36 MUST HAVE GIFTS!

HOLLYWOOD GOES STEM // GARY SHAPIRO TALKS CES

innovation & TECH TODAY

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WELLNESS AT WORK With Workrite

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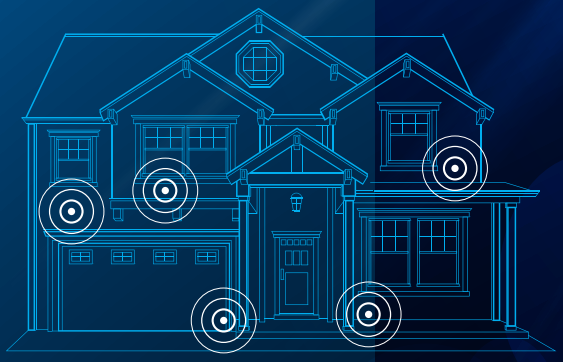

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We come to the end of another year, and what a year it has been for us at *Innovation & Tech Today.* To say we've grown substantially is an understatement. Not only have we secured more relationships and partnerships with many of the most innovative companies in the U.S., but we have also greatly enriched and diversified our editorial content through some very strong associations.

That serves as my first point of departure: our cover story. In a year that has seen *Shark Tank's* Daymond John and Bill Nye The Science Guy grace our cover, we close with James Cameron, the mastermind of *Titanic*, the *Avatar* franchise, and the only man to sit at the deepest point in the ocean in a submersible. Cameron kicks off our Sustainability Today section, a voyage into the biggest issue in our lives today, which we are taking with our partners at Sustainable Brands. Cameron, the opening plenary speaker at the Greenbuild International Conference and Expo in Washington D.C. (where we are a media partner), speaks to our view that sustainable living can only go so far if we don't back it up with sustainable business practices. He's very candid in his assessment.

Next, we turn to an area that has blossomed into one of the better education sections of any magazine — STEM. For this issue, we work with our partners at the USA Science & Engineering Festival to bring you a special holiday gift guide, X-STEM news, and an interview with actress Taryn O'Neill, who discusses STEM and her group Scirens. As shows like *The Big Bang Theory*, *Scorpion*, *Hawaii Five-0*, *Archer*, and others have made clear, a sharp intellect is now a key ingredient of being cool. The smarter our society, and the better educated our kids, the greater our future.

Another area we developed from a feature story to a full section is Outdoor & Adventure Tech, also incorporating Sports Tech. In this section, we'll hear again from the inspiring blind adventurer Erik Weihenmayer, as well as paraglider/ice climber Will Gadd. Along those lines, we decided to turn our summer look at Medical Tech into year-round coverage, this time focusing on Wellness at Work and brain health.

This year, we also began our nationwide search for the hottest tech zones around the country, beginning in our backyard here in Denver. This time, we focus on Las Vegas in time for International CES 2016, which we will be covering in full force for our spring issue.

Our other major new relationship is with Digital Book World, the world's leading event dedicated to digital publishing. To get us warmed up, our founding editor, Robert Yehling, flew overseas for the Frankfurt Book Fair. Besides digging up 50 different digital publishing platforms (so much for Kindle and Nook cornering the market), Bob also represented us – the only magazine – on a panel discussion concerning multi-platform publishing.

Finally, my team and I flew to Dallas in October for CEDIA, the nation's largest home automation show. Home automation has really taken off in the last two years, and the biggest reason may surprise you. I'll turn it over to Home Automated Living's Tim Shriver, who spells it out in our Home Automation department in this issue.

From our departments, to John Gaudiosi's fabulous work in gaming and entertainment, our Product Revolution and Gift Guide, we've now created what I feel is the most diverse business publication in the country. From one issue to the next, we tackle this expanding universe of technology with the confidence and aplomb of a team of journalists who not enjoy writing these pieces, but also the lifestyle the technologies and innovations afford. To all of them, I say, thank you very much for a great year.

To you, I say Happy Holidays — and join us for a momentous 2016.

Charles Warner,
Publisher/Editor-in-Chief

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1960s -70s

FUJI FILM

1965
• October 28, 1965 established Fuji Photo Film U.S.A., Inc., New York City

1972
• FUJICOLOR Color Paper

1976
• FUJICOLOR HR400, the first 400 ISO color negative film

1965
• PS plates (for offset printing)

1965
• Open reel computer tape

1974
• VHS tape for commercial use

50 YEARS IN THE U.S.A.

1980s

FUJI FILM

1981
• Professional photofinishing lab opened in Los Angeles, CA

1984
• Blimp is launched

1984
• Official Film of the Los Angeles 1984 Olympics

1986
• Fuji Photo Film U.S.A., Inc., moved to Elmsford, NY

1989
• Floppy disk factory opened in Bedford, MA

1989
• PS-Plate factory opened in Greenwood, SC

1989
• Official Film and Tape of the US Open Tennis

1982
• Motion picture film awarded the Scientific and Technical Academy Award® and an Emmy Award®

1984
• Minilab system

1986
• FUJICOLOR HR1600, the first 1600 ISO color negative film

1987
• FUJICOLOR QuickSnap, first 35mm one-time-use recyclable camera

1988
• FUJIX DS-1P, world's first digital still camera

1989
• FUJICOLOR REALA, first color print film with 4th color layer

1983
• Digital diagnostic X-ray imaging system: FCR

1984
• Floppy disks

1990s

FUJI

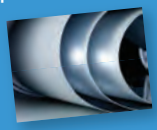
1991
• VHS Tape factory opened in Greenwood, SC

1997
• 35mm Color Film manufacturing facility opened in Greenwood, SC

1990
• FUJICHROME Velvia

1996
• Purchased 6 Walmart labs which became Fujicolor Processing

1996
• CTP plates



1999
• Synapse® PACS medical imaging and information management system

Milestones | Core Photographic Technologies | Graphic System | Medical | Recording Media

2000s

2010s

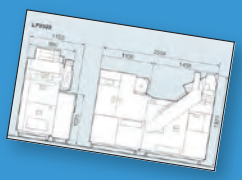
FILM

1993
- Fuji TruColor wholesale photofinishing lab opened in Orlando, FL

1996
- Color Paper plant opened in Greenwood, SC

1997
- Graphic Arts Film factory opened in Greenwood, SC

1997
- Digital Minilab Frontier, APS system



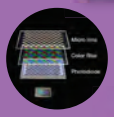
FUJIFILM

2003
- Fuji Photo Film U.S.A., Inc. corporate headquarters moved to Valhalla, NY

2003
- Super CCD Technology

2007
- Digital Minilab Frontier 700 Series

2008
- Super CCD EXR Technology



2008
- FUJIFILM INSTAX® 200 wide format instant camera

2010
- FUJIFILM INSTAX® Mini 25 instant camera

2010
- J Press 720 inkjet digital printing system

2004
- Sapientia, digital endoscope system

2007
- PAVEway™ Advanced Protein Expression

2008
- Synapse® 3D image analysis system

2008
- Justia, FTS electronic endoscope system

2001
- NANOCUBIC™ Technology breakthrough

2014
- FUJIFILM Holdings America Corporation designated the regional headquarters for all North America and Latin America

2014
- U.S. Open Innovation Hub opened in Santa Clara, CA

2010
- ETERNA RDI wins an Academy Award® for Technical & Scientific Achievement

2011
- First FUJIFILM X-Series X100 digital camera

2012
- X-Trans CMOS Sensor

2012
- ETERNA-RDS wins an Academy Award® for Technical & Scientific Achievement

2013
- FUJIFILM INSTAX® Mini 90 instant film camera

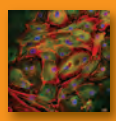
2014
- FUJIFILM INSTAX® Share wireless printer

2014
- FUJIFILM X-T1 Weather Resistant X-Series mirrorless digital camera

2015
- FUJINON UA80 and UA22 2/3" 4K broadcast lenses

2013
- X-Porte, world's first ultrasound kiosk

2015
- Research and development performed using induced pluripotent stem (IPS) cells



2010
- Barium Ferrite magnetic tape

2012
- First LTO tape using Barium Ferrite

2014
- Dternity Deep Storage System

innovation & TECH TODAY

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This publication is dedicated to the **dreamers**, the **innovators**, the **collaborators** and the **doers** who can't be bothered by those saying it can't be done.

Nicholas and Aria, the future is ***yours!***

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Sustainability

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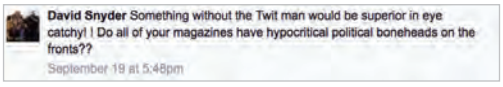
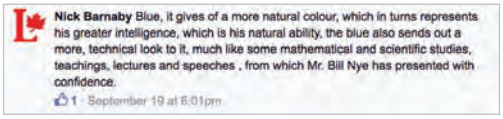
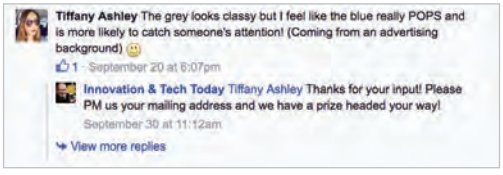
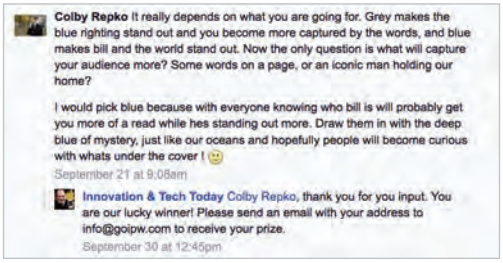
Since Last Issue . . .

Our Fall Issue featured Bill Nye, The Science Guy himself. We asked you to vote for our cover design.









I&T Today Reader Responses

As someone who is technology challenged, I find this magazine informative without being boring, the articles are short, clear, easy to understand, yet interesting. And the art department keeps it fun and flowing nicely. Always a good mix of subjects, something for all ages and interests! This month's Bill Nye article was a great read, well-written and great questions, always looking forward to the next issue. –Lois Smith, Denver, CO

Just received my copy of *Innovation & Tech* Today in the mail. The story on Bill Nye was my favorite. Loved that guy growing up. Quick Bytes is always one of my favorite sections. Really any of the little stories and infographics. If I had one complaint, it would be that you need more like that! –Sarah Escher, San Diego, CA

I picked up a copy of *Innovation & Tech* recently and really enjoyed it. Surprisingly great interview with Bill Nye, and great way to keep up to date with today's tech world. –James Harris, St. Louis, MO

Great to see a magazine covering issues related to sustainability. Articles on Peer Stewardship and Smart Cities were standouts. –Frederick Turney, Columbus, OH

Why so few women tech leaders? We need to see women represented equally to men. –Amanda McCallister, Las Vegas, NV.

Corrections

Fall Issue:
Page 10: Nick Harris should be Nick Holloway

Summer Issue:
Austin Tech Zone: Michelle Skelding should be Michele Skelding

What do you think of THIS issue? Share your thoughts, and you may be published in our Spring 2016 Energy & Transportation issue! @innotechtoday, facebook.com/InnovationAndTechnologyToday, submit@innotechtoday.com

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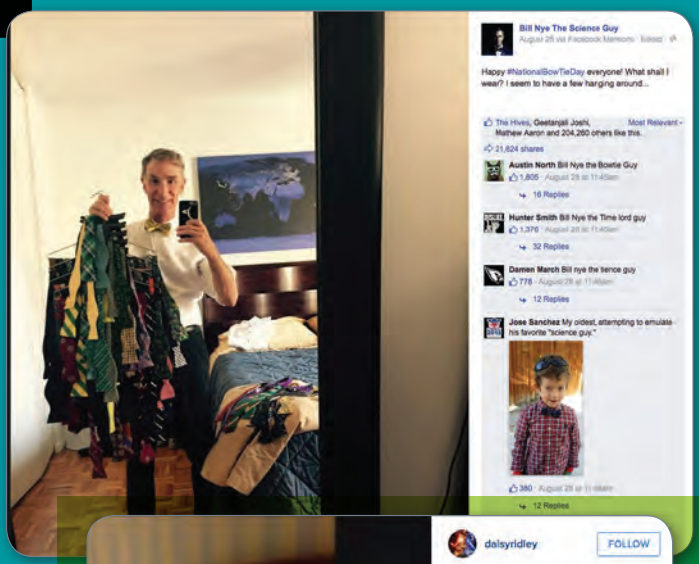

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Edison Achievement Winners Bob Lutz, Retired Vice Chairman, General Motors Company and Clayton Christensen, Kim B. Clark Professor of Business Administration, Harvard Business School

The Barrett Family Foundation awards $10,000 to Sari Deitche for Excellence in Math and Science Teaching.

People, Places, & Faces

Girls Day @ The Tech: The Tech Museum of teamed up with The Junior League of Palo Alto-Mid Peninsula for the event designed to get young girls to consider careers in STEM.

Denver Start Up Week: #BadassSolutions to Doing it ALL featured speakers and panelists Paul Foley, Danny Newman, Kristin Darga, Amy Baglan, and Josh Whitaker.

Crowds at CEDIA enter the show in Dallas, TX. The organization's newly established CEO, Vin Bruno, began making changes almost immediately. Read our take on the show and interview with Bruno starting on page 106.

Rocky Mountain Audio Fest Director Marjorie Baumert takes a break for a quick stand-up bass lesson before the awards (see page 104 for our coverage of the event).

GLSEN Respect Awards - Los Angeles - Red Carpet (L-R) Honoree Justin Timberlake, honoree Jessica Biel and GLSEN Executive Director Dr. Eliza Byard attend the 2015 GLSEN Respect Awards at the Beverly Wilshire Four Seasons Hotel on Oct 23, 2015.

Nairoby "Nairo" Quezada, winning the Super Smash Bros. Wii U Championship at the MLG Finals in New Orleans on October 18th.

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A look at the metrics shaping the technology market — and our lives

THE CHANGING WORLD OF BUSINESS & TECH

Projected number of virtual wallets worldwide by 2016:

200 MILLION

Marketing leaders expecting to compete primarily on the basis of customer experience by 2016:

89%

Marketing leaders that competed primarily on the basis of customer experience, 2012 :

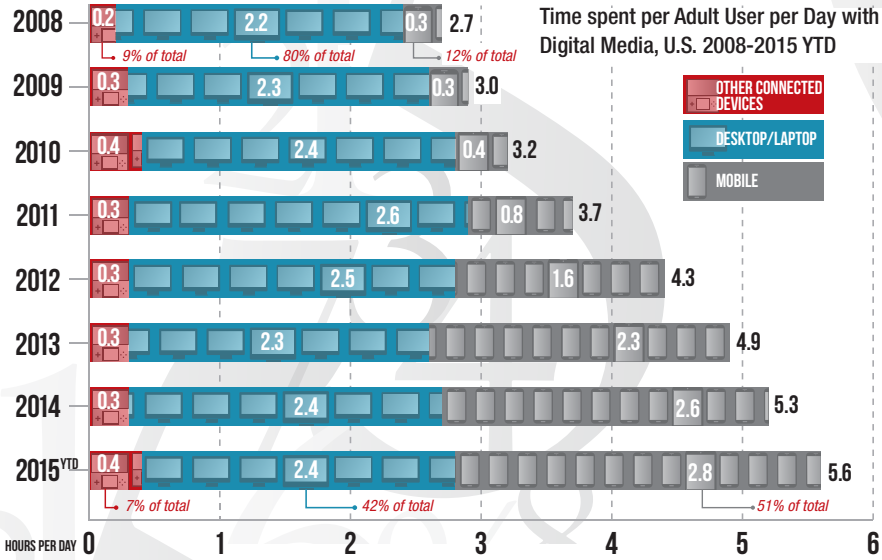
36%

2/3

of marketers believe they will be industry leaders, or much more successful than their peers, within five years

INTERNET USAGE (ENGAGEMENT) GROWTH SOLID

+11% Y/Y = Mobile @ 3 Hrs/Day per User vs. <1 Five Years Ago, U.S.



12%

Sales increase from Coca-Cola Amatil after retrofitting vending machines with touchscreens, video cameras, and Microsoft Kinect technology

Individuals willing to share data with companies:

67%

Estimated app downloads in 2016:

235 Billion

Individuals willing to share data with companies if the business is sharing data with a third party:

27%

Barely 1%

of apps are now paid for at the point of download.

NATURAL LANGUAGE PROCESSING (NLP), WHICH MAKES IT EASIER FOR HUMANS TO INTERACT NATURALLY WITH TECHNOLOGY AND MACHINES, IS EXPECTED TO GROW TO A

$10 BILLION

MARKET BY 2018.

Sources: Gartner, Accenture, Juniper, Smart Insights

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SP 20

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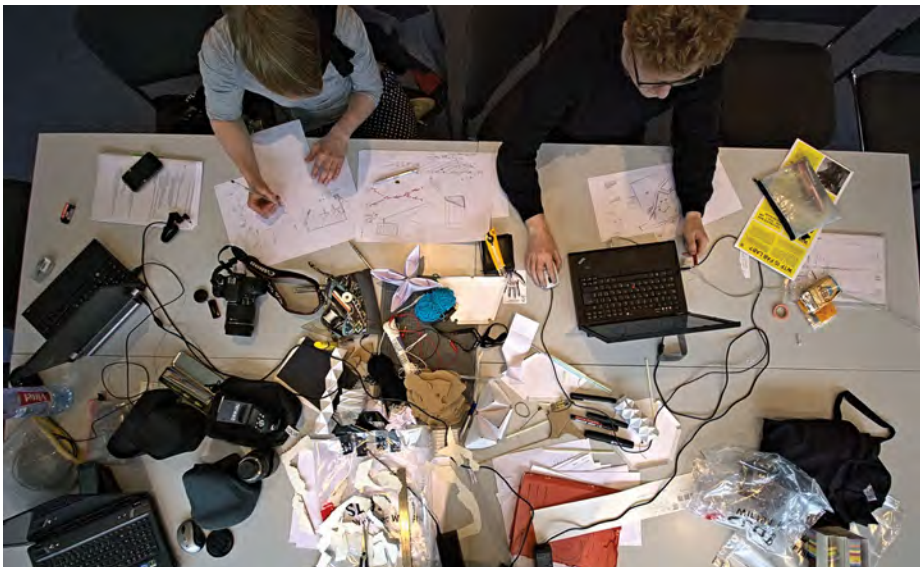
New Community Crock-pots of Creativity: Maker Spaces



Maker Spaces are independent community spaces designed to attract local creative minds and give them the tools they need to team up, tinker, invent, and produce. To power the members' creativity, Maker Spaces house a large selection of tools and equipment for members to use on their projects. Depending on the space, these tools span from basic hammers and screwdrivers to large and complicated machines like laser engravers and water cutters strong enough to slice through steel.

Maker Spaces are often independently owned or operated, some as non-profits and others as for-profit corporations. The facility itself can be a small 800-square-foot nerdy nook jammed full with 3D printers and circuitry, or an expansive 15,000-square-foot facility that allows the designers, hackers or inventors to go from idea to prototype to final product. Each operation adapts to fit their local environment, community needs, available resources, and talent to share. Tech Shop, with nine locations across the country, is so accessible for inventors and entrepreneurs, it's likely you'll find at least one person operating their business from the space itself.

Maker Spaces attract a unique crock-pot of designers, inventors, and builders. The pool of members changes based on the size, location, and focus of the Maker Space. Members range from high school and college students to retired engineers, inventors and entrepreneurs. Collaboration, however, is an essential ingredient for what's being programmed, cut, crafted, and created. Monthly membership rates correspond to the scope and caliber of the equipment available for use. Databases like makerspace.com make finding one near you a breeze.

Whether you're working on a hobby project on the weekends or prototyping a technology that will change the way we live, Maker Spaces are powerful demonstrations of how technology and collaboration can provide just the spark needed for the next big breakthrough.

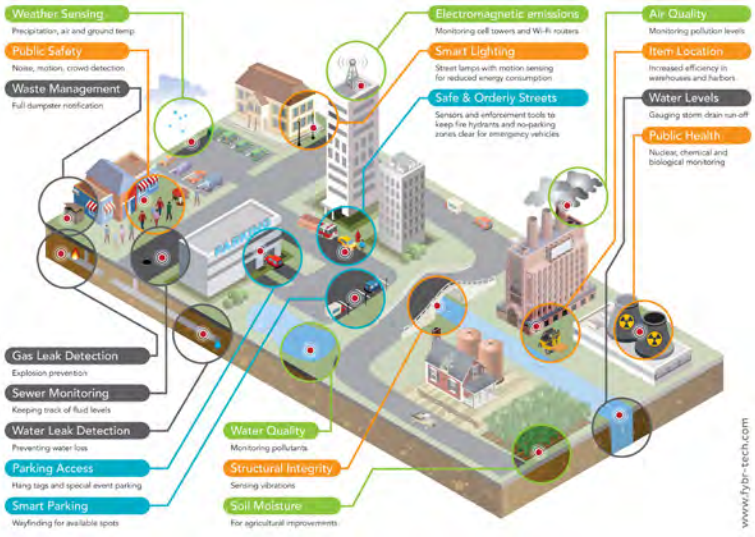
—Liam Kivirst

From Smart Parking Spaces to Smart Cities

A lot has happened since Fybr started providing smart parking solutions in the early 1990s. At the time, the initiative was futuristic. But now, smart parking has become commonplace, with a number of solution providers.

"We ran the world's largest smart parking implementation," said Dr. Rik Goodwin, an organizational psychologist specializing in corporate and consumer behavior and Fybr COO. There were about 9,000 spaces in San Francisco. At the time, SFpark's expectation of smart parking was to enable wayfinding and tracking space utilization.

