace. Consequently, over the past 20 years, focus has increased on security education. But have we really improved

education and reduced cybersecurity attacks? In government and business, we require security training sessions or display posters around the office about how to be more secure. Some organizations even offer advanced security training for staff. In academia, where we train young computer engineers and computer scientists, we treat security as a separate topic, offering separate majors in information assurance and network security. When security is covered as part of a course on operating systems or programming, it's treated as an add-on. It's covered at the end of the semester, if time permits.

In general, we don't educate our computer engineers and computer scientists to take a holistic approach to security, and when these individuals enter the workforce, security is treated with the same separatist approach. Worse yet, computer engineers and computer scientists aren't the only ones who either ignore or segment security into its own world. All disciplines suffer when security is not included as a core product. This leaves those at decision-making levels as ignorant of security concerns as those who work for them.

Recognizing that individuals proficient in computer security are in high demand, colleges and universities have begun producing students with degrees in information assurance (IA). When compared with other disciplines in existence for 150 years or more, IA programs are often seen as the "new kids" on the academic "block." The first schools to teach security courses began doing so in the 1990s and started offering degree programs in 2000. At approximately the same time, in 1999, the government, specifically the National Security Agency, created the Centers of Academic Excellence (CAE) program to entice a larger number of universities to produce security professionals. In 2000, seven schools met the government's criteria and were designated as charter CAE schools; Iowa State University was one of the original

We are all tired of seeing the same headlines—“The U.S. is Losing the Information War,” “Cyber Space is the Next Battleground,” “Money Motivates Today’s Hacks”—recycled in newsprint and magazines; blasted over the airwaves, cable news channels; and Internet.

seven. Since that time, the number of CAE schools has grown to more than 150, ranging from two-year colleges to research-focused institutions.

Due to the diversity of topics and specialties in security, as well as the now-large number of institutions producing graduates, students in information assurance (IA) come from wide varied backgrounds. They may have backgrounds in computer science, computer engineering, business, math, and/or political science. Because of the varied disciplines that claim IA as their own, industries seeking security professionals must have clear guidelines.

There is no common curriculum required of all IA students; therefore, IA degrees are not consistent. IA graduates with business backgrounds may be well versed in IA policies and procedures, while those in engineering

may approach IA from a technical design perspective. Likewise, those who completed an M.S. or Ph.D. could approach IA in a theoretical and/or algorithmic manner while those with an A.S. or A.A.S. provide an applied and architectural perspective. As an attempt to help business and industry clarify their thinking about hiring security professionals, I offer the following classification of levels of IA professionals:

Information Technology (IT) Security Technicians

—IA graduates produced by community colleges and four-year institutions focus on the application of technology to provide daily security needs. They work in the trenches of IT support and implement policies and procedures others created.

Information Technology (IT) Security Professionals

—Graduates of four-year and research schools, these IA professionals possess foundational skills in computer science or computer engineering coupled with IA training. They perform technical work on computer and network systems as well as understand and develop the theoretical and/or policy level of security.

Security Professionals—IT security professionals can be included here; however, this large grouping includes graduates produced by four-year and research schools with less technical backgrounds. IA students with political science or business backgrounds may write or enforce security policies such as auditors who are responsible for overseeing corporate security practices. These individuals would be hard-pressed to develop the technical plans or implement them but are able to address corporate security needs.

Security Researchers/Engineers

—These students are produced by research schools and have often earned an M.S. or Ph.D. These IA graduates are developing the newest technologies for future product development. They are the design engineers who integrate security technologies into products or the mathematicians who develop the newest

cryptographic algorithm. These students also may perform basic security research or enter an academic career.

What does the future hold? Over the past 20 years, we witnessed the progression of computer security defenses in reaction to the ever-increasing volume and sophistication of attacks. Emphasis on defensive approaches often focuses on purely technology-based solutions (e.g., first firewall). Today's attackers are not just exploiting software vulnerabilities but more and more human vulnerabilities. Unlike software vulnerabilities, many of these human "bugs" cannot be patched simply with a download from the Internet; they require formal security awareness and education to mitigate. There exists an urgent, long-recognized need to improve security education, and the security community needs to begin educating a broader audience than just those in technology.

The primary method for educating the public about cybersecurity has been constructing top-ten security lists. Neither effective nor sufficient, this approach serves as poor pedagogical practice. Such lists communicate a false sense of security which implies security only requires broad steps.

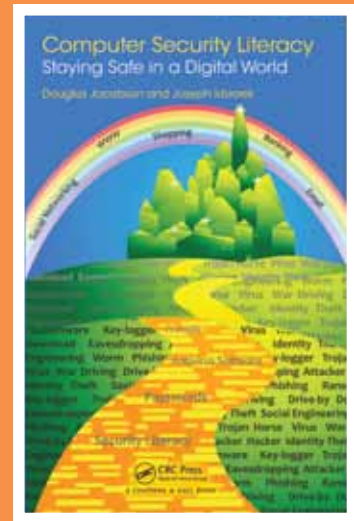
Formal computer security education is the key to combating risks and vulnerabilities intrinsic to the Information Age. Each day, technology users are inundated with alerts and pop-ups about patch updates, antivirus signatures, and firewall exceptions, but users lack proper education or vocabulary to make value-based decisions regarding benefits and consequences of taking specific action. What a formal, pedagogical approach to practical computer security education provides is the context and knowledge for students to apply computer security best practices when faced with a novel situation, and the ability to be proactive, not reactive, in the face of new threats.

Computer security education need not be exclusive to technical audiences. If abstracted correctly, practical security education can be accessible to users with minimal technical backgrounds. We all perform the same basic routines on our computers and Internet each day. People use passwords, connect to the Internet on unsecured wireless connections, share media via external devices, click on links, use social networks, and more. Each of these actions involves a potential risk and can result in malicious consequences, many of which the average user is unaware.

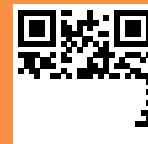
Iowa State University designed a model for computer security education: a one-credit, half-semester course entitled "Introduction to Computer Security Literacy." This course educates students of all backgrounds and IT levels about risks of using computers and the Internet. The course is immediately applicable and serves students long after they leave the university. In contrast with past approaches, this course places security in the user's context. Over the eight-week course, students internalize the information they learn and reflect on key concepts. They return to class questioning and communicating their understanding of computing security. Students are told the real test for the course is not in the classroom but when they begin interacting with information technology.

Society's collective security depends on every user being security-aware and exhibiting thoughtful discipline over personal information and computing resources. The user is the weakest link in the security chain, a fact long recognized by security experts, and technical measures alone cannot and will not solve current cybersecurity threats. Why not address the weakest link in a formal educational environment?

Having presented on the topic of practical computer security to groups ranging from elementary school children to senior citizens, I can attest there is both a desire to learn and a need to



Dr. Doug Jacobson is a professor in the Department of Electrical and Computer Engineering at Iowa State University. He is the director of the ISU Information Assurance Center, recognized by the National Security Agency as a charter Center of Academic Excellence for Information Assurance Education. Dr. Jacobson teaches network security and information warfare and has written a textbook on network security.



For more information, visit
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DR. DOUG JACOBSON AND JULIE RURSCH WILL PRESENT *INFORMATION WARFARE: USING SOFTWARE TO ATTACK COMPUTER SYSTEMS* AT THE DMACC WEST CAMPUS ON WEDNESDAY, MARCH 6 AT 9:30am (ROOM 121E).

provide practical computer security education to each of these groups (K-12, college, corporations, and the public). As educators and computer security practitioners, the task of providing computer users with the opportunity to become knowledgeable about the malicious side of the Internet falls squarely on our shoulders. Computer security literacy is not only the next step in computer security defense, it may be one of the most important.