The value proposition for smart cities is much more. For example, let's say a person visits a neighborhood often, and frequents a certain hat store. With Fybr's tools, the store-owner could expect the customer and reserve a space close to the store. Since the owner knows the customer is likely to buy $200 worth of hats, he could pay for her 30-minute parking, and even extend her parking stay if necessary to avoid ticketing. In this case everyone wins – the city, the store, and the customer.



Goodwin is clear on Fybr's strategic goal: to sit directly in the middle of smart city development. "We are creating a platform with edge devices and communications features to enable any data package on low data-rate networks for a large enterprise or smart cities system. So, instead of having unrelated, costly silos of excellence managing different aspects of the smart city – smart parking, water management, smart lighting – we allow cities to control all of them through one service."

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Bringing Games to the Real World

With augmented reality games gaining popularity (for example, the real world role-playing game Ingress with its seven million registered accounts), companies have taken notice of this new trend. Augmented reality games immerse you into the game world by laying virtual elements into the real world, whether it be through projecting images with some form of head mounted display or taking virtual elements and combining them with real world locations. Nintendo recently revealed their new augmented reality game Pokémon GO, in which players use their smart devices and go outside on a virtual Pokémon hunt. Think: augmented reality geo-caching.

The Pokémon GO is being developed by Niantic, with investment from Google, The Pokémon Company, and Nintendo. The Pokémon GO is being published by Nintendo and set for a release on iOS and Android in 2016. Revealed in the trailer for Pokémon GO, players must scout the real world for the virtual locations of Pokémon using their smart phone or smart device, which tracks their location.

"We are all incredibly excited about the opportunity to create a product true to the spirit of the original Pokémon games, while extending gameplay out into the real world," writes John Hanke, Founder and CEO of Niantic, in a Niantic blog. "Because it is a mobile game, players all around the world will be able to immerse themselves in the Pokémon universe on devices they already have in their hands."

—Liam Kivirst

BUY WITH THE BLINK OF AN EYE

Never mind fingerprint or eye recognition, or even your signature. Soon, purchasing will all be about facial recognition. In fact, MasterCard is developing an eye recognition program as a means of reducing fraud.

How will this work? The company will select about 500 customers to test the system. After a purchase, a pop-up will appear and ask for your authorization.

If you selected a fingerprint as your biometric verification, all it takes is a touch. If you choose facial recognition, you then stare at your phone—blink once—and that's it!

According to MasterCard, in order for the company to truly pull this off, they had to partner with a smartphone maker.

There is some precedent with banks using the iPhone's fingerprint scanner. And with the growing security threats associated with a simple password, biometrics just may be the next logical step.

—Laura Jordan

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Randy W. Viola, M.D.
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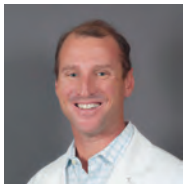

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Do Starfish Have Eyes?

Have you ever wondered if starfish have eyes? As it ends up, they do! Starfish actually have eyes on the end of each of their arms. Scientists have known starfish have eyes for at least 200 years, according to Anders Garm, neurobiologist at the University of Copenhagen in Helsingor, Denmark.

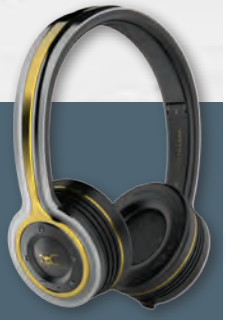
That's pretty cool, but what do starfish eyes do? Since starfish don't have brains, it's been difficult for scientists to figure out if and how they could even see. But with recent technological advancements, it's now possible for scientist to test starfish sight.

Starfish can only see about 200 pixels, which is very low quality. (By some reports, humans can see 324,000,000 pixels.) But, it may be enough to 'see' coral reefs, which starfish depend upon to survive. The catch? The reefs need to be about three feet away. More distance resulted in the starfish wandering away.

In the future, Garm and the team hope to determine if starfish use sight to locate the reef, as well as other uses for the sense.

—Laura Jordan

Monster Products Off the Mat for 2016



After the sudden, high-profile departure of one Dr. Dre and his massively popular earphones, Beats by Dre, from Monster Products in 2012, a lot has happened. If you don't know the story, Apple facilitated a $3 billion purchase of the Beats by Dre brand in May 2014, two years after Dre left Monster. Despite working with Dr. Dre on the concept from the beginning, Monster didn't see a dime from the deal.

While some companies might take this as a sign to close up shop, Monster is charging into new segments of the market with Head Monster, Noel Lee, leading the way. Their brand ambassadors, top-of-the-line headphones, and wireless Bluetooth speakers just may take 2016 by storm. You'll see UFC Champion Rhonda Rousey and All World Soccer Phenom Christiano Renaldo sporting Monster's new line of highly-engineered products, all of which are readily available now.

Nature Inspires Tech: Insects & Helicopters

According to DARPA (Defense Advanced Research Projects Agency), the helicopter of the future will resemble something you'd hire an exterminator to get rid of.

Recently, DARPA has created landing gear that features four collapsible robotic legs, giving the helicopter a new look that is much like that of a giant insect.

The payoff is huge. When the chopper touches down, the legs will automatically moves to stabilize the helicopter.

How does this work? The feet on the helicopter's legs are embedded with force-sensitive sensors, which help the helicopter determine precise angles to prevent tipping over when trying to land on uneven surfaces. The jointed legs will help minimize damage that is inflicted during landings, and allow the helicopter to land on virtually any solid surface.

These nature-inspired advancements can "greatly expand" the effectiveness of helicopters used for both military and non-military purposes, according to DARPA.

—Laura Jordan

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IoT: Save Electricity and Make Your Vents Smarter

Like most people, you're probably wondering which doors or rooms to close in order to save on heating costs this winter. You can't escape to that sunny snowbird climate because of last year's excessive heating bills; that's not going to happen again, right?

Not if you catch onto the latest in smart ventilation. One company, Keen Home, recently fired up the *Shark Tank* investors with their Smart Vents, wireless air vents that sense ambient room temperatures and adjust accordingly. It not only saves on utility bills but also delivers enhanced comfort and convenience. You can direct your furnace's heat into your living room and kitchen before leaving for work, waiting to increase heat flow to the bedroom you return home.

"The Smart Vent is equipped with pressure and temperature sensors to understand a room's environment," COO Ryan Fant said. "With this information, the Smart Vent can automatically adjust the amount of airflow entering specific rooms. With four to eight Smart Vents installed, we typically see a 15% reduction in HVAC run time."

In a sizable home in the snowy northeast, that can equate to over $150 per month.

CEO Nayeem Hussain noted that Keen Home's solution is yet another byproduct of the growing connectivity of the Internet of Things, and how specialists with killer technologies can spot specific needs — such as room-to-room airflow — and deliver. "We're identifying the core functions of the home and applying design and technology to improve the lives of homeowners," he said.

An Era of E-sports: Competitive Gaming

The time of nerds being considered un-sporty has passed. However, it's not on the court or the field where they're crushing the competition. Instead, the geek's playing field is in the virtual world of video games. Competitive gaming, or e-sports, brings together the top video game players from around the world as they vie for fortune and fame, competing at tournaments with prize pools rising into the millions.

E-sports competitions have emerged in 2D fighting games like *Super Smash Bros. Melee*, and real-time strategy games like *League of Legends*. E-sports can even include some first person shooters like *Counter-Strike: Global Offensive*. E-sports games are chosen for their competitive play, with player rankings (ladders) and leagues often built into the game.

Critiqued by traditional sports media for not being a 'real sport', the main argument for this viewpoint is the lack of physical strength required. No one can deny, however, the amount of finesse, strategy, and razor-sharp hand-to-eye coordination that's required by top gamers. Like traditional sports, top e-sports players have to commit to years of practice.

As for spectators, e-sports can rival those of many traditional sports. For example, the League of Legends Season 3 World Championship in Los Angeles attracted a live crowd of over 13,000 fans with an online audience of over 32 million.

—Liam Kivirst

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How Voice Recognition Drives Home Automation

By Robert Yehling

Let's return to 1994. As a magazine editor, I worked with a desktop computer, dial-up Internet, a brand new America Online e-mail account with 128 bit-per-second dial up speed (about 1/20,000th of today's slowest Wi-Fi connections), FAX machines, and desk phones. I'd seen a cell phone, used a digitized hotel room key, and played with automatic appliances and remotes. Among my friends, I was considered tech savvy, thanks entirely to the early e-mail adoption. It certainly wasn't because I was a gear head. My colleagues would laugh aloud at that notion, then and now.

Meanwhile, on the East Coast, Tim Shriver was searching for his next big automation play. He'd sold a company that automated television stations, but something else was on his mind. "I remember driving to my vacation home in 1994 and thinking to myself, 'Wouldn't it be nice if the air conditioning was on, the ice maker at the bar was running, and other systems were going when I got there?'" he recalled. "Well, in 1994, none of that was possible. Then I thought, we'd automated everything in a television station, so why not automate homes?"

Today, the company Shriver created, Home Automated Living, celebrates two decades as a true early adopter specializing in voice recognition technology and connectivity. Their signature HAL system (a double entendre saluting the company name and the computerized star of *2001: A Space Odyssey*) enables users to log into their homes on a browser to control lights, appliances, video, security, thermostat settings, and more from a single app and single remote — or by voice command.

As Shriver noted, the base technology hasn't changed so much since 1994. What *has* changed is the interfacing among sub-systems, primarily cross-platform compatibility thanks to protocols like Z-Wave, Insteon, UPB, Zigbee, and others.

"We continue to add interfaces to thermostats, security systems, newer protocols, everything," Shriver said. "We didn't really have a Web interface in 1994; it was just coming along. Most people dialed up to get online. You know, to be our own Captain Kirk, standing on the bridge of our private *Enterprise* and barking out commands? That was unheard of then. We've been doing it every day since 1994."

Which leads to the next question: What has caused home automation and connected car adoption to skyrocket this decade? According to Shriver, the killer driving force is none other than voice recognition technology.

"What's helped is the advent of more speech-type applications, whether they are on your phone or in your car," he explained. "If you think about it, in 1994, many people didn't feel comfortable leaving a message on an answering machine, let alone talking to your own house. Now, most of us are comfortable with Siri, Echo, Google Talk, talking to our car, what have you.

"Voice recognition technology is pushing everything forward, from changing a channel to navigation, using Siri to get quick information, all these things that no longer require us to reach for a knob."

The other hot button item today is DIY — do it yourself. Let's look at a DIY security company, Scout Alarm, which enables us to build a security system a la carte, tailored to our specific requirements and tastes, with no contract in place. After selecting the Scout Hub – in any of three colors – we can buy individual door panels, access sensors, and motion sensors. To add another layer of security, we can add an optional monthly monitoring plan. From our mobile phone, we can choose specific actions in response to an alarm activity, which Scout will then initiate from its command center, and monitor our home security from anywhere. This fulfills the mission set by co-founders Daniel Roberts and David Shapiro, who have tapped into the DIY world that is now

opening up broadly to home automation, with their smart home security system, Scout.

It's a great solution. You can literally build out a system to fit your every security need, controlled from your smart device. You can also set custom actions and alerts, and arm and disarm from anywhere. Once a sensor is tripped, the plan you developed kicks in — and the alarm is acted upon.

Millennials, this is not your parents' definition of DIY, as Shriver pointed out. "A DIY person back then (mid-1990s) was in the Wild West, because there wasn't a lot of cross-platform compatibility," he said. "They were the hobbyists, more progressive people who liked to tinker, true blue do-it-yourselfers. Nowadays, you don't have to be a gear head. Retailers like Lowes, as well as other companies, have made it easier for this to be more plug-and-play. The consumer can buy it, take it home, and not have to be mesmerized by lots of complicated manuals for installation."

The next time you talk to your car, house, or phone, know you are part of the vanguard of mass home automation adoption — and your voice is leading the way.

I&T Today Founding Editor ROBERT YEHLING is a multiple book author, and the editor of our Sustainability Today section. MELISSA HIRSCH also contributed to this article.

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A Restoration Program Like No Other

In the past couple of months, we have been following a program called 'Clarion Builds'. Clarion Builds serves as a base for Clarion and a hand-selected group of other top automotive specialists including Michelin, K&N, StopTech, Mothers Polish, and several others, to tackle unique restoration projects of iconic cars and trucks.

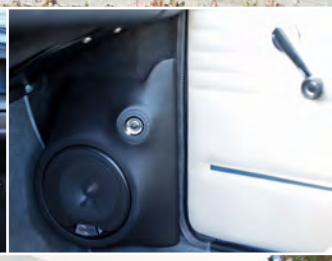
By Trish Schieffelin

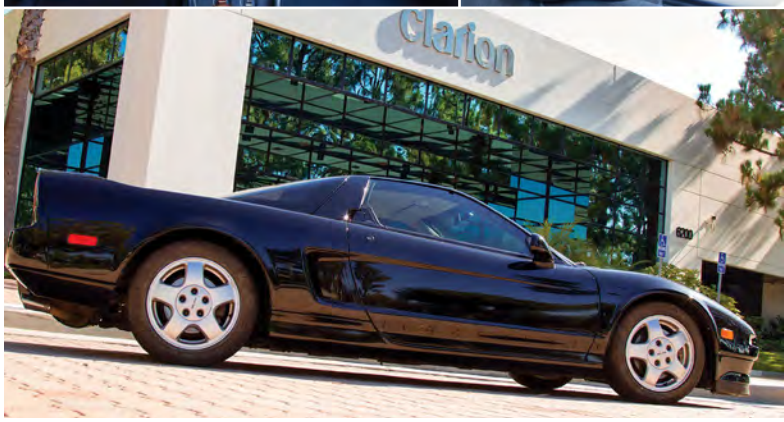
Through a mix of social and traditional media, Clarion Builds connects with new and existing fans who are car enthusiasts, automotive sports fans, journalists, historians, and anyone with an interest in design and style. The program shares with its fans and followers the details of what it takes to completely restore these iconic automobiles. With the second restoration already nearing completion, the program has received not just attention and praise from the media but has also become a favorite of hundreds of thousands of fans and followers.

The first Clarion Builds project was a complete ground-up restoration of a classic icon, a 1974 BMW 2002. The project was a massive success for Clarion and its partners with hundreds of articles published on the project, plus earning a coveted Petersen Automotive Museum 'Perfection Award' that the icon received in October of 2015. Following the format of the inaugural BMW 2002 project, Clarion has selected a 1991 Acura NSX for the program's second project. The Gen One Acura/Honda NSX is an icon by any definition as it singlehandedly redefined the supercar category 25 years ago when it first launched, targeting and delivering performance numbers previously reserved for Ferraris and Lamborghinis. In addition, the year-one NSX is surely becoming a sought after collector's car, with collector interests gaining, especially given the pending launch of the all-new 2017 Acura NSX, which boasts an impressive amount of state-of-the-art, world first technologies, some of which are supplied by Clarion.

So, why is Clarion doing this? Well, it is actually pretty simple. Sure, Clarion's engineers, marketers, management, sales guys, and almost all other employees are 'car people' but there is more to it than that. Clarion believes our collective world culture is falling out of love with the automobile. The young generation today is more interested in their smartphones and tablets, playing online games and watching viral videos rather than enjoying what many of us enjoyed when we were growing up: driving, cars, motorsports, and the pride of owning a piece of transportation if not a piece of art. Clarion believes in its mission to create enthusiasm and interest to rekindle the 'automotive genes' we have all inherited from our parents and passed on to our children. And, given our fixation with screens these days, Clarion is bringing the fun to us where we spend most of our leisure time through pages of Facebook, Twitter feeds, Instagram photos, or Youtube videos!

If you've not yet seen or heard what Clarion Builds is all about, try their site at www.ClarionBuilds.com and start following the project as it moves through its phases.





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The Future of Wearables: Touch-Responsive and Thermometer Fabrics

By Nikki Work

Wearables have been able to measure heart rate, sleep, and even detect your activities. What's next, you may ask? gaugewear, inc., is working on the first wearable technology of its kind to monitor core body temperature externally. Though the technology won't be available on the market for at least two years, the researchers working on the tech for the company at the University of Colorado Boulder have proved it works. If you can't wait that long, they are also pushing to debut a fabric input sensor that acts like a touch screen, but in a piece of clothing. This tech will be ready for market in 18-24 months.

gaugewear, inc.'s core body temperature wearable would allow for internal temperature to be measured externally, versus more invasive ways of measurement. "Of course, everybody's familiar with putting a thermometer under the tongue, but there are other methods that are equally or more invasive to measure core body temperature," CEO Jeff Wallingford said. "We have a technology that allows you to measure temperature at depth in tissue with an antenna that's placed on the skin."

The wearable might look like a chest strap, a compression shirt, or even a patch — that part remains to be decided.

This tech could be valuable for a number of industries. Wallingford said the first use is for athletes, who can maximize performance by monitoring temperature. He also pointed out the danger of heat illnesses in young athletes. In 2010, the Centers for Disease Control released a study that said high school athletes missed 9,000 game or practice days due to heat illness every year. With a technology that could monitor core body temperature and alert a player when he or she was reaching an unsafe body temp, situations like these could be avoided, Wallingford said.

The core body temperature wearable could also be used as an occupational safety tool for people in jobs with extreme heat exposure, like construction workers, soldiers, or firefighters.

There are also potential medical uses for this technology. It could be used to take temperatures consistently in a hospital setting, rather than having frequent nurse visits, he said. It could also shorten hospital stays for some patients, as it could monitor for fever as a sign of infection at home.

gaugewear's second piece of developing tech is a fabric input sensor that would be similar to the screen on a phone or tablet, but could be built into your shirt sleeve, pant leg, or other pieces of clothing. Wallingford said everything has still been interfaced to a point where the person has to use your phone or watch face to control the technology, but that this would integrate clothing.

"All of the input gestures that you could do on a touch screen, like a tap, a swipe or a pinch, you can do with our sensor on a piece of fabric," he explained. For example, if you were skiing and wanted to change the song you were listening to without taking off your gloves to fish out your phone, you could just tap your sleeve.

The next step for gaugewear is to bring in engineers to make this technology smaller, cheaper, and mass-producible.

While at the Internet of Things conference in California's Bay Area in October, Wallingford said the growth factor for the wearable tech industry is unfathomable. Sensor technology and wireless networks are both becoming more accessible and affordable, allowing more development. Still, he is confident in the science and the need for the tech his company produces.

Wallingford believes his company will have a leg to stand on — or maybe, just a leg to be worn on.

CEO of gauguewear, inc., Jeff Wallingford (right). Below, prototypes of the temperature sensor prototype and the touch sensor prototype demonstrate new directions of growth in the wearables industry.

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PIONEER OF WEARABLE SPORTS TECHNOLOGY

Women in Gaming

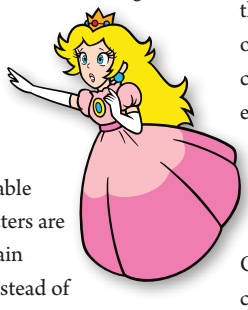
By Lisa Lunney

There has been a significant shift in recent years in the position and power women hold in the gaming world. The gaming industry is historically seen as a male dominated hobby. Now, the paradigm has changed, and women are emerging to help change the face of modern gaming.

With the advent of casual gaming such as apps and Facebook games, opportunities to play are widely more accessible to both genders. Games are much more readily available, and there are games to cater to all tastes. Choices aren't primarily racing games or first-person shooter as it was 15 years ago. Content is readily available for every genre. The gaming industry has evolved over the years, and gaming has become a more common and acceptable pastime for everyone. No longer is online gaming and its communities viewed as niche domains for misfits or outcasts—everyone is welcome.

Gaming is becoming its own medium and art form. Female characters are becoming far more commonplace, and these characters are fully fleshed characters rather than simply flesh as it was in the past. Female characters are no longer entirely scantily clad in heels in all games. One of the most iconic female characters, Lara Croft, has significantly shifted in image to a vision of a more modest and realistic woman.

The days of female characters being limited to princesses and damsels in distress are gone. Women are equally represented in roles as villains, heroes, and helpless targets. Female characters are now more accessible as choice/playable characters. Female characters are increasingly present as main characters in storylines instead of small side roles as seen in the past. These characters are strong and independent; they are hero characters instead of eye candy for gamers' entertainment. It is fantastic to see all brands of games stepping up and extending the roster of females into heroes and villains – a massive gain from the days of Princess Peach in her castle waiting to be saved by two male characters and a mushroom man.



Puzzle games are incredibly popular with women and also severely derided as not being 'real games.' It is interesting to note that Tetris is close to the highest selling game of all time, and most of the best speed Tetris players are women. Some firmly believe that RPG gamers are the 'real' gamers. From puzzles, simulation, to RPG, all games are truly equal, and one does not define a player as more of a 'gamer' than another. Whichever end of the spectrum one finds themselves on – extreme gaming to casual gaming – there is entirely a place for equality of both sexes to engage.

One of the biggest changes we have seen is the opening of conversation about the barriers in the gaming world for women. Conversation sparks change. With the conversation now in full-force, the gaming world is shifting to openly invite women to play a key role both behind the scenes and in front of the screens. The more we talk, the more that the presence of women will be felt in the gaming world.

Three strong female protaganists play lead rolls in recently released and upcoming games including from left; the re-imagined Laura Croft in the recent *Tomb Raider* series, including *Rise of the Tomb Raider*, Faith in *Mirror's Edge Catalyst*, and Lightning from *Lightning Returns: Final Fantasy XIII*.