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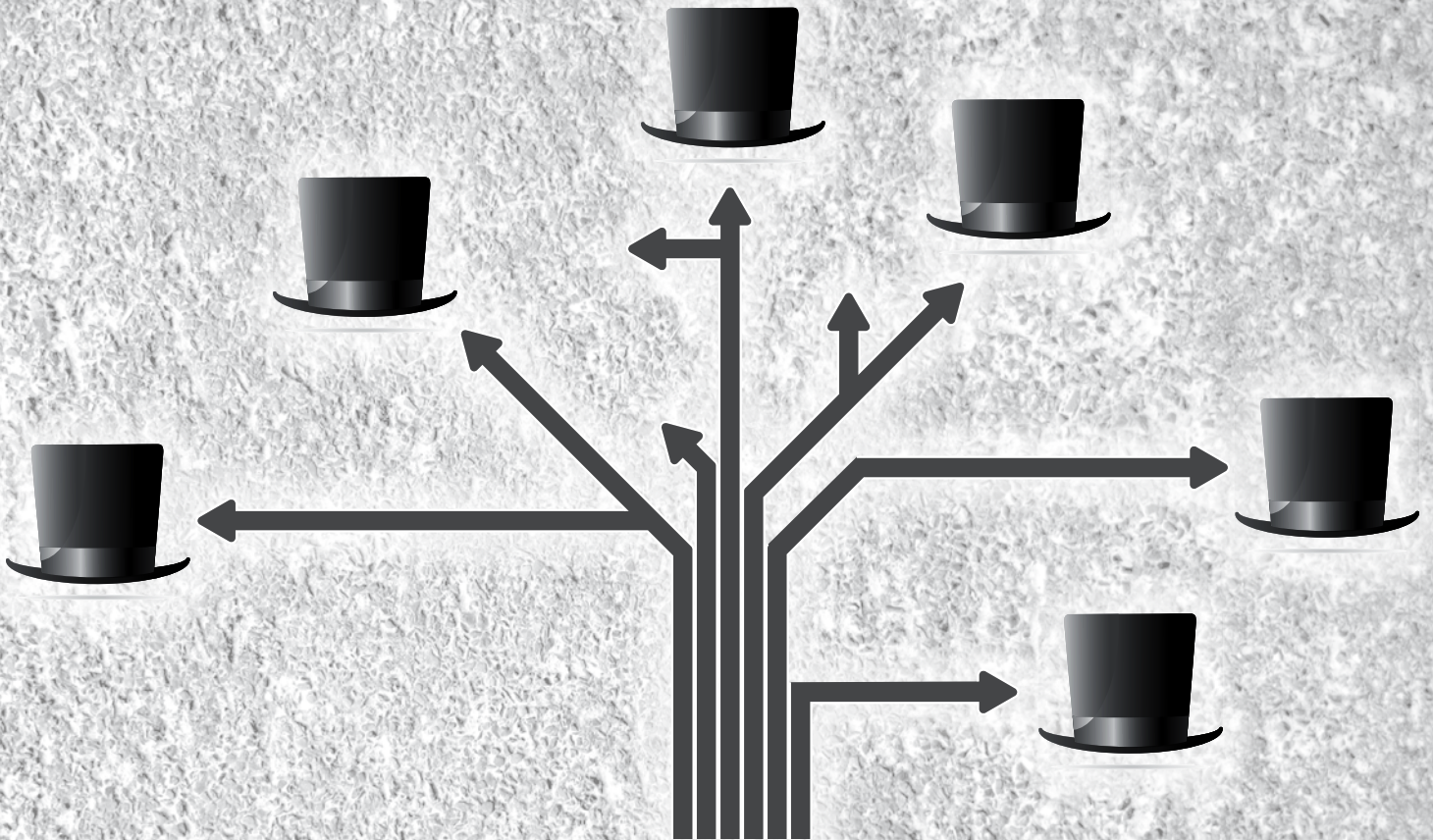
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Thinking can take a number of different paths. Used with permission.

CHANGE THE WAY YOU THINK

“If you never change your mind, why have one?”
—Dr. Edward de Bono

BY BARBARA STENNES

Innovation is a topic of near-universal acclaim. Educators, policymakers, researchers, and corporate leaders constantly stress the importance of innovation and the need for more of it. At any bookstore, the business section is littered with titles like “The Art of Innovation,” “The Innovator’s Dilemma,” and the inevitable sequel, “The Innovator’s Solution.” The business press runs cover stories such as “Four Innovation Trends to Watch in 2013” or “11 Strategic Questions for Disruptive Innovation in Markets.” The world remains awash with innovation league tables, which rank both nations and companies on their innovation prowess.

Nor is this fascination with innovation just talk; corporations put their money where their mouths are. Google offers the most celebrated example with its policy of encouraging employees to spend 20% of their time on side projects. Several ubiquitous products started out this way such as Gmail and Google Maps, as well as a host of lesser-known successes and failures. In 2012, Apple launched a similar program called “Blue Sky,” which gives employees two weeks to pursue side projects. Xerox and Bell Labs are other organizations with a legendary commitment to innovation.

Policy-makers of all stripes concur that innovation is essential to prosperity. In his 2011 State of the Union address, President Barack Obama said, “What America does better than anyone is spark the creativity and imagination of our people. We are the nation that put cars in driveways and computers in offices; the nation of Edison and the Wright brothers; of Google and Facebook. In America, innovation doesn’t just change our lives. It’s how we make a living.” In 2003, President George Bush declared, “Creativity determines the strength and wealth of nations.” The Clinton years, of course, famously witnessed the dot-com boom and the rise of the “New Economy.”

Despite the broad consensus that innovation is critically important, some academics fret that America is actually becoming less innovative. Kyung Hee Kim, a professor of psychology at the College of William & Mary, identified a “creativity crisis,” based on the creativity scores of American schoolchildren, which Kim argues have steadily declined for 20 years.

When it comes to innovation, there is much wagging of chins and wringing of hands. Everyone agrees society needs more and better innovation. And yet ... something is missing here. Nobody ever explains *how* to innovate.



THE WHITE HAT
Information Available
and Needed



THE RED HAT
Intuition, Feelings,
and Hunches



THE BLACK HAT
Cautions and
Difficulties Where
Things Might
Go Wrong



THE YELLOW HAT
Values and Benefits.
Why Something Might
Go Wrong



THE GREEN HAT
Alternatives and
Creative Ideas



THE BLUE HAT
Managing the
Thinking Process

Edward de Bono's Six Hats of Thinking. Used with permission.

This detail (or lack of detail, to be more accurate) seems important. Fortunately, there is a solution.

“Aha!” the clever reader is thinking. “I know all about this brainstorming business!”

Brainstorming, indeed. But where to begin?

*The need to be
right all the time
is the biggest bar
to new ideas.*

The problem with brainstorming, at least as it is generally practiced, is twofold. First is the question of process. The facilitator typically trots out the First Law of Brainstorming: thou shalt not judge. And what happens? People judge anyway! Invariably, brainstorming devolves into argument, and at best, a handful of ideas receive attention. Moreover, as the meeting gets increasingly bogged down, participants stop participating. They tune out. Some people check their email; others withdraw into silent apathy. By the end,

the meeting yields few promising ideas, if any, and seems a colossal waste of time. Bravo.

Even setting this reality aside, there remains another problem with the quality of the resulting ideas. After all, brainstorming is intended to provoke new thinking when the old thinking isn’t satisfactory. Yet during a brainstorming session, all that old thinking still sloshes about in people’s heads, polluting the new ideas. Brainstorming simply gives voice to the ideas percolating in people’s heads, which is why it generally yields boring, derivative ideas.

Let’s get another thing out of the way: forget the props. Creativity does not require beanbag chairs, jaunty primary colors, or hand-held puzzles involving twisted bits of metal.

So what, exactly, is innovation? Put simply, innovation is the ability to forge a link between two apparently unrelated ideas. A well-known creative thinking expert, Dr. Edward de Bono, describes the human brain as “a self-organizing system that routinely falls into patterns.” Patterns have no inherent normative value—they are neither good nor

It is better to have enough ideas for some of them to be wrong, than to be always right by having no ideas at all.

bad. The trick lies in recognizing and manipulating thinking patterns to suit one's purpose. Therein lies innovation.

Dedicating his life to the study of thinking patterns, Dr. de Bono is widely regarded as the leading international authority in the field of creative thinking and innovation. He studied psychology and physiology as a Rhodes Scholar at Oxford and later earned a Ph.D. at Cambridge. Dr. de Bono has written more than 50 books, had his work translated into dozens of languages, and held faculty appointments at Harvard, Oxford, Cambridge, and elsewhere. In 2009, he was named European Ambassador of Creativity and Innovation.

Dr. de Bono pioneered a variety of techniques to stimulate the brain, based on a fundamental understanding of how the brain processes information. The two most well known of these techniques are Six Thinking Hats and Lateral Thinking (the latter, a term coined by Dr. de Bono).

All the de Bono techniques share two characteristics. One, they are intended to be simple, even simplistic. This stems partly from Dr. de Bono's passionate belief that thinking skills are as essential as reading and arithmetic and should be taught accordingly. As Dr. de Bono points out, "Many highly intelligent people are poor thinkers. Many people of average intelligence are skilled thinkers. The power of a car is separate from the way the car is driven."