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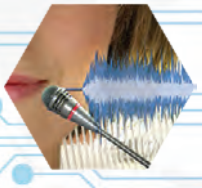

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Building Homes for a Sustainable Future

By Lee Bell

Conventionally built homes consume unwarranted amounts of energy. Air leaks and heat transfer between internal and external environments are two of the largest drains, requiring conventional homes to use considerable energy to maintain comfortable living temperatures. Changing the way we build homes can significantly reduce our energy consumption and environmental impact. Simply put, homes need not consume resources to the extent they do.

The two leading standards in sustainable construction are Zero Net Energy and Passive. Passive homes are built to combine unparalleled comfort with very low energy consumption, while Zero Net Energy homes must produce enough on-site renewable energy to meet or surpass the energy consumption of the home. At least one company, SIDCO, combines both standards to build energy efficient homes that are healthy for the environment and healthy for the inhabitants.

To achieve these standards, SIDCO homes include air-tight envelopes that prevent leakage of conditioned air, high grade insulation to limit thermal bridging, thermally efficient windows, photovoltaics, LED lighting, energy efficient appliances, and passive heat recovery ventilation. The heat recovery ventilator is the heart of the home. It works by continuously cycling filtered air throughout the house while passively exchanging heat between inbound and outbound air flow. The result is fresh comfortable air with minimal contaminants.

SIDCO's mission to build healthy homes is inspired from the heart of Mohan Mahal, founder and CEO. Mahal received a heart transplant 22-years ago. "My motivation and mission is bigger than myself. I owe it to my donor to do something good for the world," said Mahal.

A SIDCO kitchen remodel goes beyond the surface. This kitchen was completely gutted and upgraded from the inside out, including new copper pipes, energy efficient appliances, low-flow fixtures, and LED lighting.

He expands on the 'healthy home' concept by incorporating smart home technology, low-flow fixtures, gray water systems, and drip irrigation. The gray water system is crucial in California, where residents are threatened by a severe drought. The system filters and recycles wastewater from showers, dishwashers, washing machines, and sinks for use in toilets, and landscaping. Heat from gray water is then concentrated back into the hot water tank for added energy savings.

This past summer, Mahal's daughters, Subina Mahal and Simran Mahal, joined SIDCO as Director of Sustainability and Director of Operations, respectively. While SIDCO already has a strong environmental mission, Mahal's daughters are finding ways to incorporate an equally strong social mission. "Healthy housing should be accessible to all. We want to build a business model where we are able to invest back into our community by either expanding the business into the low-income and multi-unit housing markets, establishing community housing trusts, or using an adaptation of the one-for-one model," Simran Mahal said.

SIDCO's long term goal is getting more people to invest in and purchase healthy homes. For Mahal, it isn't about maximizing profits but rather making innovative homes with a positive impact. Staying at the forefront of sustainable technology, SIDCO's next project in Palo Alto, CA, will include a Tesla home battery, adding the ability to store excess energy produced during sunlight hours for use in the evenings.

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business innovation

This year in business innovations, we've seen the continued importance of newer tech (such as social media, sit-stand workspaces, and gadgets that make our jobs easier) combined with the tradition of old-school business practices (treating people well, always learning, and continually adapting to new obstacles and market shifts). Mark Yamamoto, CEO of FUJIFILM North America, led the Imaging division through the industry-altering transition from film to digital cameras. He shares how the company remained successful during this time – and how Fujifilm is leading the charge into mirrorless territory. Guest writer Matt Hyder, CEO of Recoup Fitness, shares his tips for young entrepreneurs to gain credibility in their industry, and we continue to examine the significant transition to being well at work through standing and moving throughout the workday. Lastly, we share some of our favorite gadgets for your office. Enjoy!

Four Steps: How to be Taken Seriously as a Young Entrepreneur

By Matt Hyder

Matt Hyder, Founder and CEO of Recoup Fitness.

As a 23-year-old entrepreneur and the CEO of Recoup Fitness, I've faced a certain number of challenges. Among these is gaining the respect of the people around me, including the older generation of business leaders. Through hard work, trial and error, and engaging with numerous successful people, I've developed four tips that compel others to take young entrepreneurs seriously:

1 Express Your Passion

One of the first things investors will notice is your passion – or lack thereof. You can't expect others to be excited about your business if you aren't excited. So, if you feel it, express it.

As you talk about your business, inflect your voice, convey how you feel, and illustrate how your business progresses the world in a positive manner. (It's actually been proven that properly fluctuating your vocal intonations to express passion can result in greater influence, credibility, and confidence.)

Even if an investor doesn't open his or her pocket book, passion can move them to open their networks, connecting you with others who can help your company succeed.

At the end of the day, passion is what makes your idea worth all the effort. It transforms your business and job into a mission. It keeps you going through 18-hour work days. It compels you to make sacrifices. It gives you strength to persevere through rejection and to reach out to one more person. The bottom line? If you aren't passionate about your business, then quit, move on, and find something you can pour yourself into.

2 Research, Research, Research

The Stinger by Recoup Fitness is a cold massage ball that retains its temperature for up to six hours, and can be used to alleviate pain practically anywhere on your body.

Personal Research

Learn from my mistakes. Before you meet with anyone, research them in depth.

I learned this lesson poignantly when meeting one of my heroes, Courtney Reum. Once featured on the '30 Under 30' list, Courtney found business success in his 20's, starting off as an investment banker at Goldman Sachs and working with such brands as Procter & Gamble, Under Armour, and Vitamin Water. Using his branding expertise, he founded VEEV liquor.

Upon meeting him, I had a general idea of what Courtney was about. I was excited to get to know him and pitch Recoup Fitness. But I faltered when he asked me what he could do for my business.

Courtney put me in my place. "From now on, you research anyone you talk to in depth," he said. And I did. This meant not only looking at their business background, but reading articles they wrote, watching their YouTube videos, studying them on social media, researching their involvement with other businesses, talking with people who have worked with them, and more.

(My encounter with Courtney may sound like a huge fail, but it wasn't. I was lucky, and Courtney was gracious enough to mentor me. He even took our product to the 49ers!)

Industry and Product Research

Find the greatest minds in your industry and research them. Ask them about their current thoughts on the industry, and their predictions for the future. Benefit from their expertise.

Not only will learning more about industry leaders improve your perspective, but demonstrating your knowledge of the industry and referencing experts immediately increases your credibility and the interest of the people you pitch.

In addition to researching leaders, research current products – including those of your competitors. Acknowledge what your competition does well, and look for things that can be improved. This research can inspire creative and innovative ideas and products that truly differentiate themselves from the rest of the market, adding value to your business.

Transcendent Research

When your research transcends beyond your particular industry, it allows for new and creative insights into how to solve problems that may elude those with a narrower vision. An excellent example is how Teflon-coated fiberglass was originally developed as a material for astronaut space suits, but clever engineers in architecture noted the material and its advantageous properties. It is now used for roofing and creating sports superdomes, such as Atlanta's Georgia Superdome.

Furthermore, many people you encounter in business are interested in self-actualizing. They are driven to be the best they can be, and they are constantly learning. The best way to engage these people is to be able to discuss ideas and values that transcend any particular field. The ability to have such conversations will command respect and appreciation, and also make you a better person.

3 Make Friends

Marcus Lemonis, CEO of Camping World, Good Sam Enterprises, and star of CNBC's *The Profit*, has popularized three keys to business success: people, product, and process. The first key is 'people'. That's no accident.

If you are able, try to connect with someone beyond a business relationship. Develop a friendship. What you'll find is astounding: people will begin to treat you as a peer instead of kid. They'll come to understand and appreciate you for who you are – regardless of age.

How do you develop such a relationship? Research them! Mention something about the college they went to, ask them about their kids and family, or ask about any hobbies or passions they may pursue. Everybody likes to talk about themselves if they feel that the other person truly cares. Ask them questions, and truly value their responses, stories, and experiences.

4 Be Honest

Honesty requires vulnerability. It's easy to look at the business world and think that vulnerability ought to be avoided. However, in growing my start-up, I've found the exact opposite to be true. Possible investors have been in your position and can relate to the struggle. But they'd rather work with people of integrity. This isn't to say you need to share every little obstacle. Confidently express your grand company vision and pitch them on the possibility of company growth. But be honest about the numbers and the state of the company. You may get the help that you need, even if it's not always the help you wanted.

Perhaps most importantly, be honest with yourself. Startups often stretch you to the limits of your mental faculties. Be optimistic, but truthful. Like successful entrepreneurs before you, learn how to maximize your strengths and account for your weaknesses.

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EXCLUSIVE INTERVIEW:
Mark Yamamoto
President & CEO, FUJIFILM North America Corporation

***Innovation & Tech Today:* Tell us about the success of the FUJIFILM digital cameras (especially the X-Series cameras in North America), and how they have impacted the market.**

Mark Yamamoto: Digital cameras have been a great equalizer in the photography market because now every consumer has access to a wide range of digital cameras with a variety of features and benefits. However, the award-winning line of FUJIFILM X-Series cameras and FUJINON lenses have set a new standard in revolutionizing the total photography experience. Today, we see photo enthusiasts and professional photographers embracing the X-Series because of its class-leading color reproduction, extraordinary image quality, and thoughtful design.

As smartphones have introduced picture-taking to countless new users, we see an exciting 'photo renaissance,' and it is our hope to enrich that experience with extraordinary imaging products and valuable personalized photofinishing gifts.

***I&T Today:* What are your thoughts about the emergence of mirrorless camera systems? How will mirrorless cameras affect hobbyists and intermediate and professional shooters?**

MY: Mirrorless camera systems are changing the way consumers and professional photographers experience photography. Today's mirrorless cameras are compact, lightweight, beautifully designed and – most importantly – deliver an outstanding imaging result that rivals large and heavy DSLR systems. When you incorporate these elements together, something special happens – end users become inspired again to experience and explore their photographic passions. For Fujifilm, this is part of our core mission – to enrich the lives of people everywhere. We believe the X-Series is bringing joy back to photographers.

***I&T Today:* You were the Division President of Imaging during the transition from film to digital in the U.S. What were the biggest obstacles you encountered? How did people first perceive digital cameras, and what led to their wider acceptance and use?**

MY: Successfully transitioning during any market disruption is always challenging. Fujifilm faced its own challenges head-on by supporting and working with our retail partners, where we invested heavily in photo output infrastructure, and raised awareness about the total photography experience – not just shooting images, but also printing unique and exciting photo products. For the first time, consumers saw first-hand the value of personalized photo products, including books, cards, calendars, custom-made picture gifts, wall décor, and large canvas prints and how they could enrich their photo-sharing experience.

This strategy allowed Fujifilm to make a seamless transition with the market shift, while at the same time diversifying the photo market with high quality printers and kiosks that gave consumers new ways to bring their photos to life.

***I&T Today:* How did overseeing the revolution from film to digital at Fujifilm influence or reshape your business perspective looking forward?**

MY: Supporting photographers and photography are at the core of Fujifilm's commitment to success. During market transitions, our perspective remains centered on the end-user, and the quality of their total photographic experience.

The transition to digital has created new opportunities for Fujifilm as we pursue innovative ways to enrich peoples' lives through photography. Smartphone users take more than two trillion pictures annually, and we predict that number to be almost countless in the years to come. So for Fujifilm, our opportunity to reach new users, with the strength of our imaging and color reproduction heritage, is very exciting to us.

***I&T Today:* How have you adapted your customer relations policy to this time of greater transparency, direct customer involvement in sales, and new online and standard buying patterns? How does that translate to digital cameras and products?**

MY: Our end-users are the driving force behind our commitment to innovation and leadership in the market, and the best way for us to achieve success is to listen to our consumers often and carefully.

To help accomplish this, we also made expanding our dialogue with retail partners a priority, because in many ways, they are the first experience that a consumer will have with our company. By strongly supporting our business partners, we hope users know that we are putting their experience first. Additionally, as consumers change how they communicate and share information, we have embraced engaging them on social media, at more end-user events, and with them at tradeshows where we can interact on a personal level.

Creating new photo imaging products and services are also crucial to engaging consumers and enriching their experience with Fujifilm. By leading the photography market and creating new ways for end-users to enjoy their images, Fujifilm can continue to innovate and deliver the goods and services that people demand.

***I&T Today:* Not all companies anticipate change in technology, and some even resist it. It seems Fujifilm has embraced change and innovated its business in an agile fashion. Where does that philosophy come from?**

MY: The Fujifilm philosophy is this: Value from Innovation. At Fujifilm, that means we should constantly challenge the standard way of doing business, how we interact with and understand our customers, and rethink what can be achieved with a vast collection of unique and exciting core technologies.

When we look at other companies that we admire, we see similar attributes that include constant change, continuous self-challenging and an appreciation for customer feedback. There are some great companies that exemplify these characteristics today, and we believe consumers acknowledge and support these brands the most.

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Towards Greater Wellness At Work

By Lee Bell

The clarion call continues to sound for greater wellness in the workplace. We need to stand more, sit and eat less, exercise more, and use furniture that works with our natural posture, not against it. We know this. So why do we keep racking up billions in added healthcare costs and lost productivity?

"When we stand, we don't stand stiffly; we move. We move with our hips, our trunk, while our heads remain still," says Louis Stack, President and CEO of Fitterfirst. "When we sit, our glutes get stuck to the chair. We're compromising our balance and helping gravity compress and shrink us. We're also compressing our organs and restricting blood flow by sitting like this. Not good.

"The key is to be able to shift the trunk forward, backward, sideways, up and down, without compromising spinal alignment. As soon as the head starts moving forward or shifting to the side, your balance, visual input, inner ear – all these key balance centers are compromised. Sitting kills the core strength and spinal stability."

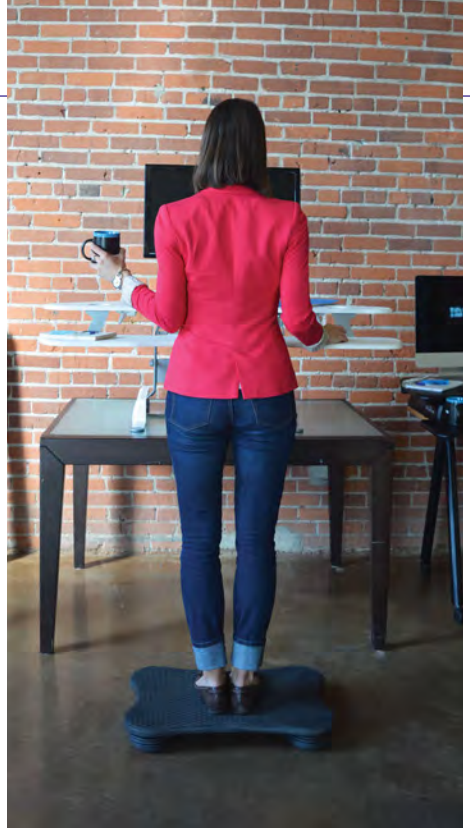
A former national-level skier in Canada, Stack was featured in *Inc.* magazine in 1999 as a forerunner of today's active office environment. He became interested while lamenting his body's stiffness in office settings, and watching how his then-pregnant wife dealt with sitting and posture. "I was sitting at a desk, my core was getting weak, and my shoulders were slumping," he said. "It comes down to numbers. We sit 40-plus hours a week at work, and many more hours in our cars. We're not designed to sit for long periods of time. It is guaranteed health failure."

Many agree wholeheartedly, including Charlie Lawrence, President of Workrite Ergonomics, manufacturers and distributors of state-of-the-art height-adjustable workcenters and ergonomic office accessories. "We are fortunate to be based in California and close to the Millennials of Silicon Valley whose focus on a healthy lifestyle outside of the office – hiking, biking, being outdoors – also spills over to the workplace." Lawrence said. "That hasn't always been the case in a large part of the country where the workforce is dominated by older workers, long hours in the office, and less focus on an overall healthy lifestyle. That trend is changing, and it is more important than ever to provide solutions that help facilitate healthier environments and habits both inside and outside of the office."

Workrite height adjustable desks are available with a variety of industry leading features, including software that provides the user with reminders that it is time to change position and that aggregates data to help monitor activity at work. "But," Lawrence said, "We're not stopping there. We believe that we need to find a way to connect our products with the individual both inside and outside of the office — such as hooking them up to wearables. Then we will truly be able to say that we promote a healthy lifestyle."

Non-laborers have sat on the job for centuries. So why is the wellness factor so critical in the 21st century? More corporations than ever tie health insurance to wellness programs, and more companies either hold workout programs or support fitness center memberships. Then there are adjustable office products like desks, chairs and tables, and Fitterfirst's in-office cross-trainers, ball chairs, balance boards, desks, and active office chairs to keep us moving.

Some of the office products are as therapeutic and enlivening as they are ergonomically sound. Workrite Ergonomics has been setting the standard

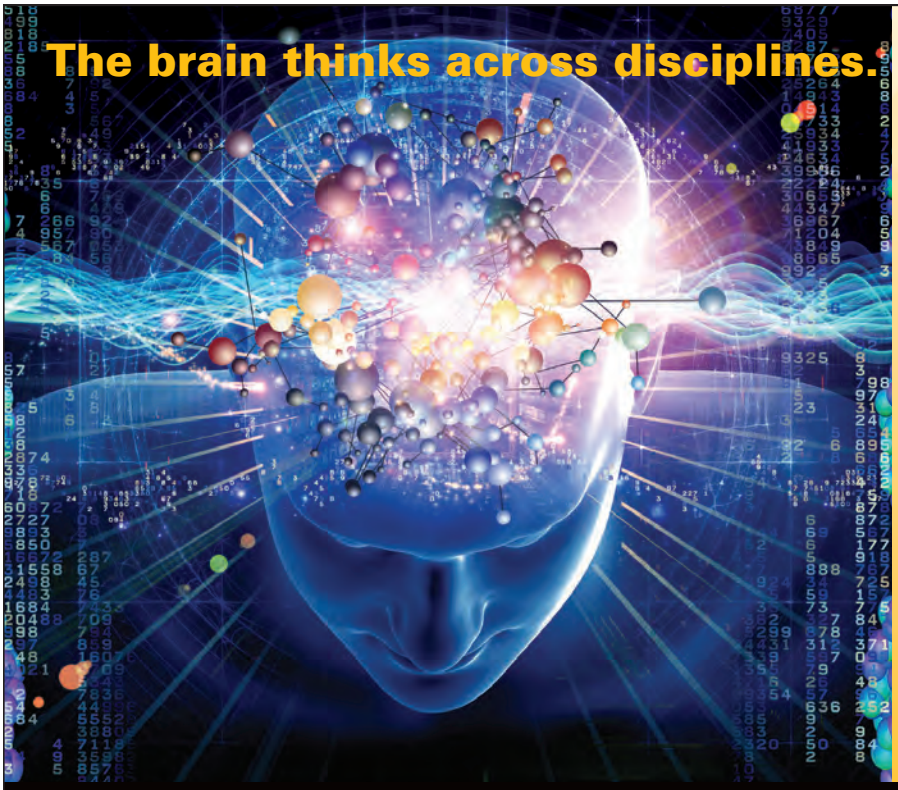


for ergonomic office products for nearly 25 years. Another strong provider is Relax The Back, a specialty retailer that offers ergonomic products to relieve and prevent back and neck pain. They provide everything from portable lumbar supports and fitness products to Tempur-Pedic mattresses and custom office chairs that support the natural curve of your spine, enhancing proper posture and lessening spinal compression issues.

One of their newest products is the revolutionary Stir Kinetic Desk M1, which use a built-in app and touchscreen to set and track movement goals. The desk reminds you to sit and stand throughout your day with a gentle 1" up and down movement of the work surface.

Yet, in spite of these increasing efforts, we still have trouble moving — or, as Stack notes, maybe we don't want or feel the need to move because of our technology.

"I think the biggest contributing factor to sitting more is technology – specifically texting and emailing," he said. "What happened to getting up and walking next door to your colleague's office rather than texting or emailing them? Head-forward posture has become so prominent, starting with teenagers. Their spines are compressing. They're not moving. Younger people can get away with it for awhile, but in time, it will catch up. I see an inherent health crisis brewing."



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Must-Have Business Gadgets

The holidays are the perfect time of year to indulge your business gadget desires. These must-have gifts are some of our favorites. Enhance your workday, be more efficient, and focus on the work you love. Check out page 114 for more of our picks.

SMART kapp, the whiteboard reinvented

The SMART kapp digital capture board is a must-have business gadget. We've all been in those situations where someone erases our whiteboards too soon, or we're sending fuzzy photos with glare to remote co-workers. "The first dry erase board was invented in the 50's," said CTO Warren Barkley. "It hasn't really changed much, and the reason it hasn't changed much is people love that you can just walk up and write on it. We really took that functionality and that sort of simplicity and kept it in this product." Team members can use iOS or Android apps to connect the SMART kapp, and see real-time updates from the board on their devices. A link to the board can be emailed as well so anyone, anywhere can see what's being written on the board. Truly plug and play, SMART kapp requires no IT assistance. Two sizes available, starting at $899 at **www.smartkapp.com.**

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Innovations in Regenerative Medicine:

A First-Person Perspective From a World-Class Medical Institution

By Marc Philippon, M.D.

Our mission at The Steadman Clinic and the Steadman Philippon Research Institute is to keep people of all ages physically active through orthopaedic research and education. We particularly focus on arthritis, tissue, and wound healing, rehabilitation, and injury mechanisms and prevention.

Dr. Johnny Huard recently joined us. A former colleague of mine and a world-renowned expert in the field of regenerative medicine focused on stem cell research, Dr. Huard has taken The Steadman Clinic and SPRI's core belief about the body's ability to heal itself and run with it. He is now using scientific research to prove that theory in our labs.

Ultimately, our goal is to help you live a more active life longer than ever imagined through regenerative medicine. To do this, Dr. Huard and his team of researchers are focused on science and research that extends the timeframe for joint replacement, whether it be knee, shoulder, or hip and as well, to delay the degeneration of muscle tissue due to osteoarthritis.