Two, every de Bono technique is based on the manipulation of thinking patterns. In some circumstances, the objective is

to capitalize on patterns. For example, the "parallel thinking" technique harnesses groups into self-reinforcing thinking patterns. In other situations—for example, when radical innovation is needed—the objective is to break out of static thinking patterns. Again, de Bono explains, "We need creativity in order to break free from the temporary structures that have been set up by a particular sequence of experience."

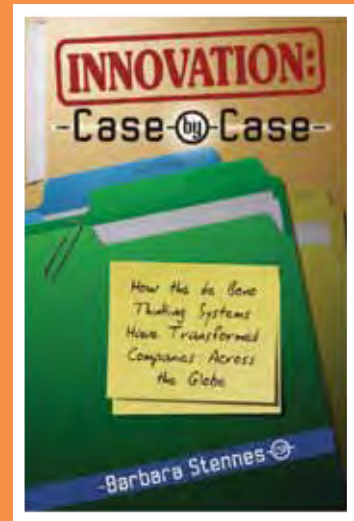
Despite my previous disparagement of brainstorming, I do believe it holds a useful place in this discussion.

Brainstorming—or as I prefer to call it, top-of-mind thinking—is a good jumping off point for the innovation process. I always begin innovation workshops with top-of-mind thinking because it warms up the brain and flushes out all those residual old ideas. But serious innovation employs brainstorming as the starting line, not the finish line, for creativity.

Dr. de Bono recognizes, "Creative thinking—in terms of idea creativity—is not a mystical talent. It is a skill that can be practiced and nurtured." I firmly believe there are no such things as creative and uncreative types. Rather, innovation is a set of tools that *anybody* and *everybody* can learn to use.

When we consider de Bono's words, "the quality of our future will depend on the quality of our thinking," we must consider the question, how robust is your innovation toolkit?

The simple process of focusing on things that are normally taken for granted is a powerful source of creativity.



Barbara Stennes, an expert on creative thinking and innovation, has consulted with many of the world's top companies, helping them develop breakthrough, creative ideas and create a culture of world-class innovation. Stennes is president and CEO of de Bono Consulting, the U.S. distributor of Dr. Edward de Bono's thinking methods. She is the author of *Innovation: Case by Case*, which documents high-profile companies that achieved spectacular success using the de Bono creative thinking techniques. Since 1976, Stennes has led Resources Unlimited, a leading global distributor of assessment tools for leadership development, teambuilding, recruitment, and employee retention.



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*Of all the gifts
that can be given,
the gift of education
is perhaps the greatest.*



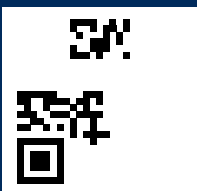
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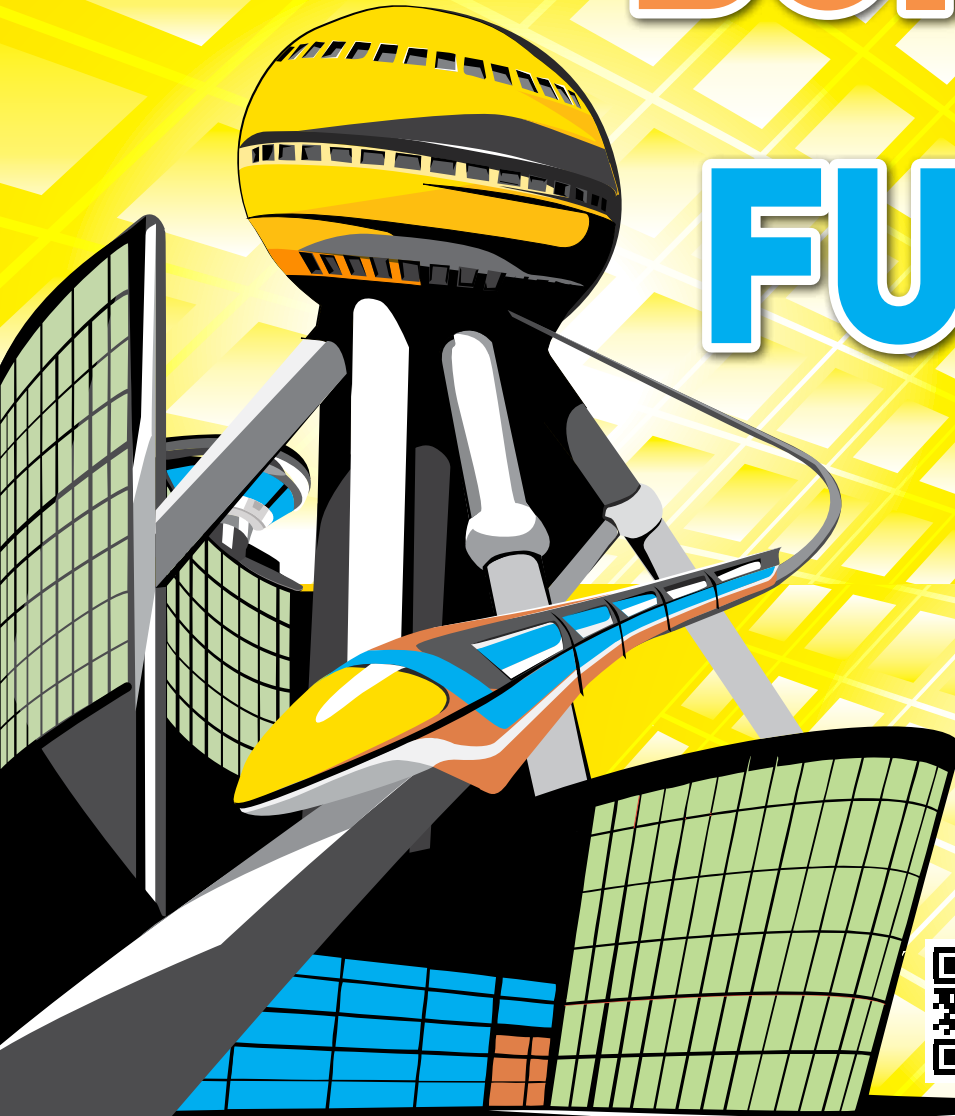


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WELCOME TO



Welcome to ciWeek 2013! Now in its fourth year, I'm amazed at how this event evolved. From a simple idea to a full-blown celebration of innovation, ciWeek brings together some exceptional speakers and has become an anticipated event for students and the community alike.

Since 2010, ciWeek has inspired people from all walks of life whether through the stories of Captain Alan Bean (Apollo 12 and Skylab astronaut and the fourth man to walk on the Moon); Steve Wozniak (co-founder of Apple and the father of the personal computer); Dr. David Gallo (co-expedition leader to the RMS Titanic); or from any one of the CEOs, leaders, and entrepreneurs who have graciously shared their expertise with us.

The theme for this year's event is "Building a Better Future" and will exhibit the futuristic feel of a World's Fair. With speakers like Daymond John (from ABC's *Shark Tank*), John Gaeta (Academy Award winning special effects designer for *The Matrix* movies), Jessica Matthews and Julia Silverman (creators of the Soccket—a soccer ball that

generates three hours of electricity after a half hour of play), Dr. Gene Poor (founder of LifeFormations and creator of lifelike animatronics and robotics for companies such as Disney), Cassie Kloberdanz (part of the Sierra Nevada Dream Chaser® Space System), and Eric Hunter (LEGOLAND® engineer and designer), one can't help but be inspired by the future.

The purpose of this week has always been to immerse and engage people in imagination, creativity, and innovation through interaction and relevance. ciWeek 2013 will feature an interactive robotics lab, expanded activities for high school students, and a new ciWeek bookstore near the main stage featuring many of our presenters' works.

This free, four-day event is made possible, however, through the generosity of our sponsors and the hard work of DMACC West staff and faculty. As always, we continuously seek feedback, so we can strive to make each year better and more engaging than the one before. If you have any thoughts or ideas, please feel free to contact me at adpaustian@dmacc.edu. Thank you for your support, and enjoy ciWeek 2013!

Sincerely,

Anthony D. Paustian, Ph.D.
Provost
Des Moines Area Community College
West Campus

ciWEEK 2013 AT A GLANCE

MONDAY, MARCH 4, 2013

9:30am–2:00pm

HIGH SCHOOL SESSION I

6:00pm–7:00pm

MITCH MATTHEWS

MAIN STAGE

ENGAGE! How Inspiring Full Employee Engagement Can Be Your Secret Weapon for Innovation

WEDNESDAY, MARCH 6, 2013

8:15am–9:20am

BARB STENNES

AUDITORIUM

Change The Way You Think!