The latest developments in stem cell usage are driving those efforts. Dr. Huard's research aims to confirm that stem cells can function as the body's ultimate repair kit. Dr. Huard has been instrumental in discovering the use of adult muscle-derived stem cells for this purpose. This work is not only well regarded, but also well supported. He is one of the most funded stem cell researchers by the National Institutes for Health (NIH), and also collaborates with NASA and other national organizations. In addition, his stem cell research extends beyond his work in orthopaedics to include areas of study in muscular dystrophy, along with cardiac and bladder studies currently undergoing clinical trials.

In orthorpaedics alone, creating and developing cost-effective methods to treat injuries and arthritis could have a huge financial impact on the productivity of the nation. According to the *Bone & Joint Initiative USA*, $461.5 billion in earnings is lost annually to arthritis alone. Advancements and discoveries by SPRI could significantly reduce that huge loss each year.

The promise for the future is nothing short of extraordinary. As I look back, I marvel at the vision and direction that Dr. Steadman provided for the field of orthopaedic medicine. When I look into what lies ahead for The Steadman Clinic and SPRI, I see how Dr. Huard and our exceptional staff of physicians, clinicians and scientists have targeted ways to improve lives by taking the Steadman Philippon Research Institute's philosophy and applying it to the new generation of medicine and science.

Marc Philippon, M.D. is the managing partner of The Steadman Clinic and Co-Chairman of the Steadman Philippon Research Institute in Vail, Colo.

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High School Sports' Tragic Year

Eight players have died from sports-related injuries. We talk about increased head injury detection and prevention, but where do we need to look next?

By Robert Yehling

No matter how great your favorite teams are performing, this has been a rough year for high school sports. Teams might be winning championships, and star players throwing, shooting, and running their ways into college scholarships, but Friday nights have had a more somber tone. For example:

- El Dorado, CA, quarterback Nick Brown leads his junior varsity team to a 27-8 win, says he doesn't feel well, and collapses. He is continuing to fight for his life.
- Andre Smith of Chicago hits his head in the final play of the game, walks off the field, and later collapses and dies.
- Casey Dunne, of Dedham, MA, tells her friend she doesn't feel well after a routine field hockey practice. Soon after, she dies from a brain hemorrhage.
- Burien, WA, defensive back Kenny Bui sustains a head injury while making a full-speed tackle. He dies days later following emergency brain surgery.

The cause in all cases? Head injuries caused by hits and collisions.

As of November 8, eight high school players have died in 2015 from sport-related injuries since the first whistles blew in August, one of the highest single-season numbers ever recorded. It's hard to understand why this continues to happen with awareness about concussion and head injury protocols at an all time high. On-the-field diagnoses of such injuries have increased by over 80 percent in the past five years. The number of documented concussions more than doubled after the institution of the Lystedt law, which requires high school athletes who have sustained a concussion to be removed from practice and play – and not permitted to return until cleared by a medical professional. An estimated 7 million athletes participate in high school and college-level sports. Only two-thirds of athletes recognized when they have had a concussion, and only 43% reported it. These athletes are at a higher risk for repeat concussions, which can lead to prolonged symptoms or possible catastrophic injury.

Parents aren't taking kindly to it, especially with football. "People are pulling their kids from football," said Dr. Douglas Comeau, Medical Director of Sports Medicine at Boston University. "You've seen high schools cancel their games because there aren't enough people to play. You have to take a step back and say, is that because fewer students are signing up, or because there are more injuries? It's probably a little bit of both."

According to Dr. Joseph Maroon, team neurosurgeon for the Pittsburgh Steelers, the types of injuries that killed or gravely injured high school athletes — those that caused subdural hematomas or hemorrhaging in the brain — are the hardest to detect.

"Typically, a patient who has a concussion and is helped off the field rarely has an intracranial hematoma," Maroon said. "I've been working as a consultant with MedLogic, using a tool, the InfraScanner, that gives objective data to help medical professionals with what is otherwise a subjective call from a neurological evaluation and history of an athlete."

According to Maroon, the InfraScanner has proven to be an ideal tool for the times. It can be used on the spot to test and rule in or rule out an intracranial bleed or brain hemorrhage. Today the InfraScanner is being used by high schools, NCAA football programs, NFL teams and the California State Athletic Commission for combat sports. Dr. Maroon feels that large-scale deployment will help greatly with quick detection, thus saving lives. "One thing I really like is that you can scan over and over without exposure to radiation, like you'd have with a CT scan. That way, a team doctor can watch for delayed onset hematomas without overdosing athletes with unnecessary radiation."

Experts agree: early detection and treatment are crucial steps in saving young athletes' lives. Products like the handheld MedLogic InfraScanner (left) and a variety of treatments like those offered by Cerebrum Health Centers (above) may be important developments towards this goal.

Meanwhile, large brain study and medical rehabilitation centers like the Cerebrum Health Centers have found themselves gearing more and more to serving young athletes who need further work after nasty sports injuries. Despite having some of the best tools money can buy, former medical director Dr. Andre Fredieu says it still comes down to those critical first moments after impact, when the player is seeing stars, hearing strange sounds and unable to focus.

"We really need to do a better job of identifying brain injury faster," Fredieu said. "If someone suffers a subtle injury, and they're placed back in the field — whether military theater, the gridiron, or even a classroom setting —if their brain hasn't been given the opportunity to heal, then further damage can result."

InfraScanner

HANDHELD BRAIN INJURY DIAGNOSTICS

Now, for the first time ever, the application of Near-Infrared (NIR) technology can be applied in a portable, handheld device that empowers clinicians to know what's happening inside the human skull, even before symptoms of brain injury appear.

The InfraScanner is currently being used by physicians and athletic trainers in the NFL, NCAA, high schools and professional boxing/MMA as an adjunct tool giving objective data to help assist in the early identification of a potentially catastrophic injury that may not be detected by a physical examination alone. The InfraScanner is easily incorporated into any concussion management protocol, takes just 2 minutes and can be done at the field of play.

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New Horizons in Bipolar Care

Dr. Rif S. El-Mallakh

Once known as manic depression, bipolar disorder (BD) is central to mental health discussions in the U.S. According to the National Institute for Mental Health, 6 million adult Americans struggle to live ordinary, balanced and stable lives in the face of this lifelong, difficult condition. Of that number, an astonishing 25 percent are considered 'severe' cases, experiencing four or more major depression episodes per year — a phenomenon known as 'rapid cycling'. With six percent of all adults under age 45 diagnosed with bipolar, it carries tremendous social repercussions for the future.

Typical treatment calls for prescription of a mood stabilizer, coupled with an antidepressant. The latter prescription deeply concerns Dr. Rif S. El-Mallakh, director of the Mood Disorders Clinical and Research Program and Professor of Psychiatry at the University of Louisville School of Medicine in Kentucky.

"Whether or not antidepressants cause rapid cycling in BD is a controversial issue," wrote Dr. El-Mallakh and his co-author, Dr. Nassir Ghaemi of Tufts University, in the *Journal of Affective Disorders*. "Antidepressants are the most commonly prescribed class of medication in BD. If they cause or worsen rapid cycling, found in about 25 percent of patients with BD, this presents a major public health problem."

Common sense dictates that antidepressants work for people battling depression, right? Not exactly. Rapid-cycling bipolar patients who used antidepressants for an extended period following an acute depressive episode actually experienced *three times* the number of depressive episodes in the following year as those who stopped using antidepressants.

In previous findings, Dr. El-Mallakh hypothesized that in some BD patients for whom antidepressants lose their effectiveness over time, continued use of the antidepressants may even cause depression. He called this condition 'tardive dysphoria'. "Antidepressants are useful medications, and you don't know if someone will be rapid cycling when you begin treating them. However, if someone is rapid cycling, you want to avoid using these drugs because the medication will probably increase mania, cycling, and depression," he said.

Handheld Brain Scanner

During our all-hands-on-deck social and medical efforts to detect head injuries when they occur, one device has popped up with revolutionary capabilities — the InfraScanner, a handheld brain hematoma screening system.

The device comes as 1.5 million people each year suffer new traumatic brain injuries, and as the national debate about TBI and concussions rages on. It also comes when we're paying more attention to these injuries at their moment of occurrence. According to the Centers for Disease Control and Prevention, emergency room visits for sports-related TBIs increased by 92 percent in the last 10 years, a good sign of better onsite detection.

MedLogic's InfraScanner allows medical professionals at sporting events, medics in the battlefield, or paramedics at the scene of an accident to detect early stages of intracranial bleeding. It helps to determine whether the injured party should be immediately transported to a hospital for neurological intervention, or held for observation and continued monitoring. "Another great advantage is that it can be repeated as many times as needed without further exposure to radiation from CT scans, since some hematomas can be delayed in onset," says Dr. Joseph Maroon, team neurosurgeon for the Pittsburgh Steelers.

"I feel comfortable recommending the InfraScanner as an adjunct tool—together with a history and neurological examination—as a valuable instrument that provides objective data when assessing a patient to rule out a brain bleed," he added.

Toward A True Winter's Rest

Since we first stood upright as human beings, our bodies have trended toward sleep and rest during the winter, induced to hibernate with the absence of warm days and sunlight. How do we do this with the combination of productivity pressure, cost of living, greater job expectations, 40-hour-plus work weeks, and our national caffeine addiction?

Many companies have focused on this problem. One, Solace Lifesciences, has developed a killer solution combining supplements and neuroscience technology, called NuCalm.

"Our brain communicates with the body through two channels — chemical signaling, and electrical signaling," said Solace Lifesciences' Jim Poole. "We add relaxation fuel to the chemical signaling, and create patterns for the electrical signaling that the brain recognizes as relaxation. If we commandeer both channels, as we're doing, then the brain will do what we direct it to do. Which is to relax."

The fact that NuCalm can predictably slow down the brain to levels aligned with deep relaxation and cellular restoration within five minutes is a testament to the technology. However, it is also a reminder that we, too, need to do our part.

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AVATAR DIRECTOR JAMES CAMERON

OFFERS A NEW WAY TO FIGHT CLIMATE CHANGE

> "We need to get big food and big ag's **hands off** regulators in Washington, or the government will **continue to support** a broken food system that is all about feeding people **processed foods** instead of healthy organic ones."

BY **John Gaudiosi**

Walt Disney Imagineering in collaboration with filmmaker James Cameron and Lightstorm Entertainment is bringing to life the mythical world of Pandora, inspired by Cameron's *Avatar*, at Disney's Animal Kingdom theme park. The awe-inspiring land of floating mountains, bioluminescent rainforests and soaring Banshees will become real for Disney guests to see, hear and touch. Scheduled to open in 2017, the *Avatar*-inspired land will be part of the largest expansion in Disney's Animal Kingdom history.

In addition to writing, developing new technology for, and preparing to shoot the three new *Avatar* films, Oscar-winner James Cameron has remained firmly entrenched in environmental issues. The director took the stage on September 15, 2015, at the first-ever U.S.-China Climate Leaders Summit to raise awareness about the impact of animal agriculture on climate change through his talk, "Food for Sustainable Nations."

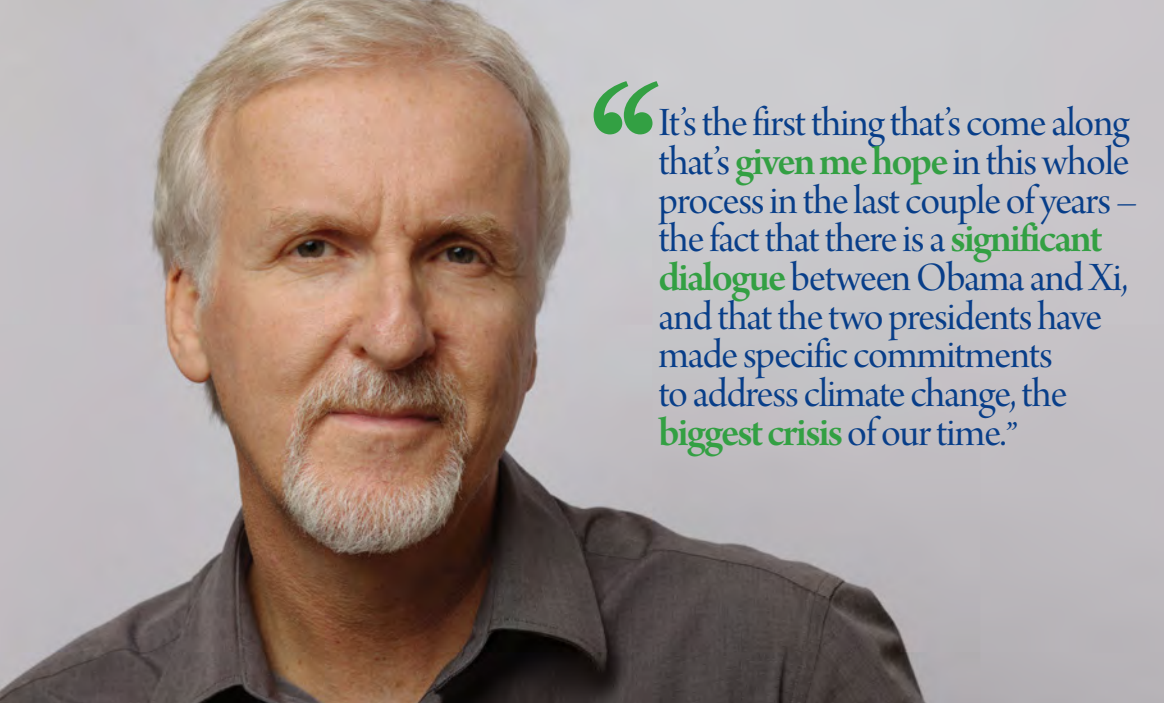
Cameron co-founded the Food Choice Taskforce to investigate how raising 70 billion cows, goats, sheep, pigs, chickens, and other animals humans eat every year are contributing to 14.5% of greenhouse gas emissions worldwide. As Cameron emphasized in his presentation, keeping global warming below dangerous levels isn't possible if a growing global population mirrors the current American diet and consumes the amount of animal-sourced foods eaten in the U.S.

The 61-year-old director discovered that switching to a plant-based diet not only cuts one's carbon footprint in half, it's also healthier – as referenced by the recent blue zone regions around the world that have the largest collection of centenarians (who live a mostly plant-based diet). So, Cameron went plant-based almost four years ago, and now he's using his stature to get the message out to the public about the connection between animal agriculture and climate change.

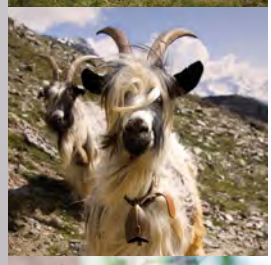
Cameron talks about these environmental issues, and discusses how sustainability is being integrated into Disney World's Pandora: The Land of Avatar in this exclusive interview.

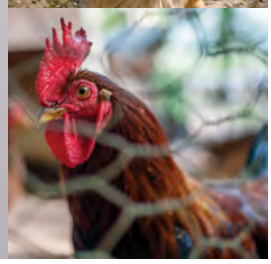
***Innovation & Tech Today:* How have you been involved in making a change when it comes to Food Systems?**

James Cameron: In late March, the Food Choice Taskforce launched the 'My Plate, My Planet' initiative to support the Dietary Guidelines Advisory Committee (DGAC),



> "It's the first thing that's come along that's **given me hope** in this whole process in the last couple of years – the fact that there is a **significant dialogue** between Obama and Xi, and that the two presidents have made specific commitments to address climate change, the **biggest crisis** of our time."





a government-appointed, independent scientific body, in its historic stand on sustainability as a criterion in the important Dietary Guidelines for Americans. The DGAC did something bold and important, citing that "Current evidence shows that the average U.S. diet has a larger environmental impact in terms of increased greenhouse gas emissions, land use, water use, and energy use..." and noting that "a diet higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in calories and animal-based foods is more health promoting and is associated with less environmental impact than is the current U.S. diet..."

The Dietary Guidelines for Americans affect U.S. nutrition policies and food procurement, including the $16 billion school lunch program. So, they are a very big deal, with far-reaching impact and implications. In support, we launched a campaign and got more than 100 organizations and individuals to sign on, a lot of them the big environmental groups like the Sierra Club, Conservation International, NRDC, Greenpeace and many others. We published an open letter to USDA Secretary Tom Vilsack and HHS Secretary Sylvia Mathews Burwell in *The New York Times*, *Washington Post*, and elsewhere, urging them to accept the sustainability recommendations of the very scientists they appointed to advise them.

Both Vilsack and Burwell have the opportunity to say forcefully that sustainability matters. What they do will be their legacy, for better or worse. But it's our future. They still have time to make the right choice.

***I&T Today:* How important is it to have the U.S. and China on the same stage at the recent L.A. summit talking about environmental issues like this?**

JC: It's critical. It's the first thing that's come along that's given me hope in this whole process in the last couple of years – the fact that there is a significant dialogue between Obama and Xi, and that the two presidents have made specific commitments to address climate change, the biggest crisis of our time. That's huge because you have the two biggest economies, the two biggest emitters, facing the primary issue that affects the globe, and that affects our children and their future. Everybody else in the world can link arms and try to solve the climate problem, but if the U.S. and China are not leading, or not on board with solutions, then it's not going to work. Obviously, we need to get India into that mix, as well, but the U.S. and China are a great place to start. We just need to make sure there's real action. Now.

***I&T Today:* What opportunities do you see this opening up for businesses interested in connecting with consumers who want to make a difference?**

JC: Bill Gates is saying if you can come up with great plant protein-based substitutes for people's favorite comfort foods, you're going to do very well. That's pretty obvious. We need a big reboot of the whole agriculture sector. We need to get big food and big ag's hands off regulators in Washington, or the government will continue to support a broken food system that is all about feeding people processed foods instead of healthy organic ones. Those are separate problems from the specific linkage I'm making about climate and the consumption of meat and dairy. That linkage couldn't be more important. People are generally unaware that what's on their plate has an impact on the planet.

***I&T Today:* Do you have any advice for businesses?**

JC: If you really want to surf this wave of change, and the changes are coming, people should look at creating businesses like the Veggie Grill, which serves good, wholesome plant-based food to people who are in a hurry. Chipotle and Veggie Grill have both proven you can provide good food served fast that's well-sourced and that's responsibly grown. Empowering people to make healthier choices is something that business can assist with, in general. And it's good business.

***I&T Today:* How will these types of environmental messages be integrated into Disney World's Pandora: The World of Avatar?**

JC: Disney has a commitment to sustainability and animal welfare. One of the reasons they've put Pandora: The World of Avatar in Animal Kingdom is because they wanted to emphasize social and environmental responsibility. It's very positive messaging; there will be an effort to provide good, healthy, organic, sustainably-grown food in what is largely a fast food environment.

Disney has made a commitment to us that it's going to promote sustainability as much as possible. The company already does it at Animal Kingdom broadly, and it's certainly going to promote sustainability within Pandora: The Land of Avatar because that's what the movie stands for.