9:30am–10:20am

CASSIE KLOBERDANZ

AUDITORIUM

Dream Chaser®: The Future of Commercial Human Spaceflight

CONCURRENT SESSIONS

SEE SCHEDULE FOR DETAILS

10:45am–11:50am

DR. ANTHONY PAUSTIAN

MAIN STAGE

Beware the Purple People Eaters!

12:00pm–12:50pm

LUNCH BREAK

1:00pm–2:20pm

JESSICA MATTHEWS & JULIA SILVERMAN

MAIN STAGE

SOCKET: From Idea to Innovation

2:30pm–3:20pm

DR. VERNA CORNELIA PRICE

AUDITORIUM

If You Can't Think It, You Will Never Build It!

CONCURRENT SESSIONS

SEE SCHEDULE FOR DETAILS

6:00pm–7:00pm

DR. GENE POOR

MAIN STAGE

Animatronics: The Illusion of Life

TUESDAY, MARCH 5, 2013

9:30am–2:00pm

HIGH SCHOOL SESSION II

6:00pm–7:00pm

ADAM CARROLL

MAIN STAGE

Why Your Friends Matter: The Secret Ingredient to Making It Happen

THURSDAY, MARCH 7, 2013

8:15am–9:20am

DR. GENE POOR

AUDITORIUM

Animatronics: The Illusion of Life

9:30am–10:20am

NIC MILANI

AUDITORIUM

The Role of Chief Discomfort Officer and Its Impact on Creativity and Design

CONCURRENT SESSIONS

SEE SCHEDULE FOR DETAILS

10:45am–11:50am

JOHN GAETA

MAIN STAGE

Future Cinema

12:00pm–12:50pm

LUNCH BREAK

1:00pm–2:20pm

DAYMOND JOHN

MAIN STAGE

Daymond John's 5 Steps to Becoming a Shark

2:30pm–3:20pm

MIKE DRAPER

AUDITORIUM

The Midwest: God's Gift to Planet Earth!

CONCURRENT SESSIONS

SEE SCHEDULE FOR DETAILS

MONDAY, MARCH 4, 6:00pm**MITCH MATTHEWS****MAIN STAGE****ENGAGE! HOW INSPIRING FULL EMPLOYEE ENGAGEMENT CAN BE YOUR SECRET WEAPON FOR INNOVATION**

An engaging and in-demand speaker, Mitch Matthews keeps audiences interested and entertained by combining humor, powerful stories, case studies, and actionable strategy. You'll walk away from this session with a smile on your face and a plan in your back pocket!

TUESDAY, MARCH 5, 6:00pm**ADAM CARROLL****MAIN STAGE****WHY YOUR FRIENDS MATTER: THE SECRET INGREDIENT TO MAKING IT HAPPEN**

It's said that ideas are a dime a dozen. So, how do you take any one of your amazing ideas and actually see it through to completion? Chances are, you're going about it the wrong way with the wrong people. In this session, learn why the people you surround yourself with and the network you have (or don't have) could be keeping you from your accomplishments. You'll get tips, tricks, and hacks that make connecting with the right people easier, more fun, and more productive! Let's make it happen together.

WEDNESDAY, MARCH 6, 8:15am–9:20am**BARBARA STENNES****AUDITORIUM-202C****CHANGE THE WAY YOU THINK!**

Do you hear people complaining about meetings, meetings, and more meetings? Are hours spent debating issues with few decisions made or problems solved? Is innovative thinking stifled? Do people fear speaking out? This session will change the way you think! You'll be introduced to Dr. Edward de Bono's toolkit, Six Thinking Hats®. You'll learn how the Six Hats method generates creative ideas, reduces team conflict, and builds an innovative culture. See how to put egos aside and focus on a way forward without argument. Leave this session with tools you can apply immediately for a better tomorrow!

WEDNESDAY, MARCH 6, 9:30am–10:20am**CASSIE KLOBERDANZ****AUDITORIUM-202C****DREAM CHASER®: THE FUTURE OF COMMERCIAL HUMAN SPACEFLIGHT**

Sierra Nevada Corporation's Dream Chaser® Space System is reinventing the way astronauts travel into space. When the Space Shuttle program was retired in 2011, America was left with only one solution to get our astronauts into orbit: pay Russia more than \$60 million per person to reach the International Space Station. With American tax dollars, jobs, and international leadership in spaceflight on the line, NASA is funding a competition to ensure American access to space in the near future. Sierra Nevada Corporation's Dream Chaser® is a commercial crew vehicle designed to reestablish America as the world's leader in human spaceflight.

KIRK HARTUNG**ROOM #116E****PROTECTING YOUR INNOVATION**

Whether your innovation comes from sweat of the brow or from a lightbulb moment, if it has commercial value, it may be worth protecting through U.S. and foreign patent laws. Patent protection is a valuable asset, which should be that can provide competitive advantages. The patent owner controls who makes and sells the invention. Well-drafted patent applications are often a key piece of the puzzle for successful products and processes. Timeliness is critical, and if you snooze, you'll lose your rights. This energetic and entertaining presentation will teach you the options and deadlines for protecting your creativity.

KRISTIN RUNYAN**ROOM #118E****CREATING THE PRODUCTS OF THE FUTURE**

As technology makes the world smaller and the pace of innovation continues to accelerate, how will we create the products of the future? How will we gather requirements? How will we learn what the market wants especially when the market doesn't even know? And how will we communicate those desires to the technologists who will build the solutions? With experience in both product management and IT, Runyan knows the challenges we face today and how we need to prepare for the future. Join our discussion about data gathering, prioritizing, collaborating, and responding to change.

DAVID STARK

ROOM #119E

INNOVATION IN HEALTHCARE—REAL WORLD CHALLENGES AND RESULTS

Healthcare has never been more challenging than it is today. We have the perfect storm of financing challenges, regulatory burdens, delivery model changes, and national discord. This situation demands creative answers and leadership to deliver results. Hear about the challenges facing our healthcare industry and how local healthcare organizations are responding. This interactive session will challenge us to think differently about how healthcare should and can be delivered.

DR. DOUG JACOBSON & JULIE A. RURSCH

ROOM #121E

INFORMATION WARFARE: USING SOFTWARE TO ATTACK COMPUTER SYSTEMS

This presentation consists of a step-by-step, hands-on activity where students will use software to scan for vulnerable computers, then try to break into a computer. Students will work in teams of two through a guided exploration of information warfare. The target computers are part of a new mobile lab designed to simulate part of the Internet and provide students with a real-life environment to carry out cyber attacks. Students will learn how attackers scan for vulnerable computers and how they use software tools to compromise vulnerable systems.

TRENT NICHOLS & ERIC HALL

ROOM #123E

HOW TECHNOLOGY IS REVOLUTIONIZING CONSTRUCTION

3D modeling technology—once thought only applicable to manufacturing—is now being applied to construction to drive quality, improve communications, and reduce waste. Building Information Modeling (BIM), laser-based measurement devices, and web-based collaboration allow construction teams to predict better outcomes on the job site. As computer software improves, designers and contractors can simulate the construction of a facility in a computer before any boots hit the ground to predict a successful outcome. This presentation will cover the creation, management, and administration of construction data to operate a building over its lifetime.

TEAM PRISUM

ROOM #126E

HISTORY OF SOLAR CAR RACING: PAST, PRESENT, AND FUTURE

This session will cover the evolution of solar car design from the Sun Rayce, an open-invitation challenge set by General Motors to anyone with the will and desire to develop a solar-powered car, to the present, modern look of today's top models. We will review the technology and innovation the study of solar car racing has led to as well as its current and future impact on the modern American marketplace. The presenters will provide a look at what it takes to be a competitive solar car racing team, learning inside and outside the class room context, and life on the road with the solar car.

WEDNESDAY, MARCH 6, 10:45am–11:50am

DR. ANTHONY PAUSTIAN

MAIN STAGE

BEWARE THE PURPLE PEOPLE EATERS!

Change is hard. Innovative change is even harder. As the old saying goes, "If it was easy, everyone would be doing it," but it's not easy (and everyone isn't doing it). Through a blend of personal observation, life experience and research, Dr. Anthony Paustian will lead an introspective discussion of what it takes to lead creative, innovative change today, both in yourself and in others.

WEDNESDAY, MARCH 6, 1:00pm–2:20pm

JESSICA MATTHEWS & JULIA SILVERMAN

MAIN STAGE

SOCCKET: FROM IDEA TO INNOVATION

Enjoy a dynamic, engaging presentation featuring the stories and experiences that led to their success. See the bio for more information.

WEDNESDAY, MARCH 6, 2:30pm–3:20pm**VERNA CORNELIA PRICE, PH.D.****AUDITORIUM–202C****IF YOU CAN'T THINK IT, YOU WILL NEVER BUILD IT!**

What do you think about the most? Do you understand the power of thought? What does thought have to do with your personal power? Can you harness the power of innovation without understanding how powerful you are? Come learn, discover, and own your personal power. Learn what it means to use your personal power to harness the power of thought, which is the first step to building the future you desire.

JAMES ELIASON**ROOM #116E****INNOVATING JELL-O**

Jell-O has remained innovative not because the product has changed, but because consumers are constantly finding new ways to use it. This presentation will focus on the belief that innovation doesn't have to be defined by a new invention; the best innovation comes from the continuous improvement of existing products. We will discuss success stories (Zappos), tales of failure (Blockbuster), and companies in the red zone (Zynga, Groupon). Last, James Eliason will share his experiences as an entrepreneur. Everyone should leave this presentation with the confidence to become an innovator.

MIKE McCORMICK**ROOM #121E****FROM THE GROUND UP: LESSONS LEARNED BUILDING A SOFTWARE START-UP**

With no formal training in software and unable to get a job waiting tables at Applebee's, Mike McCormick founded and navigated a software start-up through the dot-com crash and sold it to a multibillion-dollar corporation in fewer than six years. He will recap how he ultimately patented and presented his technology to some of the finest minds in the mobile software community across the globe.

MIKE COON**ROOM #123E****LEAVE THE STATUS QUO AT THE DOOR: BREAKTHROUGH INNOVATION IN LESS THAN AN HOUR**

This program is both strategic and practical. If you are looking for an engaging, high-energy workshop for training and flexing your innovation techniques, then this is the program for you! Be forewarned: The content will be rich, and the pace will be fast. And you WILL be expected to participate actively in the workshop for your personal gain.

ERIC HUNTER**ROOM #126E****BEYOND THE BRICK: INSIDE THE ENGINEERING AND DESIGN OF LEGOLAND®**

LEGO® bricks provide endless possibilities for the creation of any type of model, architectural or sculptural. In this session, Eric Hunter will describe the use of LEGO® elements and supporting steel structures to design and engineer a Miniland city cluster (this process includes design, layout, budget, buildings, vehicles, etc.). By employing a variety of mathematic and engineering principles, Eric Hunter will illustrate the design process of sculptural pieces and mosaics.

WEDNESDAY, MARCH 6, 6:00pm–7:00pm**DR. GENE WILLIAM POOR****MAIN STAGE****ANIMATRONICS: THE ILLUSION OF LIFE**

Bill Gates recently stated that robotics is where computers were 30 years ago. Ponder that thought! Around the world, engineers and scientists are participating in the race to create the first intelligent robot. This new generation of smart robots will act like (and maybe resemble) human beings. Currently, human-like robots (animatronics) are used to teach, sell, entertain, and persuade. Walt Disney imagined the process of creating lifelike robots as the perfect marriage of art and technology. This presentation examines that art/technology marriage and how creativity plays an integral part of creating the illusion of life.

THURSDAY, MARCH 7, 8:15am–9:20am**DR. GENE WILLIAM POOR****AUDITORIUM–202C****ANIMATRONICS: THE ILLUSION OF LIFE**

Bill Gates recently stated that robotics is where computers were 30 years ago. Ponder that thought! Around the world, engineers and scientists are participating in the race to create the first intelligent robot. This new generation of smart robots will act like (and maybe resemble) human beings. Currently, human-like robots (animatronics) are used to teach, sell, entertain, and persuade. Walt Disney imagined the process of creating lifelike robots as the perfect marriage of art and technology. This presentation examines that art/technology marriage and how creativity plays an integral part of creating the illusion of life.

THURSDAY, MARCH 7, 9:30am–10:20am

NIC MILANI

AUDITORIUM-202C

THE ROLE OF CHIEF DISCOMFORT OFFICER AND ITS IMPACT ON CREATIVITY AND DESIGN

What creates truly revolutionary change in an organization? In people? In life? **Discomfort**. In this fast-paced, fun presentation, Nic Milani explores the fictional role of the Chief Discomfort Officer and shares insights and experiences helping teams achieve extraordinary change through provocation. Leveraging experience in business, technology, and design, Milani will share simple, powerful concepts to help accelerate creativity through change.

LTC JOHN HINCK

ROOM #116E

OWN YOUR DESTINY!

In our short time together, you will laugh, learn, and look to your future by 1) understanding how to identify the right problem in any situation, 2) learning how to develop the proper goals to solve the right problem, and 3) applying effective short- and long-term goals. The time to act is now to build a better future—personally, financially, and professionally! Through his use of videos, humor, new information, more humor, group interaction, and personal development, you will walk away with a brighter future. You will OWN YOUR DESTINY!

DR. DAVID COURARD-HAURI

ROOM #118E

CARBON SOLUTIONS: SAVING THE PLANET WITH OR WITHOUT THE GOVERNMENT

From the late 1980s until perhaps 2009, most people interested in climate change believed the solution to carbon pollution lay in governmental action. But cap and trade legislation stalled in the Senate in 2009, even with a large Democratic majority. China, a country with seemingly little interest in controlling carbon, has become the world's largest emitter since overtaking the U.S. in 2007. With few prospects for significant legislation or international cooperation, voluntary actions may be the only option left for a climate solution. What do possible solutions look like, and what is the way forward?

DON PESCHKE

ROOM #119E

NEW MISSION: DESTROY THE COMPANY

Don Peschke is determined to destroy the company he founded. After spending 35 years building August Home Publishing, with five national magazines and 1.5 million customers, along came the iPad and the digital revolution for traditional publishing. It's not enough for text and photos to sit on a printed page. See how Peschke is shredding traditional magazine articles and transforming them into digital content with multimedia and interactivity for the seven screens of the digital era.

DON SHORT

ROOM #121E

OLD WOOD IS GOOD WOOD: A LESSON IN SALVAGE

Don Short is the off-the-cuff proprietor of West End Architectural Salvage in downtown Des Moines. He will take you on a fun-filled journey through the inception of a unique, local, junk-shop venue; one that will attract the attention of an avid, nationwide audience when a reality show bearing the West End name debuts in March 2013 on HGTV.

TODD BISHOP & DON HORKEY

ROOM #123E

BUILDING A BETTER FUTURE: SOLAR AND THE NFL FAN EXPERIENCE

Many NFL franchises reap the benefits of renewable energy. These projects not only incorporate the latest in technology to produce renewable energy sufficient to power stadiums on non-game days, but they also do so in a highly visible and experiential manner. The NFL remains committed to lowering its carbon footprint while providing a public display for fans. The communication and educational value of these installations may far outweigh the solar production value. The number of people passing through the gates and experiencing clean technology in an accessible and educational way brings awareness to alternative energy sources.

SHAWN FITZGERALD

ROOM #212W

EVERY PIXEL BUILDS A STORY

The art of storytelling is as old as time, yet our digital world has unleashed an incredible new realm for future storytellers' imaginations. This session will introduce the process of creating visual stories using digital tools.

THURSDAY, MARCH 7, 10:45am–11:50am

JOHN GAETA

MAIN STAGE

FUTURE CINEMA

Enjoy a dynamic, engaging presentation featuring the stories and experiences that led to his success. See his bio for more information.

THURSDAY, MARCH 7, 1:00pm–2:20pm

DAYMOND JOHN

MAIN STAGE

DAYMOND JOHN'S 5 STEPS TO BECOMING A SHARK

Enjoy a dynamic, engaging presentation featuring the stories and experiences that led to his success. See his bio for more information.

THURSDAY, MARCH 7, 2:30pm–3:20pm

MIKE DRAPER

AUDITORIUM-202C

THE MIDWEST: GOD'S GIFT TO PLANET EARTH!

RAYGUN landed in the Midwest in 2005 and has been part of a Midwestern renaissance—with hotbeds of innovation in cities such as Chicago, Des Moines, and even Detroit. The Midwest's history is abundant with accomplishments, and the direction the region takes in the next few years will, in large part, determine the direction America takes in a post-industry economy.

MATTHEW McIVER

ROOM #116E

CREATIVE REVOLUTION PLAYBOOK: HOW TO GO FROM BAR NAPKIN TO OVERWHELMING SUCCESS

Change comes to us whether we want it or not. In this session, we will look at the steps to unlock creativity and move forward on whatever creative projects/life changes you want to pursue. Matthew McIver is one of the founders of the Des Moines Social Club, an innovative arts organization transforming Fire Station No. 1 into a mecca for culture. Following the story of the founding of the Des Moines Social Club, McIver will share the lessons, strategies, and discoveries that helped create this unique, groundbreaking organization.