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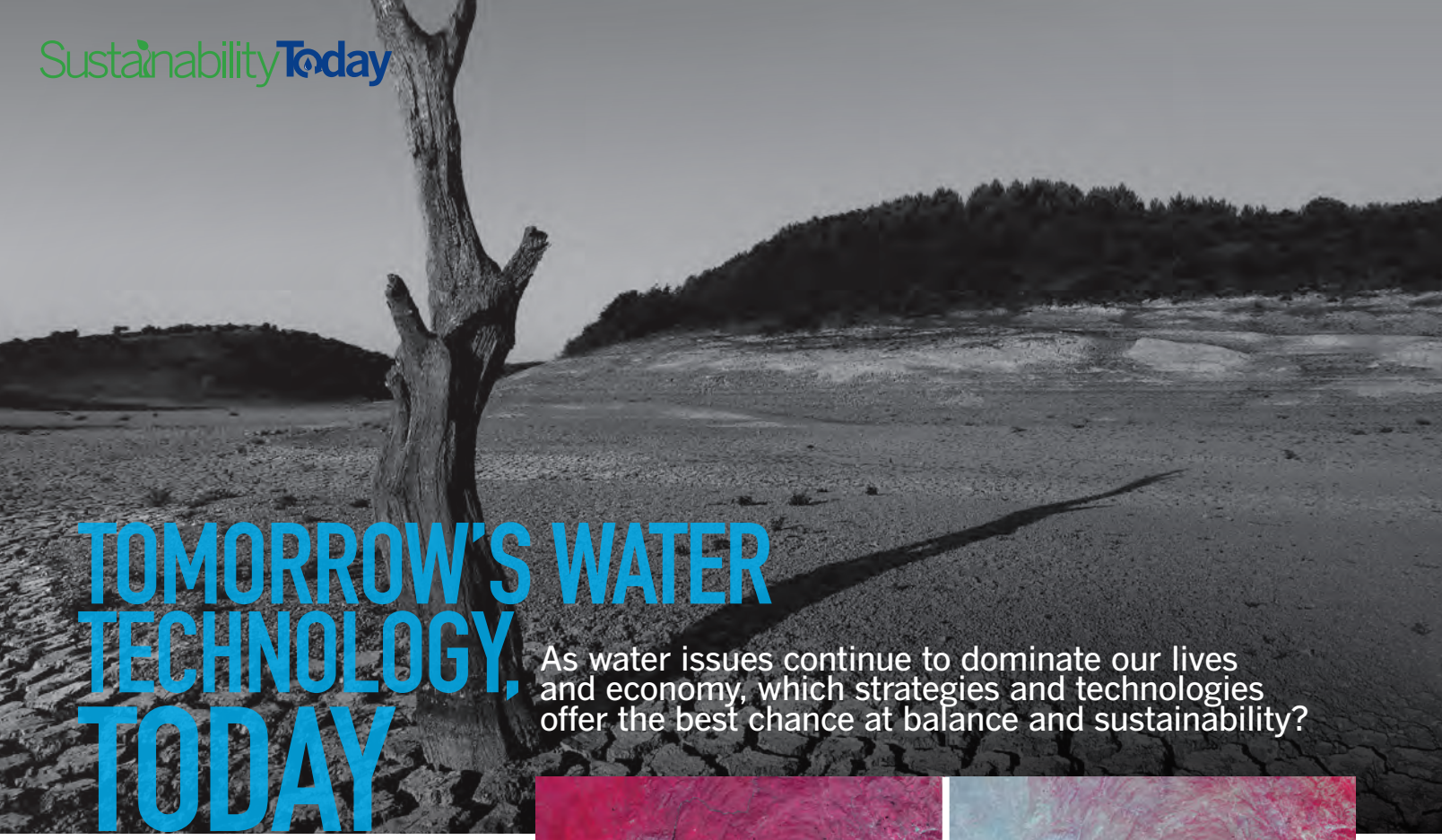


TOMORROW'S WATER TECHNOLOGY, TODAY

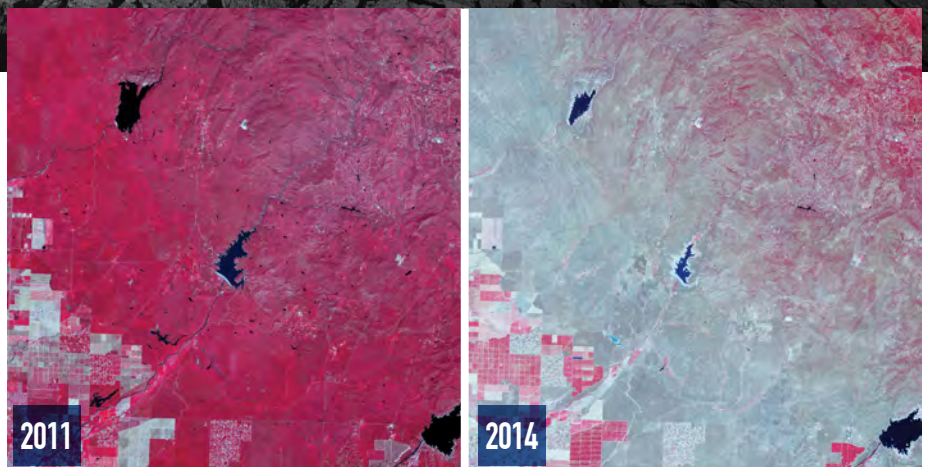
As water issues continue to dominate our lives and economy, which strategies and technologies offer the best chance at balance and sustainability?

By Lee Bell

Everywhere you look, the news is rough. NASA calls the West Coast drought the worst in a millennium. The Southwest continues to burn or flood, with no middle ground in sight. The East Coast, particularly the Carolinas, saw enough rain this summer to send Noah scurrying for building materials. Coastal New Englanders pray and hope there won't be 100-inch snowfalls the winter of 2015. Both U.S. coasts are losing prime real estate to rising sea levels and the vicious storms that gobble buildings, businesses, and lifestyles while riding those higher seas.

Meanwhile, we continue consuming water at voracious rates. One would think that with all the flooding, ice packs, oceans, and fresh water sources, we'd be okay. After all, isn't water the ultimate renewable resource? With 7 billion people tapping the 1 percent of all fresh water that is readily accessible, and desalination of the oceans still in its infancy, we cannot even say that anymore.

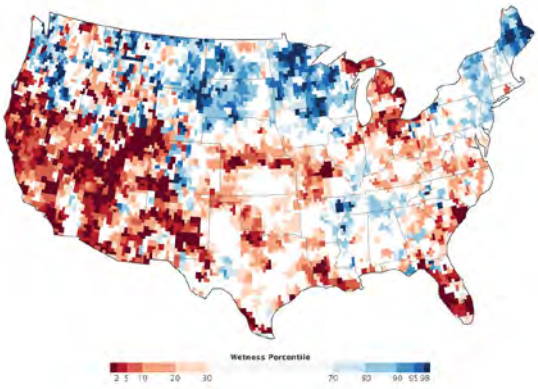
We've sounded this clarion call for decades. Now, we're living in it: by 2025, the UN predicts that nearly 2 billion people will live in areas plagued by water scarcity. Another 2 million people die annually from diseases caused by lack of safe drinking water, according to the World Health Organization.



NASA images show an area north of Fresno, CA on April 5, 2011 (left) and May 15, 2014 (right). This area includes H.V. Eastman Lake and Hensley Lake, built for flood control, irrigation, and recreation in the 1970s. At the time of the 2011 image, the landscape was comparatively lush with vegetation (which appears red) and the lakes were robust. After three years of drought, the 2014 scene shows a browned landscape and lakes that have shrunken considerably

Let's turn it over to NASA. The agency has found melted water on Mars, but forecasts a much different outlook on the West Coast. NASA used 17 computer models to determine that the West Coast drought has one parallel in the past millennium — the 11th century mega-drought that caused the mysterious disappearance of the ancient Pueblo people, the Anasazi. And, says report co-author Dr. Jason E. Smerdon of Columbia University's Lamont-Doheny Earth Observatory, "Even when selecting for the worst period, the 21st-century projections make the mega-droughts seem like quaint walks through the Garden of Eden."

People, businesses, and municipalities alike are fundamentally changing the way they utilize water. Companies have built water more and more into the center of their sustainability policies and practices, led by efforts such as Levi-Strauss' Water<Fabric initiative, which saves hundreds of millions of gallons per year; Water.org's partnership with Stella Artois, Europe's largest beer brewer, to provide more water to millions around the world; the water-reclamation work of the world's largest brewer, ABInbev; and even the National Hockey League, which is using state-of-the-art technology to recycle melted ice. It felt like water was everywhere at



After record-breaking rains pounded South Carolina in early October 2015, severe floods overwhelmed many parts of the state. On October 8, 2015 (center), the Advanced Land Imager on NASA's EO-1 satellite observed the flooded interior of South Carolina. For comparison, the image on the left shows the same area on October 15, 2014, as observed by NASA satellites. Note that the dark areas in the 2014 image are cloud shadows. (Right) The map above combines data from the satellites of the Gravity Recovery and Climate Experiment with other satellite and ground-based measurements to model the relative amount of water stored in underground aquifers in the continental United States.

the Sustainable Brands '15 San Diego conference – in discussions and sessions. It is front-and-center now, and will remain so indefinitely.

Now, if we can only kick our love of things like eating hamburgers (one hamburger requires 630 gallons of water to produce) and wearing cotton garments (one cotton t-shirt requires 700 gallons of water to produce). Since neither will happen, we turn to conserving in all other directions, relying on companies like Levi-Strauss and Patagonia to show us the way in sustainable clothing.

Our issues as individuals and businesses are well-documented. What about municipalities? Cities lose billions of gallons annually from leaky underground pipes, hydrants and reservoirs. In developing countries, it's far worse. These deficits become more profound when drought restriction measures often give priority to agriculture, which consumes 70 percent of available water. "In the old days, there was not so much stress on measuring, because we thought we had plenty," says Carey Hidaka, smarter water management expert at IBM. "It's a bit of a paradigm switch for the water industry, which like others is used to throwing new engineering developments at problems."

To solve these problems, most magnified in cities like Los Angeles, San Diego, San Francisco, and Seattle, we can turn to Canada. Water rationing in California continues at a 25 percent required reduction, despite welcome major off-season storms in late August and mid-October (the latter, the remnants of a hurricane that traveled *northeast from Hawaii to Alaska,* truly the sign of a warped sense of humor by the weather gods).

(continues on page 132)

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Building Community for Our Sustainable Future

A Conversation with KoAnn Skrzyniarz, Founder/CEO, Sustainable Brands

Ten years ago, KoAnn Skrzyniarz combined her business background with her deep love of, and concern, for our environmental and social future. Her goal? To reframe sustainability as the biggest innovation opportunity of the 21st century – rather than simply a risk or cost savings play, and to help brands prosper by leveraging environmental and social innovation to build a flourishing future,

In 2007, the first Sustainable Brands event was held, drawing 225 people to New Orleans. Today, Sustainable Brands is the first name among sustainability conferences and online communities worldwide. The community reaches over 1 million readers around the world, with major events across 6 continents in cities such as San Diego, Boston, Rio de Janeiro, London, Kuala Lumpur, Buenos Aires, Istanbul, Barcelona, and Bangkok. Cape Town, Copenhagen, and Sydney will launch in 2016. More than 10,000 people from 80 countries attend Sustainable Brands events annually.

Skrzyniarz talks with *Innovation & Tech Today* about Sustainable Brands, the growth of sustainability as our way of doing business and living, and more in this interview.

***Innovation & Tech Today*: Tell us a little about Sustainable Brands.**

KoAnn Skrzyniarz: Sustainable Brands is a global community of change-makers, who are working to tap environmental and social purpose as a driver of business growth and value. Our goal is to shift the world as quickly as possible to sustainable models of commerce that respect the limitations of our natural systems, decouple business growth from negative environmental impacts, and respect and support our need to redesign societal aspirations away from consumption for consumption's sake. Sustainable Brands events are where the community convenes face to face around the world. The community is also alive and well online on SustainableBrands.com, where members read, share stories, and research best practices and trends, as well as in our social media groups on Facebook, Twitter, LinkedIn, and YouTube.

Our goal with Sustainable Brands is to bring together all the parts of the ecosystem required to bring a more environmentally and socially respectful and resilient brand to market – from technical sustainability, packaging, materials and supply chain experts to brand strategy, marketing, and innovation professionals. We seek to help them build a common language and a shared view of what's possible so they can begin to collaborate on envisioning, building, and selling brands that are better for their customers, better for suppliers, and better for the communities in which they operate, as well as for their investors.

***I&T Today*: Sustainable Brands conferences have grown steadily. At the past three San Diego events we've attended, we've seen well over 1,500 highly engaged attendees, and you now have conferences around the world.**

KS: Actually, our entire business has been growing organically, driven by demand from people around the world to participate in the conversation we've been exploring since 2007. In addition to our conferences, we also have a growing corporate member network, which includes companies like Natura, Johnson & Johnson, Disney, Target, BASF, Unilever, Ford, and many more who are meeting in private member meetings throughout the year to share learning and discuss challenges.

***I&T Today*: 'Sustainability' and 'sustainable' have gone from being words of environmentalists and alternative lifestylists to the center of corporate and personal living. Now, everyone seems to claim an understanding, or at least an idea, of what sustainability means. What does it mean to you?**

KS: We launched Sustainable Brands with the view that sustainability is a mindset honoring whole systems thinking, which seeks to understand the impact of our actions on the long-term sustenance of life on earth. There are many things which play into this. Clearly, if our natural world and environmental systems are not protected, we will not be sustained as a species.

However, social behaviors such as unhealthy consumption, inequality, exploitation, religious conflicts, and cultural homogenization and other territorial conflicts that lead to war or other forms of violence are all 'unsustainable', and we see opportunities for brands to positively address each of these challenges and more.

***I&T Today*: Do you have an example of a brand, company, or segment that does good work in this area?**

KS: Natura, the top cosmetics brand in Brazil, is a great example of a company seeking earnestly to understand and behave in innovative and sustainable ways. From their commitment to sustainably source ingredients from the Brazilian rainforest, to their efforts to support economic empowerment of local indigenous peoples, to their commitment with the Sou brand to remind consumers that consuming only what's essential is a better path to a healthy happy life, they are an exemplar on many levels. That said, a journey through our website will uncover countless examples from here in the US and around the world.

***I&T Today*: What is needed to take the concept of sustainability out of the field of discourse and into practice inside companies?**

KS: A commitment to action. There are so many tangible examples around the world of solid return on investment today that companies that aren't taking notice and taking action are at risk of falling behind. Unilever recently announced that its strongest fastest-growing brands, which are delivering half its growth at twice the growth rate of other growth brands, have purpose embedded in the core and are part of their Sustainable Living Brands portfolio.

Companies need to start by looking at and quantifying the range of material impacts they have on the environment and society as a function of their activities, identify best practices for reducing negative impact, and conversely, actually intentionally delivering positive impact. It's worth noting that leadership can often be found outside one's own sector, which is part of the beauty of our multi-sector, multi-stakeholder community.

***I&T Today*: Can products known to cause harm be considered sustainable? And how are companies working around that? For instance, Coca-Cola is commercializing other products, like teas and water. Is this to change its image?**

KS: Coke would argue, and I likely would too, that sugar by itself is no more harmful than any number of things we consume. It can add an enjoyment/delight factor to life with little to no downside if consumed in healthy moderation. Our human lifespan has expanded tremendously over the decades, despite the existence of Coke throughout much if not most of the world. The problem is overconsumption. That said, for sure, as global consumer trends shift toward more conscious consumption of not only food, but clothing, personal care products, transportation, and more, companies have the opportunity to actively partner with their customers to shift their portfolios to products and services that are healthier for them, their communities and the planet. Smart companies realize this is much more than an image issue – it is a strategy and innovation issue, and just smart business.

***I&T Today*: Tell us a little more about Coke's new strategy because it certainly is lighting up sustainability headlines and keynotes the world over.**

KS: Coke is aware of the risks to their consumers, to their brand and to their businesses of encouraging, or allowing, unabated the overconsumption of their products that can lead to obesity. They're also aware of other material impacts of their activities on water use, for example.

***I&T Today*: Coca-Cola's initiative really hits on the human side of sustainable living, doesn't it? When we reviewed it, we found it hard to believe it came from a soft drink manufacturer.**

KS: Yes. Coke's sustainability strategy focuses on *Me, We, The World,* and then *Women, Water and Wellness*. That is to say that generally, as humans, our awareness tends to start with what goes in me (or my family), then what goes on me (or my family), then what is around me in my home, my community and the greater world. For this reason, we tend to be most aware of, and motivated first by, moving toward healthier eating, non-toxic personal care products, textiles, and home furnishings; those markets are moving most quickly toward favoring organic, non-toxic, locally manufactured brands. That said, this awareness, once it becomes real for people, tends to extend to the more indirect spheres of consumption like our transportation, and ultimately our technology.

(continues on page 133)

'Smart companies realize this is much more than an image issue – it is a strategy and innovation issue, and just smart business.' –KoAnn Skrzyniarz

Speakers at Sustainble Brands '15 San Diego talk water use practices, materials, and much more to promote business sustainability.

Behind Lindal's 70 Years of Green Home Building

When the green construction world gathers in Wachington, D.C. for November's Greenbuild International Conference and Expo (*I&T Today* is an official media partner), builders and suppliers alike will celebrate the strides made in sustainable living and building in the U.S. No longer can Europe claim to corner a market they'd begun out of necessity after World War II.

Or is Europe looking too far? Long before the words 'green', 'sustainable,' and 'building' were connected, Lindal Cedar Homes was constructing homes with materials harvested from forests the company helped to renewed itself. They always worked closely and well with do-it-yourselfers as well as construction firms. That premise has continued to today: a quick tour of the Lindal website offers up home styles, viewing of floor plans and planbooks, material options, and numerous styles of homes, including modern designs. It continues a trend we also see in home automation: do-it-yourself is a far different and easier ball game than it was 25 years ago, when out of the mouth of babes, we started hearing the word 'sustainability.'

The entire philosophy was advanced by Walter Lindal, who decided to integrate green living into the company culture at the end of World War II. Agribusiness, mass production mentality began buzzsawing through the U.S., sweeping up everything from family farms to construction companies and logging concerns. However, Lindal stuck to his guns. Today, Lindal's Turkel Design single-family home offering remains the only such model selected for *Time* magazine's Green Design 100, a nod to the exquisite craftsmanship, warm comfort, and commitment Lindal made in a far less hospitable time for sustainability initiatives.

TOP SUSTAINABLE MATERIALS

A look at the top sustainable materials for the packaging, construction, plastics, and fabric industries — all big-volume utilizers of raw resources:

Packaging

1. Greenline Biodegradable Bags
2. Burlap Bags
3. Cellophane Bags
4. Recycled corrugated boxes
5. Recycled chipboard boxes
6. Reverse tuck cartons
7. Recycled DVD, CD, and Video cases
8. Green Anti-Static Peanuts
9. Recycled Newsprint
10. Recycled Padded and Bubble Mailers

Plastics

1. Starch-Based Polymers
2. PLA Polyesters
3. PHA Polyesters
4. PCL Polyesters
5. Liquid Wood
6. Chicken Feathers
7. Milk Protein
8. Plastic Additives
9. Reusable Shopping Bags
10. Glass

Construction

1. EARTH
2. Vacuum Insulation Panels
3. Low-E Windows
4. Recycled Wood/Plastic Composite Lumber
5. Structural Insulated Panels
6. Cool Roofing
7. Straw Bales
8. Plant-based Polyurethane Rigid Foam
9. Insulating Concrete Forms
10. Recycled Steel

Fabrics

1. Hemp
2. Organic Cotton
3. Bamboo
4. Linen
5. Organic Wool
6. Recycled Polyester
7. Recycled High-Tech Waterproof Wear

(SOURCES: HowStuffWorks, Green Choices, ULine)

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NEVADA'S TWO-CITY TECH SURGE

By David Bunker

(Above) By 2020, the Gigafactory will reach full capacity and produce more lithium ion batteries annually than were produced worldwide in 2013. (Right) June 2014 groundbreaking of the Gigafactory outside Sparks, Nevada.

Technology entrepreneurs come to Nevada to think big.

Here, Tesla's Elon Musk imagined a $6 billion lithium ion battery factory in the sagebrush east of Reno, and then made it a reality. Here, Switch's Rob Roy dreamed up the world's largest data center, and then got right to work building it. And in perhaps one of the wildest examples of dreaming big, Zappos' Tony Hsieh came here to create his own technology ecosystem from scratch.

But not all of Nevada's technology stories are so outsized. A very important, but less visible, foundation of startups and entrepreneurs are building companies, and an entrepreneurial culture, from the ground up in both Reno and Las Vegas. Walk down Reno's unassuming but growing Startup Row, and you'll stroll by startups like Filament (an IoT company that has landed funding from Bullpen Capital, Samsung Ventures, and Verizon Ventures), Inquiri, and TrainerRoad (a cycling performance technology). A visit to Tony Hsieh's downtown project reveals a variety of promising and fast-maturing technology startups — orbiting around the nucleus of Hsieh's Zappos hub.

Fueled by affordable land, ample space, and proximity to Silicon Valley and Los Angeles, Nevada is experiencing a technology boom that is transforming the economic landscape of a state renowned for its reliance on casino gaming. The technology growth is coming both from publicly traded juggernauts that are relocating to the state and bootstrapped startups with big ideas.

The Twin Engines

Nevada has two interconnected, but separate, sources of technology growth — relocation and homegrown entrepreneurship. Most of the headlines have gone to the relocating business — Zappos, Apple, Switch, Tesla, Amazon, and Microsoft Licensing.

These businesses have brought in an influx of thousands of jobs as well as an outsized impact on the perception of Nevada towns previously pigeonholed as a collection of casinos.

But an impressive startup ecosystem is also picking up steam. And the two technology engines are now feeding off of each other. Zappos' relocation to Las Vegas set off a round of startup investment that the city had never seen before as Tony Hsieh pumped $350 million into tech startups and small business in old Las Vegas. Rob Roy's immensely successful Switch Supernap gave birth to the Innevation Center, a 65,000-square-foot collaborative workspace that now houses companies like Banjo, Originate and Telesphere. Now Switch is replicating the successful model in Reno, where a Northern Nevada Innevation Center, in partnership with the University of Nevada, Reno, is bringing together some of the brightest minds in drone research and entrepreneurship.

In Reno, the halo effect of the $6 billion Tesla Gigafactory and a new Switch data center is still in its infancy. But economic development experts expect a reverberating impact of ancillary companies, spinoffs and new investment.

Doug Erwin, Vice President of Entrepreneurial Development for the Economic Development Authority of Western Nevada, points to the impact that technology-driven companies like Internet Gaming Technology (IGT) has already had on the area when forecasting what Tesla and Switch might bring to the area. Alumni of IGT have gone on to found companies like cycling software maker TrainerRoad, creating new products and new technologies in Reno when Reno was still emerging as a technology economy. He expects that cascading effect of entrepreneurship to be intensely magnified as Tesla, Switch, Apple and other technology heavyweights attract new talent and investment to the area.

Craig Macy and the Silicon Valley Satellite City

Craig Macy is the CEO of Onstream, an intelligence device platform for transforming connected devices into smart devices. The company launched in the summer of 2015 with $2 million in funding from Traynor Family Enterprise, and is partnering with companies such as Amazon, Microsoft, and Clearscale to deliver real-time intelligence to devices, accelerating time-to-market for future-proof intelligent features all while increasing overall device security.

***Innovation & Tech Today:* What brought you to Reno?**

Craig Macy: I lived in Silicon Valley from 1995 to 2005, and in the heart of San Francisco during one of the peaks of the housing boom. When deciding to start a family, we wanted to move to a place we felt was more convenient and affordable. Back then, Reno was booming, so we came here to try to catch the next wave. I didn't want to be in the place that was peaking. I wanted to go where the next big thing was going to happen. It is an entrepreneur thing.

But the 2006 boom was really an artificial housing boom. Reno took it on the chin during the Great Recession, but this turned out to be pure opportunity. We've figured out what we want to be, and we're making it a reality. We have a start-up community that is starting to experience the rapid growth we expected back in 2005.