TONY GUERRA, PHARM.D.

ROOM #118E

SELF-PUBLISH A PAPERBACK OR E-BOOK FOR UNDER \$35

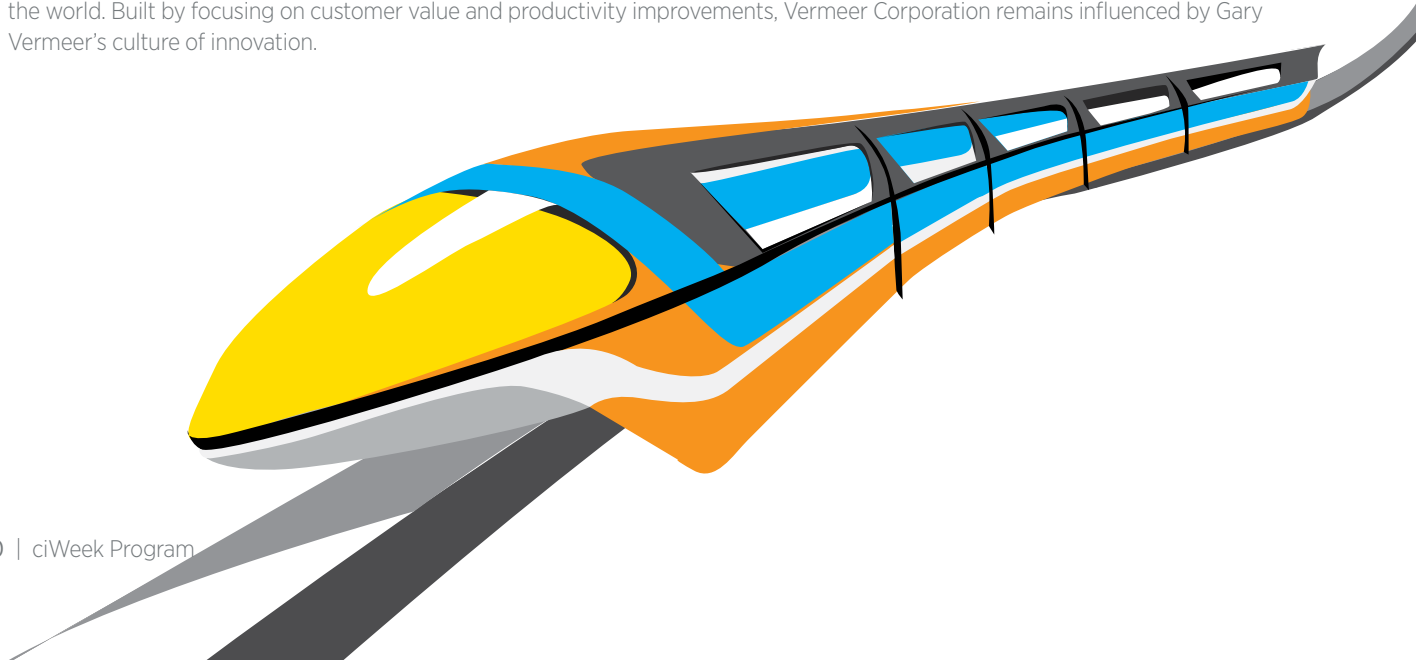
Do you have a revolutionary idea, solution, or great story you want to share? What would have taken months or years for a progressive author with groundbreaking ideas to publish can now be done in a day. In this presentation, you will learn to create a high-quality, self-published paperback or e-book for under \$35. Famous self-published authors include Ben Franklin, Henry David Thoreau, Thomas Paine, Mark Twain, and Walt Whitman—innovators who were pivotal in building a better future for our country.

MIKE BYRAM

ROOM #119E

CULTURE OF INNOVATION

From the simple beginnings of serving Midwest farmers in 1948 to currently reaching across global markets, Gary Vermeer's influence created a culture of innovation. These innovations enable Vermeer Corporation to compete in a global economy, providing a solid foundation for future growth. Vermeer Corporation builds more than 150 products, which solve the needs of customers around the world. Built by focusing on customer value and productivity improvements, Vermeer Corporation remains influenced by Gary Vermeer's culture of innovation.





ADAM CARROLL

SPEAKER, AUTHOR, EDUCATOR

Adam Carroll is a super-connector. His passion resides in helping people succeed faster by leveraging social capital and making killer introductions. Carroll believes creativity, innovation, and implementation are fueled by the connections we have with one another, and six degrees of separation are far too many in our hyper-connected world. He is a guest lecturer on campuses all over the country, is the author of *You Don't Know Me From Adam*, the founder of Succeed Faster Seminars, and is a heckuva good guy to know.



JOHN GAETA

SPECIAL EFFECTS CREATOR: *THE MATRIX* FILM TRILOGY; CEO, FLOAT (HYBRID)

John Gaeta is an Academy Award-winning visual effects designer best known for his work on *The Matrix* film trilogy where he advanced the effects methods known as “Bullet Time,” “Virtual Cinematography,” and “Photo Anime.”

Since working with the Wachowski siblings on *The Matrix* movies and *Speed Racer*, he has been experimenting with motion sensing technology (Kinect) as a way of converging movies and interactive media into a more compelling, mind-bending, and unifying experience.

It's Gaeta's contention that while the movie industry is creatively stagnating, we're on the verge of a new renaissance of technological innovation that will transform both movies and interactive entertainment into a deeper and more subjective experience. We're talking holographic immersion with complete volumetric capture, so viewers can watch from the viewpoint of the director or select their own individual perspectives. Imagine going into *The Matrix* with Neo or being transported into the watercolor heaven of *What Dreams May Come*.

In 2009, Gaeta founded a new type of development entity called FLOAT (hybrid) and serves as acting Chief Creative Officer. Float innovates and prototypes compelling interfaces between audiences and many types of media including television, gaming, search, social, and augmented reality. Gaeta believes that there are threads in today's most exciting technologies that are leading toward a fundamental leap forward in the way people interact and immerse within all media.



DAYMOND JOHN

MEMBER OF ABC TV'S *SHARK TANK*, CREATOR OF FASHION BRAND “FUBU”

A young entrepreneur, industry pioneer, highly regarded marketing expert, and a man who has surpassed new heights of commercial and financial success are just a few ways people have described Daymond John. In recognition of his contributions to fashion and the face of American business, John has been celebrated with some of the most prestigious awards including: *Brandweek* Marketer of the Year, Ernst & Young's New York Entrepreneur of the Year Award, and the Congressional Achievement Award for Entrepreneurship, just to name a few.

John's creative vision and strong knowledge of the marketplace created one of the most iconic fashion brands in recent years. FUBU (For Us By Us) represented a lifestyle that was neglected by other clothing companies. In 2005 Daymond entered the literary world with his first book *Display of Power: How FUBU Changed A World of Fashion, Branding, And Lifestyle*, and followed up with his second book, *The Brand Within: How We Brand Ourselves, From Birth To The Boardroom*.

In 2009, John joined the cast of the ABC entrepreneurial business show, *Shark Tank*, produced by acclaimed TV producer Mark Burnett. As one of the “Sharks,” John and four other prominent executives listen to business pitches from everyday people hoping to launch their company or product to new heights. Investing his own money in every project, John becomes partners with the entrepreneurs, helping turn their dreams into a reality.



MITCH MATTHEWS

SPEAKER, COACH, AUTHOR

As an elite business coach, entrepreneur, cofounder of BIG Dream Gathering™, and consultant to *Fortune 500* companies, Mitch Matthews is a leading authority on innovative thinking, human performance, and goal achievement. Matthews has worked with leaders from NASA, Principal Financial Group, Disney, Pioneer, and others.



JESSICA MATTHEWS & JULIA SILVERMAN

FOUNDERS: UNCHARTED PLAY

In May of 2011, Jessica O. Matthews and Julia Silverman founded Uncharted Play—a new kind of social enterprise that would show the world that doing good and doing good business need not be mutually exclusive.

The Uncharted Play dream began in 2008, when Matthews and Silverman met during their junior year at Harvard College. Both studying to be social scientists, with no experience in engineering, they nonetheless worked together on a class project to invent the SOCCKET—a soccer ball that doubles as an eco-friendly portable generator. Through this experience, both women realized that the world of play was truly uncharted territory when it came to tangibly addressing real issues facing the masses. Though the future was uncertain, they knew that an enterprise grounded in sustainable, realistic solutions for happiness had an undeniable value.

After graduating from college, Matthews and Silverman set up shop in New York City and established an enthusiastic team to further develop the founders' core values. The SOCCKET is constantly being reimaged to truly meet the needs of the end-user, and development on several other FUNctional products has already begun.