***I&T Today:* How is it different to found and scale a company in Reno versus founding and scaling a company in Silicon Valley?**

CM: It certainly is less expensive in almost, if not every, regard. And because it is a smaller community, you don't get lost in the noise. Everyone can reach a higher level of productivity with less impact to their personal lives. You don't have a one-hour commute to work each way. You don't have to carve out half a day to get to a meeting. That translates to dramatically less stress over a year or two. It is only a 3.5-hour drive to the Bay Area. We're the closest tech boom to Silicon Valley. There is no debating that fact.

***I&T Today:* What is the entrepreneurial environment like in Reno, and how has it changed over the time you've done business in Reno?**

CM: When I first arrived, companies were very secretive about what they were doing. There was a poorly-coordinated ecosystem for supporting startups. In the last ten years, that has made a 180-degree turn, and the opposite is true. Startups are talking. Local services professionals are providing support. Seasoned veterans, including both investors and former entrepreneurs, are lending a hand.

***I&T Today:* How do you see Reno's technology economy growing in the future?**

CM: We're growing both organically and artificially. Companies are re-locating here, and that type of artificial growth is critical to boosting the organic growth already underway. The two are symbiotic.

–DB

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A Tale of Two Cities

Nevada is bookended by two cities — Reno and Las Vegas — each with its own personality and unique technology renaissance. Reno is fueled by its proximity to Silicon Valley, its forward-thinking, research-oriented university, and its advantages for everything from data centers to drones and advanced manufacturing.

In Reno, downtown casinos have been transformed into upscale condos with views of the Truckee River and the towering ski slopes of nearby Mount Rose. A bustling Midtown has matured organically into a cocktail of hip bars, coffee shops, startups, and eateries. South of town, golf course communities at Montreux and Parc Foret offer luxurious living with limitless recreation opportunities at a fraction of the price of the Bay Area. Reno's international airport and proximity to Lake Tahoe continue to attract businesses and residents looking for a high quality of life in a city on the rise. Tesla, Switch, Apple, Microsoft Licensing, and Amazon's choice to put down roots in the area is changing the region's identity and economy simultaneously.

The Las Vegas technology sector mirrors a startup in many ways. Jumpstarted by seed money from Tony Hsieh, Vegas is now maturing and experiencing some of the growing pains that venture capital-backed companies experience as they scale and wean themselves from seed capital and ramp up revenue.

Las Vegas has a wide array of technology companies. The Las Vegas Startups website lists 150 active startups on its site — everything from 3D printing manufacturer Full Spectrum Laser to one of three offices of personal assistant company Zirtual. Originate, a successful custom software engineering firm, opened an office in Las Vegas after being launched in Los Angeles by Rob Meadows, a University of Las Vegas graduate. Perhaps Las Vegas's shining startup star is Banjo, a high-profile digital company that *Inc.* Magazine recently called "The Most Important Social Media Company You've Never Heard Of."

Rob Mallery, the Vice President of Talent at Originate, graduated from high school and college in Las Vegas before leaving to work in Los Angeles. Today, he is back in the city he grew up in, recruiting engineers to work in a growing software company.

It is an outcome he never thought possible when he left a casino-dominated Las Vegas with no technology industry at all.

"As I look back to what was going on in Vegas, I would have worked in a hotel or been a server at a restaurant. Vegas never would have been an option when it came to tech. There was nothing here," said Mallery.

Four Flourishing Nevada Tech Sectors

Nevada is particularly suited for specific technology sectors. The state is a testing ground for the FAA approval of drones. Here are four technology sectors that have a bright future in the state. –DB

1 Data Centers and Information Technology
Nevada's information technology jobs grew by 22 percent between 2011 and 2014, even as wages in the sector grew by 12 percent, according to the Nevada Governor's Office of Economic Development.

2 Advanced Manufacturing
Nevada Manufacturing jobs grew by 16 percent from 2011 to 2014 while wages increased from $48,500 to $53,000. Companies like Lincoln Electric Cutting Systems and Pololu Robotics and Electronics are pushing the limits of tech-driven manufacturing.

3 Unmanned Aerial Systems
Australian drone delivery company Flirtey recently set up shop at the University of Nevada, Reno, and became the first to demonstrate and test drone delivery in the U.S. with Federal Aviation Administration approval. Las Vegas-based Skyworks Aerial Systems is introducing programmable drone packages for education and customization. And UAV giant Drone America calls Reno home.

4 Homegrown Start-ups
Startups bring tremendous entrepreneurial energy, but their life cycles can be mercurial and short. It takes a couple of years and a certain maturity to see what will grow out of a startup scene.

Water Innovation In The Desert

Nathan Allen is the Executive Director of the Nevada's Water Center of Excellence, a Las Vegas-based organization that promotes water technology commercialization. Allen has worked as an assistant staff scientist for The University of Arizona at Biosphere 2, founded his own environmental startup, Terraswell, and has held board positions at the Agrarian Freedom Project and the Arizona chapter of the U.S. Green Building Counsel.

***I&T Today:* Why is Nevada positioned favorably to tackle water technology problems and opportunities?**

Nathan Allen: I think Las Vegas and Nevada is underappreciated for the influence and expertise it has in the Southwest within the water industry. The Southern Nevada Water Authority and our utilities in the state directly collaborate with other utilities in the Colorado River basin. That is a direct connection to 40 million water customers.

***I&T Today:* What do you see as the future of both the Nevada's Water Center of Excellence and water technology entrepreneurship in Nevada?**

NA: Nevada will continue to capitalize on its expertise in water management. One thing that will aid that effort is integration across water sectors. For years, drinking water was seen as different from wastewater, irrigation water, and other forms of water. As we make each drop of water more valuable, we are seeing technology companies that used to just focus solely on drinking water use their same leak detection system or efficiency software across the various forms of water usage.

***I&T Today:* Technology is often pigeonholed in the public's mind as app or software development, but we are seeing large advancements in technology in traditional industries like water, manufacturing, and aerospace. How do you see technology unfolding in these more traditional sectors of the economy?**

NA: At its root, technology is applied science. In the 20th century, technology enabled our modern standards for drinking water and sewage treatment. In the 21st century, we are going to see applications for water technology as a part of the Internet of Things. The amount of investment in Big Data to support IoT applications has been in the tens of billions of dollars.

–DB

The Future

Both Reno and Las Vegas are looking for the next generation of technology growth. Tesla, Switch, Zappos and other large technology companies have had a big impact on the state, but experts are looking for acquisitions and exits in both cities to signal true maturation — a Downtown Project startup to hit it big or the homegrown talent to hatch the next billion-dollar technology company.

"We have not gone through a cycle or two of acquisition money," said Rob Mallery, the vice president of talent for Originate. "Banjo probably has the best chance of a very large exit. That would be the next Zappos plus. That would inject an enormous amount of entrepreneurialism and funding into the space."

Mallery said that the Las Vegas entrepreneurial environment has grown rapidly since he graduated the University of Las Vegas. Funding is here, talent is still hard to come by but easier to attract, and the environment is ripe for the next round of growth — a second generation of tech growth branching off of the Innevation Center and the Downtown Project.

"We are actively trying to bolster and improve that ecosystem as a whole," said Mallery. "My goal personally is to raise that technology bar and get those kids who don't even know that Vegas is an option to come back to the city."

Doug Erwin, the vice president of entrepreneurial development for the Economic Development Association of Western Nevada in Reno, sees something similar coming out of Reno. His hope is that Tesla will bring in talent that will spin off their own startups, and the Reno entrepreneurial environment will be fertile ground for those businesses to flourish.

"I am really excited to look three years ahead when these startups spin out of Tesla," said Erwin. "When people want to spin out of Tesla, there will be that supportive infrastructure. Had they spun out of Tesla, three years ago, not so much."

All of that entrepreneurial potential and the fact that one of the most magnetic personalities in technology picked Reno to build his outsized gigafactory is changing the one thing that has held Reno back maybe even more than tech talent or venture funding — the perception that it was still a crumbling casino town.

"Nevada is a pioneering place, and that pioneering spirit really aligns with entrepreneurship," said Erwin. "Elon, because he is such a great marketer and such a big thinker, the energy around what he is doing will have huge psychological impact on people moving to Reno."

What to Expect at CES 2016

By Gary Shapiro

Four days in early January energize and inspire me for the rest of the year. The spot is Las Vegas. The excitement is off-the-charts. The event is the greatest innovation tradeshow in the world – CES.

Thousands of innovators – from Fortune 100s to startups – gather in Las Vegas, Jan. 6-9, to showcase game-changing technology at the Consumer Technology Association's (CTA) annual industry event. CES 2016 will feature more than 3,600 exhibitors in more than 2.2 million net square feet of exhibit space, attracting attendees and exhibitors from more than 150 countries.

Since it began in 1967, CES has been the proving ground for innovators unveiling breakthrough technologies, serving as the launching pad for everything from DVD players and tablets to 4K Ultra HDTVs and drones – and much more. Today, once unconnected industries gather at CES. For example, at CES we expect nine of the top carmakers – Audi, BMW, Chrysler, GM (Chevrolet), Ford, Hyundai, Mercedes, Toyota, and Volkswagen – to showcase amazing innovations in driverless and in-car technology.

In addition to automotive tech, the 2016 show will feature more than 20 category-specific Marketplaces showcasing innovations ranging from robotics, unmanned systems and augmented reality, to 3D printers, smart home technology, and wearables.

Virtual reality – once more at home in science fiction movies – is becoming even more of a true reality at CES 2016. Forty exhibitors – including Oculus VR, Sphero, and Virtuix – plan to showcase the next wave of immersive multimedia for virtual reality systems and environments in the Gaming & Virtual Reality Marketplace. And the all-new Augmented Reality Marketplace will feature disruptive technologies that can change how we learn and experience the world, with exhibitors such as ASRC Federal for NASA, Marxent, and Occipital.

CES 2016 will also feature the latest in enhanced audio and video innovation, providing consumers with the 360-degree entertainment experience they crave. 4K Ultra HD and high-resolution audio create an all-encompassing technology journey. 4K Ultra HD has revolutionized home entertainment, with four million units sold in 2015, resulting in $5 billion in revenue. Globally-recognized companies such as LG, Panasonic, Samsung, and Sony will unveil the next-generation of 4K technology at the show.

More than 20,000 new products are launched at CES every year. Major introductions at the 2015 show included Bosch's first-of-its-kind BME680 environmental sensor; DISH Network's Sling TV; and the Bragi Dash wireless smart headphones, which have become an all-time top 20 crowd-funding campaign on Kickstarter.

CES attendees see the most influential technology companies in the world – think GoPro, Intel, and Samsung – to name a few. They also discover the most innovative startups on the planet in the Eureka Park Marketplace. Now in its fifth year, Eureka Park is an awe-inspiring curated exhibit area that has, since 2012, featured more than 800 startups with hundreds of cutting-edge technologies and provides rising stars an opportunity to connect with suppliers, manufacturers, investors and media, to grow their businesses.

Attendees can also look forward to an extensive conference program featuring more than 220 sessions and 800 speakers, including keynote addresses from Brian Krzanich, CEO of Intel, Reed Hastings, CEO of Netflix, Mary Barra, CEO of GM, Dr. Won-Pyo Hong, president and chief marketing officer of Samsung Electronics, and me. Conference program sessions – covering topics ranging from content monetization to cybersecurity – offer a unique opportunity to engage with industry experts, hear from startups and discover the backstory on how content, creativity, technology, brand marketing and influencers come together.

CES is the world's gathering place for all who thrive on the business of consumer technology. It simultaneously reflects and drives the magic, wonder, energy and promise of that consumer technology, while bringing together leaders from a broad array of industries to survey 'what's out there' and to interact.

More than 150,000 attendees will travel to Las Vegas for CES to connect with key stakeholders, make game-changing deals, and experience the future of consumer technology. The show saves business executives from traveling an estimated 3.5 million passenger miles for business trips, because so many of the key people they need to meet to make those deals happen are also at CES. Our attendees report an average of 33 meetings across the four-day show.

From the show floor to the keynote stages to the conference programs and the hundreds of networking opportunities all around Las Vegas, a remarkable array of innovation will be on display at CES. This is the one time of year when what happens in Vegas does not stay in Vegas – it's impossible to contain the wonder, excitement and magic of CES. And we already have our sights set on CES 2017, our 50th anniversary show, because we're always looking for ways to grow, evolve, excite and innovate. Technological innovation never rests, and neither do we.

Gary Shapiro is president and CEO of the Consumer Technology Association (CTA), the U.S. trade association representing more than 2,000 consumer electronics companies, and author of the New York Times *best-selling books,* Ninja Innovation: The Ten Killer Strategies of the World's Most Successful Businesses *and* The Comeback: How Innovation Will Restore the American Dream. *His views are his own. Connect with him on Twitter: @GaryShapiro*

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ACT TWO: NO BARRIERS FOR ERIK WEIHENMAYER

In our Summer Issue of *Innovation & Tech Today*, we spoke with Erik Weihenmayer, one of the world's most amazing athletes. Weihenmayer's message of relentless empowerment and optimism is contagious – especially if you ever have the honor of speaking with him. His attitude also sheds light on how he claimed the title of the first blind person to summit Mt. Everest, which is arguably (and incredibly) one of his less impressive accomplishments.

▲ Weihenmayer ice climbing in the Adirondacks.
◀ Backcountry skiing in Mayflower Gulch, CO.

Interview By
Kelsey Elgie Domier and Charles Warner

Besides kayaking the Colorado River and climbing Mt. Huntington, Erik Weihenmayer is changing thousands of lives through his No Barriers programs. No Barriers, No Barriers Youth, and No Barriers Warriors are dedicated to helping people overcome the barriers in their lives – whether those are physical, emotional, psychological, socioeconomic, or otherwise. In the second part of this exclusive interview, Weihenmayer shares his perspective on his famous Everest climb, his inspiration, the loss of his eyesight, and the personal importance of No Barriers.

***Innovation & Tech Today:* Tell us about planning your Everest trip. What was your first thought when you reached the summit?**

Erik Weihenmayer: It was one of the most fulfilling things I've ever done – a No Barriers moment. As far as preparing for the trip, one of the most important things was finding someone to lead the team. That person was Pasquale Scaturro. He's been to the Himalayas a bunch of times, and he had great connections there. And he believed in this. Pasquale used to have dreams of us summiting Mt. Everest. He would wake up with tears in his eyes. He knew if he could get me to the summit, it would be the most challenging thing he had ever done. It inspired me because I knew there were a lot of people who wouldn't touch our project with a ten foot pole.

It was a good lesson on the kind of people who you want to surround yourself with. The key to this type of achievement is finding the right people and going through the preparation process.

I think by the time I got to Everest, I was more prepared than most people on that mountain. I also had a team of good friends. Nobody on the team was paid to be there. We were just a group of guys that wanted to take care of each other.

When I finally got to the summit with my team, it really overwhelmed me how much everyone really stepped up. The National Federation for the Blind sponsored us, so it was really an achievement for blindness. What some people don't know is that 70% of working age blind people are unemployed to this day. And those in the Federation really stepped up and helped us – car washes, bake sales, and more. When I attended their yearly event in Atlanta, 5,000 blind people gave me a standing ovation. I was so proud to be a sort of symbol for them.

***I&T Today:* It sounds like the camaraderie of the team and overcoming adversity is a big part of the experience – not just getting to the top.**

EW: Absolutely! The success of the climb is all about doing things well and together. I was climbing with Mike Gibbs on Mount Huntington recently. Mike and I have been climbing since the 90's. (We are all on the over 40 team. I think Dave Schuman is 45. I'm 46, and Mike is 48. We're all the old farts!) When you are hanging on that bivy, you take your crampons and boots and hang them so carefully. You really have to strap it in. If you lose a boot up there, you are so hosed!

***I&T Today:* You guys are like *The Expendables*.**

EW: [Laughs.] We are like that!

***I&T Today:* Who inspires you, Erik?**

EW: Definitely my parents. I'm very lucky to come from a family where both my parents were adventurous. My dad was a Marine; he flew A4's in Vietnam. My dad would have gotten an exemption from the draft because he graduated from Princeton, but he signed up. My mom also had an adventurous spirit. She travelled the world for her business.

There was a show called *That's Incredible!* I used to watch when I could still see a bit out of one eye. I loved it. It was always something scientific or out of this world.

One episode focused on Terry Fox, who lost a leg to cancer. It was a paradigm shift for me. After he lost his leg, he decided he was going to run across Canada. He ran thousands of miles on a clunky prosthetic leg above his knee. This was all before they had the new prosthetics that are available today. Seeing that made such an impact on me because I thought you were supposed to retreat, dig your heels, and focus on survival in these situations. But, Terry did the exact opposite.

It took me years to understand why he did what he did. Instead of allowing that darkness to crush him, he grabbed it and converted it into something else. He used that energy to propel himself forward.

Maybe there are barriers that you will never break through – like me being blind. I'm not going to be sighted. Ever. But you know, sometimes when you confront those barriers, you find hidden strengths you never may have discovered without the barrier itself.

***I&T Today:* Would you say the loss of your eyesight has been a gift?**

EW: Absolutely. 100%. Before I was blind, I was a normal kid. I played baseball and basketball, and I loved those sports. But, the only reason I turned to climbing was because I couldn't do them anymore. Climbing put me on an entirely different trajectory that I never would have known existed without having gone blind. People

70% OF WORKING AGE BLIND PEOPLE ARE UNEMPLOYED TO THIS DAY.

ask me, "What would your life be like if you could see?" How would I know that?

***I&T Today:* Space travel for civilians isn't that far off. Have you ever thought about exploring the final frontier?**

EW: I have, actually. We have a board member at No Barriers who wanted to sponsor a couple people to go on what they called 'vomit comet' – planes that bring you to microgravity for a couple minutes. It's fascinating how quickly technology is evolving with new frontiers being available. That's a little different, but it would be pretty exciting to take a trip into space.

***I&T Today:* Tell us about No Barriers.**

EW: No Barriers USA has been a big part of my life. Increasingly so. And it's really exploded. We went from experiences where we had a couple dozen people to our most recent, which had over one thousand people.

It's so cool to be a part of this community and be surrounded by people searching for that No Barriers life. I'll be sitting at a table with a kid who has socioeconomic challenges, who never left the pavement, and he's looking to go on his first hike. Maybe it's a blind kid. Maybe it's a person who had three strokes and thinks they are totally out of the game. Or a person who has struggled with obesity and has literally lost 100 pounds to be there. Or maybe a person with a full heart transplant. Maybe a CEO who is looking to bring that No Barriers message back to their team.

We also bring in 'Pioneers', or people who have broken through these barriers, because the best way to teach this stuff is through people who have done it. So, we bring in dozens and dozens of them. We have people who have 3D-printed prosthetic limbs on computers and distribute those to developing countries. There will be someone experimenting with exoskeletons, or someone with one arm who kayaks. You name it.

This is a wonderful melting pot of people who are all sharing and getting stronger as a community. No more of this waiting around for ideas to plop in your lap. It's a great thing to be part of such a proactive community.

THE KEY TO THIS TYPE OF ACHIEVEMENT IS FINDING THE RIGHT PEOPLE AND GOING THROUGH THE PREPARATION PROCESS

***I&T Today:* What does it mean to live a No Barriers Life?**

EW: It's about developing a map you can look at in terms of your No Barriers Life. You can figure out what those elements are that every human confronts along the big journey. It's about building some tools that you can access. It's about a mindset. It's been really fun to be able to think about making a bit of ground in terms of what that looks like – and being able to pass that off to people. No Barriers has really exploded.

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NINE TRAINING TIPS FOR LIFELONG ATHLETES

By Will Gadd

[*Editor's Note:* A professional climber, paraglider, world-renowned ice climbing athlete, author, and speaker, Gadd has won every major ice climbing title from the World Cup to the Winter X Games. He was the first man to ascend a portion of a frozen Niagara Falls, and recently tracked down the rarest ice on earth during a once-in-a-lifetime climb – the last remaining glaciers on Mount Kilimanjaro. Tune in to the Spring Issue of *I&T Today* for our mind-blowing exclusive interview with this legend. In the meantime, catch up with the 2014 recipient of *National Geographic's* Adventurer of the Year and his most recent adventures at: www.willgadd.com]

1 Commit to being an athlete. This means moving at whatever level you can, regularly.

I did something physical more than 340 days in the last 12 months. Sometimes it was an hour in a POS hotel gym, sometimes an all-day sufferfest, and sometimes a walk up a hill with my kid on my back. But it was something.

People get all worked up about a precise number of sets, or 'peaking', or nutrition, but they need to simply shut up and go do something physical every day. Stop worrying about perfection and just move. The rest is ever-refining details and shaping that movement toward a goal if desired.

2 Write down what you do every day.

I know how may days I trained because I kept a log. I make my little entries ("skied for an hour") every day with great joy. It's a reminder that what I do physically matters, and I am so damn proud of my lazy a** when I wake up extra early to ski for an hour before I get on my flight to some city. Plus, watching the sun come up while the city sleeps is rad.

3 Pay attention to your body.

If it hurts, stop doing it. Do something else, or do what you're doing differently.

That being said, just being uncomfortable is not hurting. Screaming with effort to finish a set or a climb is not hurting. That's weakness evaporating from your body and mind, and it's great.

Hurting is different. Listen to your body or pay the price.

4 Food is food. Eat good stuff. Mostly. Ignore the hype.

Every top athlete I know eats food to fuel his or her results and isn't too discriminating about what goes down the hatch. Really. Many, many people I know eat paleo, vegan, or WTF the latest hyped craze is, but those diets don't really do sh*t athletically. Eat good food mostly, some junk regularly, exercise hard regularly, we're done here. Seriously, it really is this simple.

5 Surround yourself with people who like to do physical stuff.

We are all reflections of our friends, for better or worse. Choose friends who are positive, psyched, and want to move. (This is why CrossFit has done so well. You can argue about whether or not it's relevant, but it for damn sure builds communities of people who are active.) I end relationships with people who aren't psyched on life and doing physical stuff. Shallow? Maybe, but if you think so, then you're probably not really getting the point and need to sit on the couch some more.
I won't be there.

6 Set way more short-term performance goals than long-term ones.

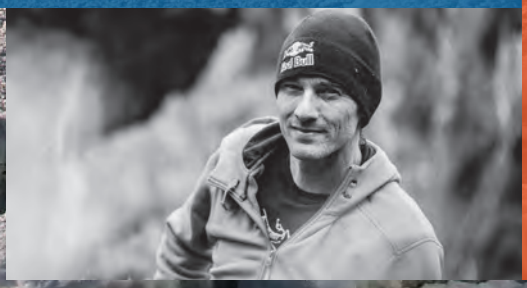
I often hear, "I want to win comp X" or "I want to climb 5.XX." OK, but what are the small steps to get there? A big success is just a lot of little successes put together. Define those little steps, and do not weaken. Celebrate them.

7 You own your time until you sell it. Sell it for what you truly want.

There are a lot of time parasites that seem important but just aren't. If you sell your time to email and do bullsh*t that is total unmemorable and mostly useless, then you won't have time to do something physical. Or play with your kids. Or knit. Or whatever it is that turns you on for real instead of just sucking your time. If you don't make time to move, then you have decided that everything else in life is more important. It's not.

8 Don't say you want to be good at something. Get better at something. Endlessly. Obsessively.

Doing something physical just to do it is enough. But, if you want to get good at something, then you have to get better at it every single day. If you're not getting better at it, then you don't really want to be good at it and need to examine why. Seriously, it's that simple. Think about what you're doing, figure out the slop, get rid of it, repeat.



9 Don't weaken. Ever.

I'm often asked, "How do you keep going when it's so hard?" Usually the journalist has seen some footage of my friends and me suffering to achieve something, and feels that it's some incredible effort that most people couldn't do. Bullsh*t. Don't weaken in training, and you won't when it's uncomfortable and sh*tty in the defining moments of life. If you're doing sets in the gym and quit when they get uncomfortable, then you'll quit when it's time to push harder for real. If you don't get out of bed in the morning to go for a run when the alarm rings, then you won't get out of the tent when the alarm rings on summit day.

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WINTER Gear Guide

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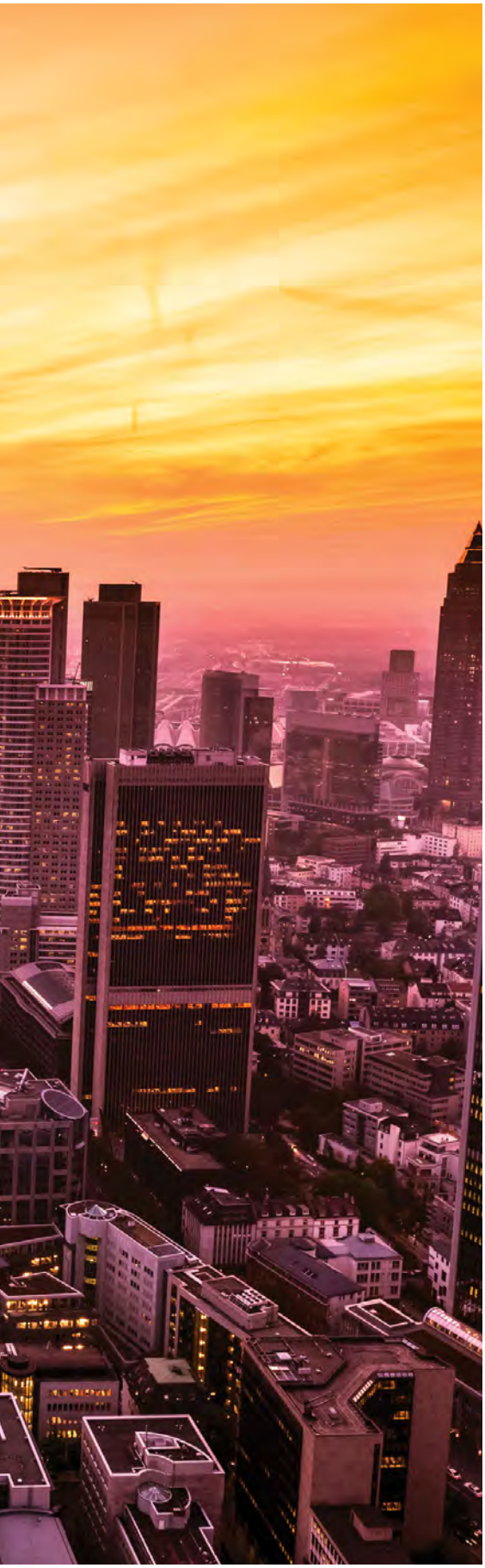
The Digital Tides Shift

SINCE 2008, THE DIGITAL PUBLISHING WORLD REVOLVED AROUND E-BOOKS AND E-READERS. TODAY, AS WE AWAIT DIGITAL BOOK WORLD 2016, IT IS ALL ABOUT PLATFORMS.

Story and Photographs
by Robert Yehling



Every morning at seven, church bells toll in the small towns surrounding Frankfurt, Germany, to awaken the citizens to another work and school day. When it comes to book and magazine publishing, they effectively rang in the newest chapter in the digital era.

After a six-year run as the darlings of convenience-oriented and cost-conscious readers worldwide, e-books and e-readers have summited a mountain that once threatened to encompass all of publishing. A downward descent has begun from a high point of 35 percent of all publishing sales, thanks to a predictable crowd, persistent readers who proved their loyalty to the printed page, and an unpredictable one — students globally who wanted to read more words on paper, or at least have them as an option to go with digitized textbooks, websites, bulletin boards, and other device-fueled means of learning.

Now, the industry turns to the next digital solution: Platforms. "We are seeing an explosion of platforms, of ways of presenting digital material," said Kirsten Wendt of Kindle Direct Publishing at the Frankfurt Book Fair, the world's largest, which took place October 14-18 in Germany. "After focusing so much on getting materials digitized and onto e-readers, we are now asking the question, 'How do we want the materials shown to us — and how deep can our experience be from them?'"

With Digital Book World and its very fitting theme, 'Strategies for the Digital Transformation,' coming to New York March 7-9 (*I&T Today* is a media partner), we attended the Frankfurt Book Fair to peer into a future that arrived as fast as e-book sales peaked — which is to say, roughly the speed of hitting 'send.' We also participated in a discussion on future monetization and content distribution on digital platforms, and realized something: as the industry shakes itself out, the future appears to be wrapped around presentation and depth, as well as options.

The forums, conversations, and panel discussions were plentiful in Frankfurt, just like everything else. Especially print. While digital continues to grow, this expo made one thing clear: Our 570-year-old love affair with printed books will never end. The most killer and game-changing technology in human history — the printing press — remains king, no matter what other platforms might try to dethrone it.

However, because of digital platforms, more people than ever are writing and reading.

(continues on page 134)

Not only was the book world on display at the Frankfurt Book Fair, but also the many shapes, sizes and forms of books and publishing technology (Top to bottom) The Blue Sofa featured great author conversations throughout the show; German Chancellor Angela Merkel discusses the state of the book marketplace in her country; the Antiquarian Book Fair offered titles dating back to the 1460s; crowded exhibits filled nearly 2 million square feet of floor space.

New Dimensions in Writing & Reading

We're in a crowded publishing world. Our recent visit to the Frankfurt Book Fair revealed more than 50 distinct content platforms. It will be no different at DBW, as publishers, authors, and companies seek dynamic ways to engage audiences amidst a blizzard of new content vying for those eyeballs.

That's where media visionary Sherisse Hawkins and her Colorado-based company, Beneath the Ink, step up. For the past couple of years, since a *Shark Tank* appearance, Hawkins and her team have built robust, dynamic platforms to redefine our relationship with what we write and read: first the Binks platform, and now, Pagedip. The publishing tools come with third-party integration, content libraries, custom templates, calls to action, and interactive elements. They're changing the face of online corporate, publishing, and entrepreneurial communication. It's like curating as well as publishing your material.

"Binks and Pagedip create an entirely new dimension to the content creating and reading experience," Hawkins said. "This is an amazing advantage for corporations, publishers, and authors trying to show their creativity and reach their audiences in new and different ways."

Hawkins knows how to balance content, delivery, and audience experience. Prior to forming Beneath the Ink, she worked at Time-Warner Cable and Walt Disney Imagineering, focusing on user experience. "How do you make something technically difficult acceptable to people who can really move their content and creative view forward without having to worry about how it's happening behind the scenes?" she asked.

Here's how: By building portals that allow users to import their content, and taking advantage of easy features to add in video, audio, photos, side content, pushing it directly to customer or audience bases, and turning it into a wholesome, intuitive reading experience. What's more, Binks and Pagedip are versatile: the platforms are equally effective for corporate documents, publications, e-books, e-textbooks, or extending print books.

This hits home for authors and content creators. How many times do we create something, like a book, newsletter, or branded magazine, and feel like we left out great backstory, research, or video or audio? Not anymore. Binks and Pagedip also overcome the biggest objection to enhanced (multimedia) e-books now produced by some publishers: hiking through thickets of unwanted links and content before reaching what we want.

"We hear about how intrusive this experience can be, how they have to read around images, or videos, or links that require reading extra adjacent material," Hawkins said. "This offers a new dimension entirely — more elegant, deeper, richer, more intuitive, more expanded content. You feel like you can see and touch it. The feedback we've gotten on this is amazing, with every iteration of our portal."

Once again, Beneath the Ink will be a featured participant at Digital Book World. They wowed the crowd in 2015 with their Binks solution. Now comes Pagedip, which truly has the potential to accelerate online publishing's evolution.

Since appearing on *Shark Tank*, Beneath The Ink has shaken up conventional e-publishing with its Binks and Pagedip platforms. Now, whether publishing a newsletter or book, you can customize core and peripheral content, create any design you want, and blast it on social media — from one source.

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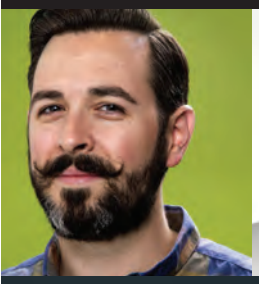
GET THE PERSPECTIVE OF BOTH PUBLISHING LEADERS AND VISIONARIES FROM OUTSIDE THE INDUSTRY:



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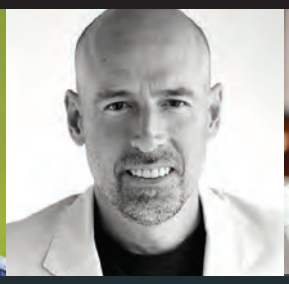

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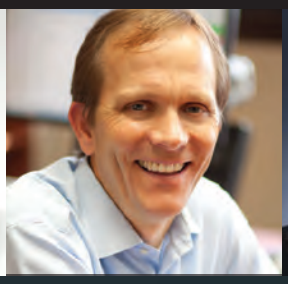

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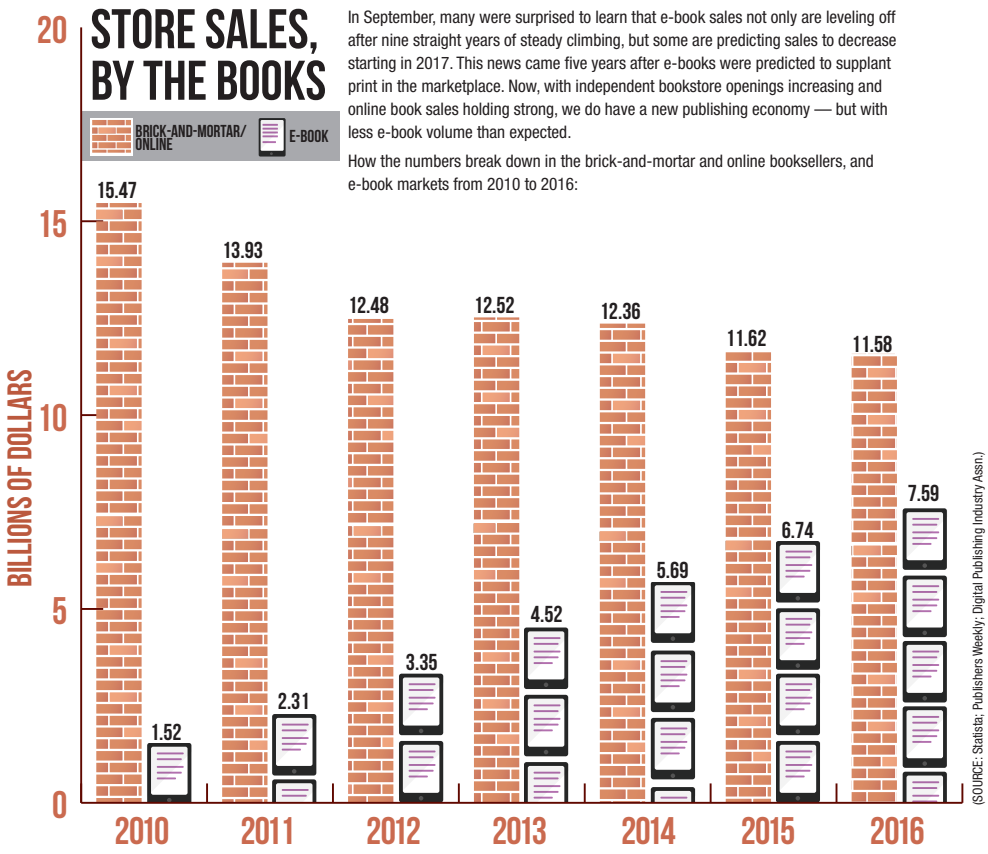
METRICS

STORE SALES, BY THE BOOKS

In September, many were surprised to learn that e-book sales not only are leveling off after nine straight years of steady climbing, but some are predicting sales to decrease starting in 2017. This news came five years after e-books were predicted to supplant print in the marketplace. Now, with independent bookstore openings increasing and online book sales holding strong, we do have a new publishing economy — but with less e-book volume than expected.

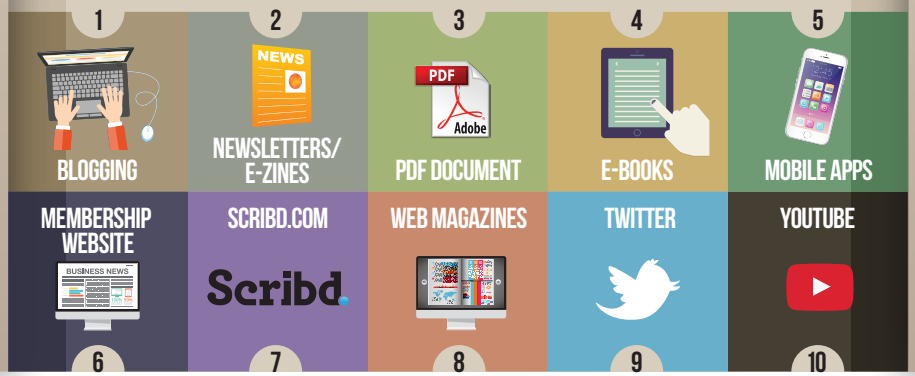
How the numbers break down in the brick-and-mortar and online booksellers, and e-book markets from 2010 to 2016:



(SOURCE: Statista; Publishers Weekly; Digital Publishing Industry Assn.)

TOP 10 DIGITAL PUBLISHING PLATFORMS

With dozens of digital publishing platforms available, and more constantly releasing, which are the best for your needs? A look at the Top 10 platforms in 2015, as chosen by leading digital publishing blogger Allen Taylor on his Taylored Content Blog (www.tayloredcontent.com):



TOP 10 USES OF DIGITAL MAGAZINES

Like other leading-edge magazines in their respective fields, *Innovation & Tech Today* offers up an outstanding digital magazine to advertisers and readers alike. We use the digital magazines for everything from lead generation and networking to subscription drives, as well as revenue.

What are the top 10 ways in which publishers utilize their digital formats? A quick study proves quite revealing:

1. LEAD GENERATION
2. NETWORKING/PROSPECTING
3. TRAINING
4. SALES PRESENTATIONS
5. CATALOGS/BROCHURES
6. CREDIBILITY STRENGTHENING
7. CONTENT DELIVERY
8. BRAND BUILDER/EXTENDER
9. LOCAL BUSINESS
10. NEWSLETTERS

(SOURCE: Appzine Machine)

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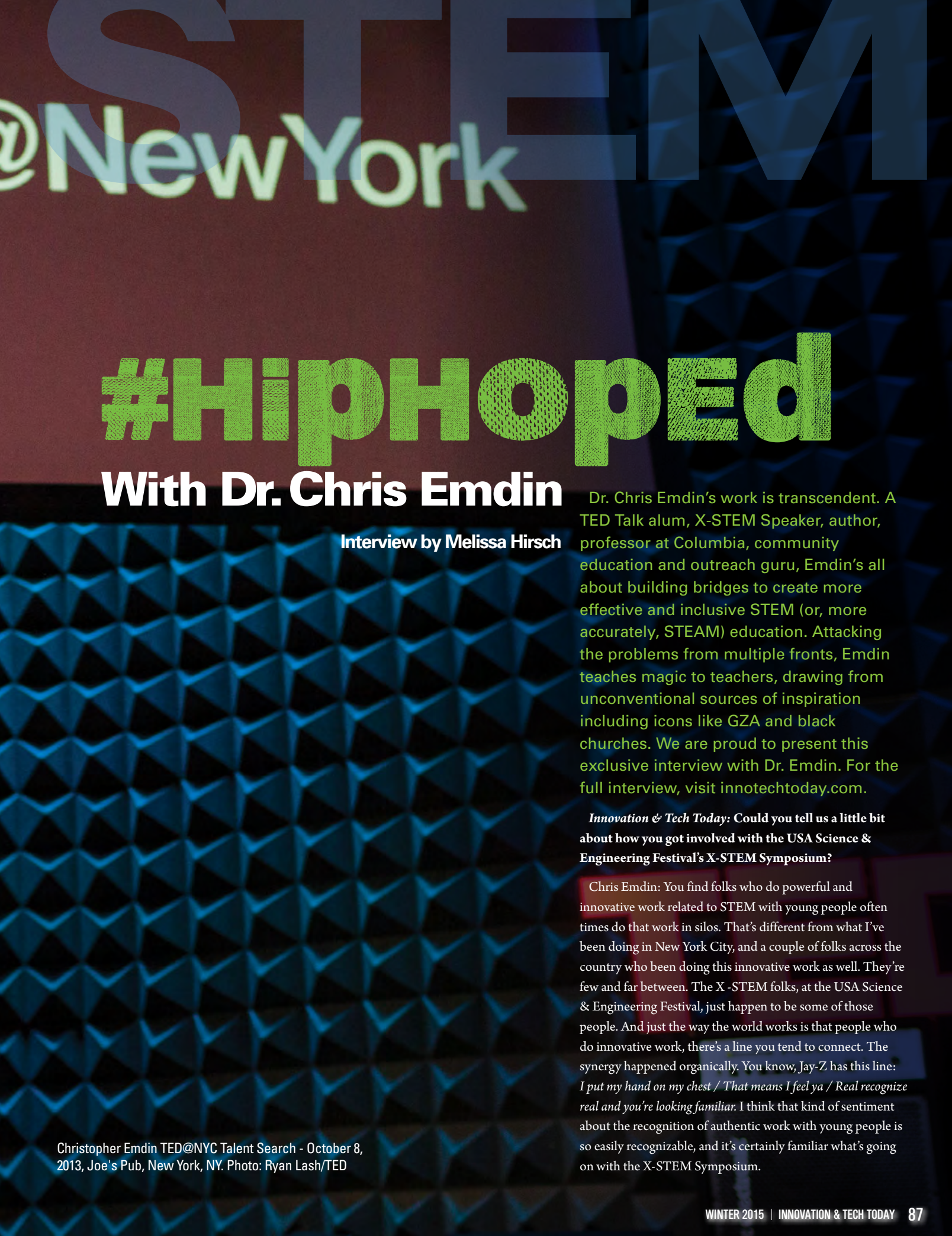
As the first semester of the school year comes to an end, *Innovation & Tech Today* takes a moment to look back and reflect with the USA Science & Engineering Festival. Speaker Dr. Chris Emdin shares his views (some from his upcoming book *For White Folk Who Teach in the Hood and the Rest of Y'all Too*) on how teachers can engage diverse populations – a skill arguably more essential now than ever. Taryn O'Neill, an actress committed to science and member of the group Scirens, talks STEAM and making science cool, while Rachel Carson Middle School shares their successes with the X-STEM in Schools program from the USA Science & Engineering Festival. We close out this special section with a look at the best STEM gifts for your favorite science nerd this holiday season, and with an excited eye towards the USA Science & Engineering Festival, just around the corner.



#HipHopEd

With Dr. Chris Emdin

Interview by Melissa Hirsch

Dr. Chris Emdin's work is transcendent. A TED Talk alum, X-STEM Speaker, author, professor at Columbia, community education and outreach guru, Emdin's all about building bridges to create more effective and inclusive STEM (or, more accurately, STEAM) education. Attacking the problems from multiple fronts, Emdin teaches magic to teachers, drawing from unconventional sources of inspiration including icons like GZA and black churches. We are proud to present this exclusive interview with Dr. Emdin. For the full interview, visit innotechtoday.com.