They invite everyone to join them in their mission to innovate, play, and empower.



DR. ANTHONY PAUSTIAN

PROVOST, DMACC WEST CAMPUS

Anthony Paustian currently serves as the provost of Des Moines Area Community College in West Des Moines. Dr. Paustian has more than 20 years of successful strategic leadership experience including service in the United States Air Force, directing strategic marketing for a *Fortune 1000* company, and collaborating with more than a dozen *Fortune 500* companies throughout the country. Dr. Paustian has been awarded the Technology Association of Iowa's Information Technology Leader of the Year Award and was named to the *Des Moines Business Record's* prestigious 40 Under 40.

Dr. Paustian has authored a number of books and journal articles in the areas of creative problem-solving, marketing and leadership including *Imagine!*, *Bridging the Gap*, and *Beware the Purple People Eaters*. Paustian holds a Ph.D. in educational administration and psychology from the University of Iowa, an M.B.A. from Loyola University Chicago, and a Master's in design management from Northern Illinois University and the American Center of Design.



DR. GENE WILLIAM POOR

FOUNDER OF LIFEFORMATIONS AND PROFESSOR, VISUAL COMMUNICATION & TECHNOLOGY EDUCATION AT BOWLING GREEN UNIVERSITY

Dr. Gene Poor is the first Scott Hamilton Endowed Professor of Entrepreneurship in the College of Business Administration at Bowling Green State University and director of the entrepreneur program. He also serves as professor emeritus in the College of Technology, where he conceived and launched the visual communication program. In addition to his academic roles, Dr. Poor also founded LifeFormations—an innovative animatronic company that designs and builds lifelike characters for theme parks, visitor centers, museums, and retail establishments. He has received numerous awards and citations including the Student Alumni Association Master Teacher (considered the highest honor given to BGSU faculty), the Kent State University Distinguished Alumni Award, and the Ernst & Young Entrepreneur of the Year. Dr. Poor has given hundreds of presentations worldwide and written nine books and numerous articles.



MIKE DRAPER

THURSDAY, MARCH 7 :: 2:30pm-3:20pm

Though born and raised in Iowa, Mike Draper left the state in 2000 to study history at the University of Pennsylvania but fell into t-shirt sales during his senior year. Draper founded RAYGUN in downtown Des Moines in 2005. Since its inception, RAYGUN has grown steadily, spinning off its custom printing and design side into 8/7 CENTRAL in 2009 and opening a second RAYGUN in Iowa City in 2010. In 2012, Draper wrote *The Midwest: God's Gift to Planet Earth*.



CASSIE KLOBERDANZ

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Cassie Kloberdanz is the Manager of Business Development for Sierra Nevada Corporation's Dream Chaser® Space System and an assistant professor at the University of Colorado at Boulder in aerospace sciences. Her expertise includes a variety of engineering disciplines, as well as technical and crisis communications. Formerly head of external relations at SpaceX, Kloberdanz began her career as an engineer with positions at NASA's Marshall Space Flight Center and Kennedy Space Center. She holds an M.A. from the University of Colorado and a B.S. from the University of Iowa. Kloberdanz is a native of West Des Moines, Iowa.



NIC MILANI

THURSDAY, MARCH 7 :: 9:30am-10:20am

Nic Milani is Director of New Product Commercialization for emerging technologies at Herman Miller. By understanding the relationship between technology, the user and furniture settings, Herman Miller is significantly changing the way people view technology and the workplace. Prior to joining Herman Miller, Milani held a variety of leadership roles in research, quality, manufacturing, sales, marketing, business development, and product development. This multifaceted perspective allows him to analyze development problems uniquely and from multiple angles. Milani is a graduate of Western Michigan University in mechanical engineering, a proud native of Iowa, and a passionate ISU Cyclone supporter.



DR. GENE WILLIAM POOR

THURSDAY, MARCH 7 :: 8:15am-9:20am

See Keynote Bio section on opposite page.



DR. VERNA CORNELIA PRICE

WEDNESDAY, MARCH 6 :: 2:30pm-3:20pm

Dr. Verna Cornelia Price is a bestselling author, international speaker, and leadership consultant. She founded multiple organizations: a leadership academic minor at the University of Minnesota, The Power of People Consulting Group™, The Power of People Leadership Institute™, and Girls in Action™. In 2010, Dr. Price was named Entrepreneur of the Year by the Black MBAs and Pioneer of the Year by Women Venture. Her books include *The Power of People: Four Kinds of People Who Can Change Your Life*, *The Silent Cry*, and *Change Your Life in 30 Days*. She received her Ph.D. in educational policy and administration.



BARB STENNES

WEDNESDAY, MARCH 6 :: 8:15am-9:20am

Barbara Stennes, an expert on creative thinking and innovation, has consulted with many of the world's top companies, helping them develop breakthrough, creative ideas and create a culture of world-class innovation. Stennes is president and CEO of de Bono Consulting, the U.S. distributor of Dr. Edward de Bono's thinking methods. She is the author of *Innovation: Case by Case*, which documents high-profile companies that achieved spectacular success using the de Bono creative thinking techniques. Since 1976, Stennes has led Resources Unlimited, a leading global distributor of assessment tools for leadership development, teambuilding, recruitment, and employee retention.



TODD BISHOP

THURSDAY, MARCH 7 :: 9:30am-10:20am

A LEED-accredited professional and architect, Todd Bishop is the design leader for DLR Group's Des Moines office. Passionate about collaborating and working with interdisciplinary teams, he has been involved in visioning processes and interoffice collaboration to define the integrated team delivery methodology. Bishop is a member of the firm's energy modeling team and has supported the implementation of energy modeling, aiding DLR Group's progress in achieving Architecture 2030 Challenge benchmarks. Bishop is a member of the firm's interdisciplinary Revit team and participates in the planning and implementation of the Firm Standards and initiatives.



MIKE BYRAM

THURSDAY, MARCH 7 :: 2:30pm-3:20pm

Mike Byram is Vice President of the Environmental Business Segment of Vermeer Corporation in Pella, Iowa, an international organization manufacturing agricultural, construction, environmental, and industrial equipment. He began his career in 1994 with Vermeer in product development and has held various positions, becoming a vice president in 2010. Prior to Vermeer, he spent five years with a Wisconsin-based company in the papermaking industry. Byram received an M.B.A. from the University of Iowa in 2001 and a B.S. in mechanical engineering from Iowa State University in 1989. He is married and has two children.



MIKE COON

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

After being raised on an Iowa farm, Mike Coon received a B.S. from Iowa State University and M.B.A. from Harvard Business School. Coon has extensive global business management experience, growing companies through technology commercialization. He has lived on three continents and thinks a world map should place Iowa front and center.



DR. DAVID COURARD-HAURI

THURSDAY, MARCH 7 :: 9:30am-10:20am

Dr. David Courard-Hauri received a Master's in public affairs from Princeton University and a Ph.D. in physical chemistry from Stanford. After a post-doctoral position in atmospheric modeling at UNC Chapel Hill, he came to Drake in 2000, where he now teaches a range of courses in environmental studies with a focus on climate science and economics. Co-author of two textbooks, Dr. Courard-Hauri has published journal articles in areas as diverse as bacterial cell-signaling, butterfly movement, and ecological economics.



JAMES ELIASON

WEDNESDAY, MARCH 6 :: 2:30pm-3:20pm

James Eliason is co-founder and CEO at Goodsmiths.com, an online e-commerce marketplace for handmade/vintage goods based in West Des Moines. Eliason is a 1997 graduate of Valley High School and 2001 University of Iowa graduate with a degree in economics and business administration. Inspired by his family's entrepreneurial spirit, Eliason spent the last 10 years diving into the online and mobile world, seeking opportunities to create products that anticipated consumer buying and usage habits. Eliason lives in West Des Moines with his wife, Julie, and newborn son.



SHAWN FITZGERALD

THURSDAY, MARCH 7 :: 9:30am-10:20am

Shawn FitzGerald loves telling stories of one magnitude or another. So it's no surprise he gravitates toward using technology and digital means to further the art of storytelling. Building on 20 years of writing, directing, and video editing, FitzGerald continues producing visual communications for private- and public-sector organizations. He also consults with and provides training for companies looking to improve communications with employees and customers.



TONY GUERRA

THURSDAY, MARCH 7 :: 2:30pm–3:20pm

DMACC professor Tony Guerra has combined undergraduate creative writing work from DMACC and Iowa State University with his knowledge of pharmacology to author *Drug Names Decoded*. He is a listed reviewer for *Jones and Bartlett Learning's Pharmacy Technician Exam Review Guide* and is currently reviewing the third edition of *Mosby's Review for the Pharmacy Technician Certification Examination*. His writing was featured in *Expressions* and *Sketch* magazines, and he presented at the 2012 Des Moines Wonder of Words Festival. He lives in Ankeny with his wife, Mindy, and triplet one-year-old daughters, Brielle, Rianne, and Teagan.



ERIC HALL

WEDNESDAY, MARCH 6 :: 9:30am–10:20am

Eric Hall is an associate member of the American Institute of Architects (AIA) and a LEED-accredited professional with more than 12 years of construction experience. After completing the superintendent trainee program for JE Dunn Construction, he served as the Building Information Modeling (BIM) Director for JE Dunn Midwest. In 2010, he became a vice president for JE Dunn Construction and was tasked with the development of integrating BIM into Dunn's projects and collaboration of their best practices from a virtual design and construction standpoint. In 2011, Hall started Innovations 10.01 to develop software solutions to enhance the interoperability of the information exchanged during design, construction, and building operations.



KIRK HARTUNG

WEDNESDAY, MARCH 6 :: 9:30am–10:20am

Kirk Hartung is a patent attorney practicing in Des Moines with McKee, Voorhees and Sease, PLC. With more than 30 years of experience, Hartung advises inventors on the options for protecting innovations and ideas. Hartung evaluates patentability, writes patent applications, prosecutes in the U.S. and foreign patent offices, negotiates and litigates patent disputes, and licenses and transfers patent rights. His engineering and law degrees provide the technical and legal backgrounds to assist clients in their intellectual property matters.



COL. JOHN HINCK

WEDNESDAY, MARCH 6 :: 2:30pm–3:20pm

Col. John Hinck, a California native, has served in the Army for more than 21 years. Hinck graduated as a distinguished military graduate from CSU, Fresno, with a B.A. in aerospace management and joined Army Aviation. As an officer, leader, and Apache Longbow pilot with two Master's degrees, he has solved many challenges throughout his Army career and helped nonprofits guide their futures. In 2003, Storming Media published his thesis on military leadership and effective communication. In 2010, the aviation battalion he commanded, Task Force ODIN-Afghanistan, won the Army Aviation Association of America's Fixed Wing Unit of the Year Award.



DON HORKEY

THURSDAY, MARCH 7 :: 9:30am–10:20am

A LEED-accredited professional, Don Horkey has 18 years of experience in mechanical system design and engineering and building system commissioning. As the head of DLR Group's mechanical engineering department, he serves as a technical resource for the engineering team. He also leads the firm's commissioning team. Horkey is respected for his experience in providing in-depth analysis of existing facilities and alternatives to improve lifecycle cost, maximize energy efficiency, and exceed code requirements. He is a member of the American Society of Heating, Refrigerating and Air Conditioning Engineers and the American Council of Engineering Companies of Minnesota.



ERIC HUNTER

WEDNESDAY, MARCH 6 :: 2:30pm–3:20pm

As a child, Eric Hunter's favorite toy was always—by far—the LEGO® blocks, and he designed highly intricate models. This hobby would ultimately become his career and passion in life. A professional LEGO® Model Designer for the past eight years, Hunter's most recent accomplishment was the design of the world's tallest LEGO® skyscraper, the Petronas Twin Towers model at the recently opened LEGOLAND® Malaysia. It is almost 33 feet tall!



DR. DOUG JACOBSON

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Dr. Doug Jacobson is a professor in the Department of Electrical and Computer Engineering at Iowa State University. He is the director of the ISU Information Assurance Center, recognized by the National Security Agency as a charter Center of Academic Excellence for Information Assurance Education. Dr. Jacobson teaches network security and information warfare and has written a textbook on network security.



MIKE McCORMICK

WEDNESDAY, MARCH 6 :: 2:30pm-3:20pm

Mike McCormick graduated from Valley High School in 1988 and from Johns Hopkins University in 1992 with a degree in economics. After a yearlong stint as a financial planner, he taught himself to program computers and eventually founded his own software company, which he successfully navigated through the dot-com crash and sold to BEA Systems in 2002. He holds a patent in distributed mobile software architecture and works for Oracle.



MATTHEW McIVER

THURSDAY, MARCH 7 :: 2:30pm-3:20pm

Matthew McIver is an actor, writer, director, educator, and artistic director of the Des Moines Social Club, an innovative, multidisciplinary arts center in the heart of downtown Des Moines. McIver is also the artistic director of Locust Productions, the in-house theater company of the Des Moines Social Club. For Locust Productions, McIver mounted highly praised regional premieres of Leegrid Stevens' *The Twelfth Labor* (with collaboration by the playwright), David Harrower's award-winning *Blackbird*, and Qui Nguyen's *Men of Steel*. He directed a lauded production of *The Beauty Queen on Leenane*, one of the earlier plays in Mooncoin's presentation of the complete works of Martin McDonagh, and was delighted to round off the project with *The Cripple of Inishmaan*.



TEAM PRISUM

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Team PrISUm is a student-run, nonprofit organization whose core mission is to educate students at all levels about engineering and the capabilities of renewable energy. In a two-year time frame, members design, build, and race a street-legal vehicle powered solely by the sun's rays. In addition to training the students who build the car, Team PrISUm's successful outreach program educates thousands of people each year about its efforts. Presenters: Joel Eakins, Project Director; Dan Bell, Human/Computer Interaction; John O'Grady, Chemical Engineering; and Cory Anderson, Mechanical Engineering.



TRENT NICHOLS

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Nichols is a 2000 graduate of Des Moines Area Community College who began his career as a structural design detailer, where he embraced technology and was an early adopter of Building Information Modeling (BIM) technologies. After spending seven years working in the structural design industry, he joined JE Dunn in May of 2007. Over the last several years, Nichols played an integral part in the development and integration of BIM into JE Dunn's workflow. He is currently the Midwest Regional Director, where his responsibilities are to manage Dunn's advanced virtual design and construction services.



DON PESCHKE

THURSDAY, MARCH 7 :: 9:30am-10:20am

"Okay then, I quit." With that, Don Peschke left his job at a major national magazine and set out on his own. Six months later, working from a spare bedroom with only \$5,000 in capital, he launched *Woodsmith*, a magazine for woodworkers. Since 1979, his company has grown to five national magazines in cooking, gardening, woodworking, and home improvement with more than 1.5 million subscribers and expanded its brand to 60 book titles, online sales of digital content, the world's largest retail store for woodworkers, iPad apps, and a national TV show. Next step: Peschke is determined to destroy his company.



KRISTIN RUNYAN

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Kristin Runyan is Chief Product Officer at CDS Global. She oversees the development of new products to lead the company effectively into the future. Runyan has significant knowledge in technology implementation and product management, previously serving as Chief Information Officer at CDS Global. She brings additional experience from working at companies such as Southwestern Bell, Level 3 Communications, and OpenText/Vignette. A certified project management professional (PMP), she holds a Bachelor's degree from Texas Christian University and an M.B.A. from Saint Louis University. Runyan is the recipient of a 2011 Women of Innovation Award presented by the Technology Association of Iowa.



JULIE RURSCH

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

Julie A. Rursch is a lecturer in the Department of Electrical and Computer Engineering at Iowa State University and director of the Iowa State University Information Systems Security Laboratory (ISSL), which provides security training, testing, and outreach to support business and industry.



DON SHORT

THURSDAY, MARCH 7 :: 9:30am-10:20am

Born and raised in North Dakota, Don Short landed in the family Maid-Rite business, founded in Marshalltown, IA, following graduation from the University of North Dakota in 1985. Restoring the 10,000-square-foot Willard House in Marshalltown during his off-hours, Short hosted events on the mansion's main floor while living in the upper levels. Leaving Maid-Rite in 2004, Short began restoring homes in Des Moines. Soon his storage was overflowing with unused but beautiful salvaged pieces from his restoration projects. On a whim, he hosted a tag sale, which spawned a whole new enterprise: West End Architectural Salvage.



DAVID STARK

WEDNESDAY, MARCH 6 :: 9:30am-10:20am

David Stark serves as president and COO of Blank Children's Hospital and executive vice president of Iowa Health-Des Moines. He joined Iowa Health-Des Moines in 1996 and has served as executive vice president and chief operating officer for Iowa Methodist Medical Center and Iowa Lutheran Hospital. He is a native of Fort Dodge, Iowa, and received his M.A. from the University of Iowa and B.B.A. from Iowa State University. Stark is a fellow in the American College of Healthcare Executives.

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