***Innovation & Tech Today:* Could you tell us a little bit about how you got involved with the USA Science & Engineering Festival's X-STEM Symposium?**

Chris Emdin: You find folks who do powerful and innovative work related to STEM with young people often times do that work in silos. That's different from what I've been doing in New York City, and a couple of folks across the country who been doing this innovative work as well. They're few and far between. The X -STEM folks, at the USA Science & Engineering Festival, just happen to be some of those people. And just the way the world works is that people who do innovative work, there's a line you tend to connect. The synergy happened organically. You know, Jay-Z has this line: *I put my hand on my chest / That means I feel ya / Real recognize real and you're looking familiar.* I think that kind of sentiment about the recognition of authentic work with young people is so easily recognizable, and it's certainly familiar what's going on with the X-STEM Symposium.

Christopher Emdin TED@NYC Talent Search - October 8, 2013, Joe's Pub, New York, NY. Photo: Ryan Lash/TED

***I&T Today:* We see the same thing over and over again about student engagement – traditional classroom methods for teaching science (including memorization, reading from books, and then just working on whiteboards) alienate a lot of students who may very well love STEM. Why is that, and what can we do to change it?**

CE: You know, STEM is never taught the way that it exists in the field. People engaging in science professionally are conducting innovative research. They're asking amazing questions. They're allowed to fail and try again. The work in the actual field is so hands-on. It's question-focused. It embraces passion and creativity.

Then we think about what's going on in K-12 education, particularly for urban youth of color, and it's the exact opposite. My mission has always been to try to ignite the same kind of sentiments and emotions that exist in actual science and bring them to the young people.

If you want to engage someone, you have to take a model of what engages them outside of school. This is why I do my stuff with hip-hop, and this is why I do my stuff with reality pedagogy. This is why I work with media production, video production, and music production. All of those things are where the kids' passions lie already. And they're naturally connected to STEM.

A lot of work is also needed in teacher training. There are a bevy of issues. There are also school administrators who don't know science, so they think my science class should look just like my math class, should look just like my English class, should look just like my art class. That's not the case. There's a general perception the sciences are stoic and memorization-based. So you do something outside of that domain, and people get uncomfortable.

I could talk about this issue forever. Essentially what it boils down to is that there's a constellation of gaps between teacher knowledge, scientific knowledge, and where the students are. We need to create bridges, and our inability to create bridges gives us the kind of issues that we have today.

***I&T Today*: What you think about the idea that if we pay teachers more it would attract better teachers?**

CE: I understand where the sentiment comes from. I think solely paying teachers more is never going to be the answer. It sounds altruistic (and of course we all do things to be able to get paid), but in the field of education, money is not the primary motivator. It never has been, and it never will be. Money would recruit people to get into the field of education who are not in it because they want to be in it, but instead because they want to get a paycheck. So, if you increase the salaries for educators, you're going to get disgruntled scientists who decide, *You know what? I'll just teach*.

I don't want just anybody in a classroom. I want people who are passionate about their work, who love children, and who see their work as a mission.

Whenever you use a business or corporation model to incentivize education, it inevitably will fail because it doesn't take into account what the core mission of education is.

***I&T Today*: Do you think there would be less teacher turnover if teachers were empowered with more effective pedagogy?**

CE: Absolutely! Listen, the reason teachers quit is because they have an unsuccessful time teaching. I just wrote a new book that's going to be out on March 22, called *For White Folks Who Teach in the Hood… and the Rest of Y'all Too*. (I had to fight with my publisher to get that title!) But the book essentially is talking about the folks – not just white people, but also black people, Asian people, and Latino/Latina people – who enact what I call a White Folks' Pedagogy. It's a little archaic, Eurocentric model focused on teaching and learning. If you implement that model in the classroom for a diverse population of students, they are going to violently reject your teaching – and I'm not just talking about physical violence; I'm talking about symbolic violence, as well. Oftentimes the kids start enacting behaviors that are very different from who the kids are. They'll yell at you, scream at you, and curse you out. They would never drop a curse word outside the classroom. It's just a violent reaction to the teaching methods that are ineffective and are doing violence on their spirits. What happens is teachers get these reactions from young people and they quit. They say, *They're so evil! They don't want to learn! They're so angry! They're so violent!*

When teachers quit, they end up getting jobs in higher education administration or policy, making decisions for the classrooms that they were -never able to cut it in, making decisions about young people that they think of as violent

when the kids aren't violent at all. The kids are just reacting to the fact that they were not prepared to teach in the first place. We have a self-fulfilling prophecy that's going on. It can only be broken if we transform the ways that we train teachers.

***I&T Today*: Let's talk about technology. How does tech affect education?**

CE: Technology is everything. It's as simple as that. Young people are always at the forefront of technology. As a hip-hop enthusiast, I think about the fact that the first hip-hop DJs put two turntables together, put a mixer in between, turned the mixer on its side, and they were able to create a new technology. Now, 20 or 30 years later, companies are actually creating technology that uses the same kind of devices at the hip-hop artists did impromptu. These folks are always creating new ways to be able to move or manipulate the existing technology, and then larger companies pick up on that and they fine-tune it and market it back out.

I love the maker movement. We've gotten to a point in the United States where we're so elitist that we've given up on vocational learning programs. If we went back to the core essence of having kids play and learn how to use tech appropriately, they actually will develop the science of thinking and the skills through *doing*, through *playing*. I'd rather have someone who has been playing with something and knows how to use it than someone who's read about it their whole entire lives. But that's the kind of system that we have. We have got to move beyond it.

"I LOVE THE MAKER MOVEMENT. WE'VE GOTTEN TO A POINT THE UNITED STATES WHERE WE'RE SO ELITIST THAT WE'VE GIVEN UP ON VOCATIONAL LEARNING PROGRAMS."

We have a program in New York City where the kids are creating beats. They get a MIDI sampler they download off the Internet for free. They use a Mac. Not only are they creating hip-hop beats solely through technology, they are also reinventing the art of music production. They're developing this amazing spatial reasoning. They're developing amazing critical thinking skills. This is all happening through the process of music production. People perceive it as lowbrow and anti-academic, but it is so riddled with academics! All we have to do as educators is to just give them the tools to play with, let them play, and as they're playing, give them the language to be able to understand the science and mathematics based on what they're organically doing. That's when you create the next generation of science experts.

(continues on page 135)

Sciren Taryn O'Neill:

Putting the 'Science' in Science Fiction

By Charles Warner and Melissa Hirsch

Originally from Vancouver, Taryn O'Neill is an actress, writer, web series producer, and lover of STEM. In fact, she formed a group of like-minded actresses called the Scirens: Screen Sirens for Science (made up of her, Gia Mora, Tamara Krinsky, and Christina Ochoa), whose mission is to advocate for science literacy, be that through sharing science news or inspiring science-infused entertainment. O'Neill has starred in *Granite Flats* for three seasons, wrote an unproduced female Sci-Fi action series for Stan Lee, and has a degree in Economics from Duke. In this *I&T Today* exclusive, the martial arts enthusiast and former competitive figure skater shares what got her interested in science, the importance of STEAM, and her favorite science-y movies.

***Innovation & Tech Today*: Why STEM? When you were growing up did you love science class?**

Taryn O'Neill: No, I wasn't a science-orientated kid when I was growing up. I liked science but it wasn't any sort of a passion – though I do fondly remember my 5th grade genetics project. I was actually a competitive figure skater, so my life was very regimented and focused. But I was definitely curious: I was the kid who sat on the lawn, wondering, looking up at the stars, trying to understand the idea of the Universe.

Luckily I came back to these 'big' questions when I started acting. The further I dug into acting, the larger the viewpoint of the world I had. I was forced to look at the human condition, our place in the world, and the psychology behind it. (There's a great neuroscience element to acting – Thalia Goldsmith has done some really interesting research on the topic.) And then when I started writing, I got to dig even deeper. I don't know why I gravitated towards science fiction. I was never into Sci-Fi as a kid, though I did love *Harry Potter* and *Buffy*, but after I produced the Sci-Fi webseries *After Judgement*, the genre just spoke to me. I liked 'what if' stories, especially about what our future will look like. But once I started exploring Sci-Fi stories, I found that I wanted to make the fiction as theoretically plausible as possible.

(continues on page 136)

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X-STEM in Schools

By Padmini Nidumolu

Our STEM team, *Eco Sy'STEM' Preservers*, from Rachel Carson Middle School (formed in 2012 and transitioned from Oak Hill Elementary in 2015) has been very enthusiastic in STEM since elementary school. When the USA Science & Engineering Festival announced its first X-STEM program, our team immediately jumped at the opportunity as this program offers everything that young explorers need in an open format.

Our X-STEM team of six formed with the mission statement, *Creating a Greener World STEMming from STEM Ideas*. As part of STEM Ambassador outreach, the team reached out to other students in the school and shared their journey in STEM programs. Marc Spiegel, a Nifty Fifty speaker from the Festival was invited to present 'Theory of Relativity' at the school, where every student had an opportunity to listen and learn about Einstein's inventions in a fun-based set up.

The team's focus in 2014 was producing Bio Gas from organic waste. We presented the concept, feasibility, and significance for biofuels at the USA Science & Engineering Festival, and received tremendous response from students and educators alike. As an X-STEM team, we also participated in various STEM Symposia and Science Nights.

We were recognized by Tom Rust, a Legislator of Virginia General Assembly, Herndon, for our interest and enthusiasm in STEM areas. He encouraged us by meeting our group and sharing how interest in STEM can be promoted in the community.

As an X-STEM school, we have experienced a quantum leap of interest and curiosity in STEM. We have shared our experiences and experiments with other elementary schools and community groups who benefited learning about our journey. We were able to do field trips to Bio Gas units, which are local and humongous (with 100,000,000 gallon digestor units!).

Our team was very fortunate to receive support from both our school and the Festival to participate as an exhibitor at the Festival in 2014. For an elementary school group, it was phenomenal exposure to share our findings beside giants like NASA. We had close to 50,000 visitors stop by our exhibit and encourage us to share what we explored. We tirelessly and enthusiastically participated in the X-STEM Symposium as well as the Festival. It was an enriching experience that any elementary/middle school student could have.

Reflections of our team during the X-STEM program journey:

"I wish I could continue the X-STEM program through my high school and college!"

"I look forward to meeting my STEM club all week! We could explore anything under and beyond the sun in this club!"

"I have never had the opportunity to share a project with an audience of 50,000. It enriched my experience as a student explorer and also taught me how to field some of the most difficult questions from students and educators!"

What is the science behind baseball? Are we alone in the Universe? Can drones play musical instruments? What do fossils and rocks tell us about the Earth's secrets?

Find out at the 4th USA Science & Engineering Festival Expo on April 16-17, 2016! Explore 3,000 hands-on exhibits from the world's leading professional scientific and engineering societies, universities, government agencies, high tech corporations, and STEM outreach and community organizations! Festival attendees will have the opportunity learn from, while being entertained by, a wide array of stage artists and fascinating science educators including Mathemagician Art Benjamin, the Franklin Institute's Science Showdown, "Science Bob" Pflugfelder and much, much more! Returning the main stage are Grammy-award winning science rockers They Might Be Giants!

The Festival Expo takes place at the Walter E. Washington Convention Center, and thanks to our Festival Sponsors, including Founding and Presenting Host Lockheed Martin; the event is FREE and open to the public!

The excitement kicks off on April 14th with the X-STEM Symposium, an all- day event sponsored by MedImmune that will feature engaging presentations from some of the most innovative minds in STEM such as DARPA's Dr. Geoffrey Ling and Nobel Prize winner Carol Greider.

Learn more about the largest and only NATIONAL science festival by visiting **www.usasciencefestival.org**. Stay up to date with the latest Festival news and performer announcements by following us on **Twitter @USAScienceFest** and become a fan on **Facebook**.

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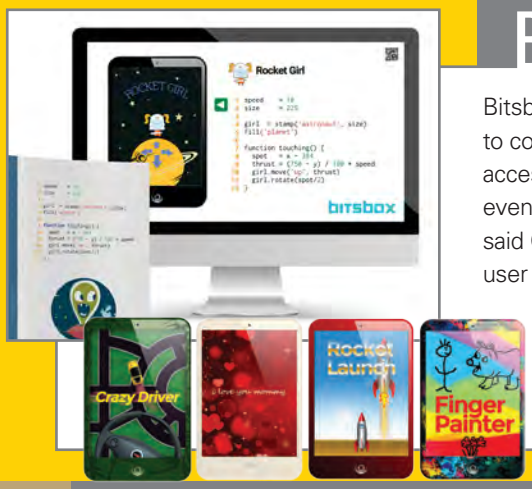

Bitsbox is a one-of-a-kind product; it's a subscription box full of materials that teach kids to code. In almost no time at all, kids are building their own apps for a virtual tablet they access online. The apps they build are fun, and they make it easy for kids to code – and even to collaborate. "We heard about a seven-year-old and a five-year-old sister team," said CPO Aidan Chopra. "The seven-year-old was coding, and the little sister was making user interface requests. The younger sister would ask, 'Can you turn the cat and make it a little bigger? A little louder? What happens if you click it and explodes instead of meowing?'" Learn more about Bitsbox and subscribe for a monthly box of stickers, toys, trading cards, and instructions for new apps: **www.bitsbox.com**

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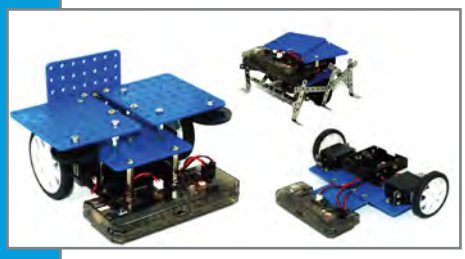

It is safe to say that growing up, there were a lot of kids who would have jumped at the chance to learn how to build a robot. Well, thanks to Robolink, they now can. In 2012, Robolink released its first prototype of Rokit Smart to teach students how to easily build and program robots. Because of the inventive idea, their kits have now been used to teach thousands of students how to build and program their own robots at various schools around California. Because of their success, the company even began a KickStarter campaign and has plans to launch their product globally. Their goal? "To revolutionize robotics education and set the foundation for future generations of robot lovers." Available for $145.00 at **www.robolink.com.**

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In this issue of *Innovation & Tech Today*, we have brought together an eclectic group: actors, coders-turned-actors, a gaming community leader and entrepreneur, and the person behind one of the biggest comic book and TV series of our generation: *The Walking Dead*. Together, they give us an inside look of the entertainment industry, how it's changing, and what to expect next.

Robert Kirkman: The *Walking Dead* is just the beginning

The creator of *The Walking Dead* has lofty goals that reach well beyond zombies.

BY John Gaudiosi

Robert Kirkman is building a multimedia empire with Skybound Entertainment. What began with comic books like *The Walking Dead, The Astounding Wolf-Man, Outcast,* and *Invincible* has expanded into television, video games, and even a feature film – *Air.*

In addition to AMC's *The Walking Dead* and its prequel, *Fear the Walking Dead*, Kirkman's *Thief of Thieves* is in development at AMC. On top of that, Cinemax is releasing *Outcast* in 2016, and Syfy is developing *Clone*.

Kirkman has a first-look deal with Universal Pictures following the August theatrical release of *Air*, which he produced and was distributed by Vertical Entertainment. The post-apocalyptic film, which features Norman Reedus (but no zombies), is now available on Blu-ray and DVD.

The man who wants to share his success with other comic book writers, video game developers, and creatives both in and out of Hollywood talks about his plans for Skybound Entertainment across all media in this exclusive interview.

> "It all starts with story. Network television is a medium that doesn't really allow for a lot of risk taking. Most everything that makes it onto the air is very safe because it takes so much effort and cost to do a television show. But these new platforms are allowing for a lot more risk taking."

***Innovation & Tech Today:* What's your vision for Skybound Entertainment moving forward?**

Robert Kirkman: Skybound has the potential to be a different kind of entertainment company. As we continue to grow and expand, we will enter new markets. We started out in comics. We've done a little bit of television. Last year we branched out into video games in a big way. This year we branched out into movies. We're also doing a table top game.

Every time we expand into different media, we're able to bring a different angle and different operating procedure to that project. A large part of *The Walking Dead's* success across different platforms is, to a certain extent, a product of my involvement. I'm not an expert at television, but I am an expert on *The Walking Dead*. The fact that I've been able to remain involved from the get-go and offer my input with help from directors, TV writers, and others lends something a little bit special to *The Walking Dead* compared to other adaptations in the past.

***I&T Today:* What did you learn from *The Walking Dead* that you're applying to your new TV shows like *Outcast*?**

RK: I think I'm a much better writer. I kind of lucked into working in television through *The Walking Dead*, and the first couple of seasons of *The Walking Dead* were definitely a learning experience. I've been able to discover the strengths and weaknesses that both the comic book medium and the television medium have – because they are two very different ways of telling stories. Working on *The Walking Dead* show has allowed me to recognize those differences in a big way and apply them to my storytelling. The *Outcast* comic and television show are going to be somewhat different, but they'll both take advantage of the respective strengths of those media. With *Outcast,* there's certainly the potential to do the kind of things that we've done with *The Walking Dead*. But, we know we have to start small, and we have to establish ourselves as a comic book and as a television show before we start going a little too crazy with it. It's important to expand at the right time and weigh your opportunities correctly. It's not necessary to expand *Outcast* to the level of *The Walking Dead* prematurely, so we can sit back and do it right.

***I&T Today:* Do you think about multimedia opportunities with the universe when you're creating something like *Outcast*?**

RK: I never sit down and say *Will this work as a video game, a novel series and a television show*? If it doesn't have components that can allow that type of expansion, I'm not going to embark on that journey. That's not really the mindset that I have. It all starts with story. And that's something that Skybound really tries to focus on. You want to have a great story that can stand on its own. If there are other components that can be expanded upon, and if there is a natural transition to another medium that's certainly a plus, but we really just want to have a great world to experience. While I'm writing the story, I keep in the back of my mind: *Is there a corner left unexplored*? But that's certainly a secondary function. It's not something that I try to bake in from Day 1.

I&T Today: What are your thoughts about the new opportunities that have opened up with digital distribution and all this new media that people can create original stories for?

RK: It's really exciting for a lot of different reasons. Having as many platforms as possible just makes the playing field more open to new content. In that respect, it's a fantastic thing to see the expansion of television out of broadcast into cable, into digital monetized platforms like Netflix and Hulu. As things continue to expand, that leaves room for new ideas to be explored and for new risks to be taken. Network television is a medium that doesn't really allow for a lot of risk taking. Most everything that makes it onto the air is very safe because it takes so much effort and cost to do a television show. But these new platforms are allowing for a lot more risk taking because they're cutting out the middleman. You don't really have a lot of money going into these things in ways that have to be recouped through very strict and calculated ways. You're likely to have more opportunities for creators to participate in interesting ways that makes it more worthwhile for them. It also allows them to take more risks, which will hopefully lead to better and more exciting and more different projects.

I&T Today: What was it like for you to enter the film business with *Air*?

RK: If you're going to branch off into a new medium, it's always nice to have Norman Reedus in tow. It's certainly a luxury to be able to work with someone like Christian Cantamessa – who I think is going to be a huge director. He's someone that comes from the video game world, and is an expert in his own right entering a new medium, but he brings a skill set that is going to really lend itself to making great movies. I feel like the deck is stacked in our favor.

(continues on page 136)

Acting as a Second Career: Masi Oka

By John Gaudiosi

Actor Masi Oka, who reprises his role as Hiro Nakamura in NBC's *Heroes* reboot, *Heroes Reborn*, and also stars in CBS' *Hawaii Five-0* as Dr. Max Bergman, had a career as a programmer long before he caught the acting bug.

Oka graduated from Brown University with degrees in math and computer science and a minor in theater arts. He got a job as a visual effects artist with George Lucas' Industrial Light & Magic (ILM), and wrote the code for the water effects software that has been used in movies like *The Perfect Storm, Pirates of the Caribbean: Dead Man's Chest,* and *Star Wars: Episode I.* In fact, so much of the code was written by Oka, he still helps from time to time in between his day job.

In 2013, Oka launched his own Los Angeles-based video game company, Mobius Digital, seeking out the brightest minds from the University of Southern California. The game studio has released mobile games *Terra Chroma* and *Beacon 38*, and it is currently developing *Outer Wilds* (which won the Independent Games Festival) for multiple platforms. I caught up with Oka, who not only speaks fluent code, but fluent Japanese and English, to talk about his latest virtual and Hollywood projects in this exclusive interview.

***Innovation & Tech Today: Outer Wilds* is being funded by Fig, a brand new crowdfunding company focusing on games. How has this opened up opportunities for smaller game studios?**

Masi Oka: We're excited about this opportunity because, as indie developers, creative control and IP ownership are critical. Having a crowdfunding platform specifically targeted to games also allows us to reach and focus our marketing to the gaming community.

***I&T Today:* What are your thoughts about *Heroes Reborn* getting two different video games?**

MO: It's cool that they're doing the mobile game, *Heroes Reborn: Enigma*, and the PC and console game, *Heroes Reborn: Gemini*. They had an opportunity to do a good video game with the original series and they missed it, so I'm glad they're doing it now. I wish it was more online, though. I always saw a *Heroes* video game as more of an MMO (massively multiplayer online) game where people are discovering each other and crossing paths with other heroes. To me, games are about individualized content because everyone wants to tell their own stories. If I was doing it, I'd do it as an MMO.

(continues on page 137)

Oka's combination of coding and acting skills make him a versatile member of Hollywood – in addition to producing his own games (such as *Outer Wilds*, pictured above) and starring in *Heroes Reborn* and *Hawaii Five-0*, Oka produced special water effects in a number of blockbusters.

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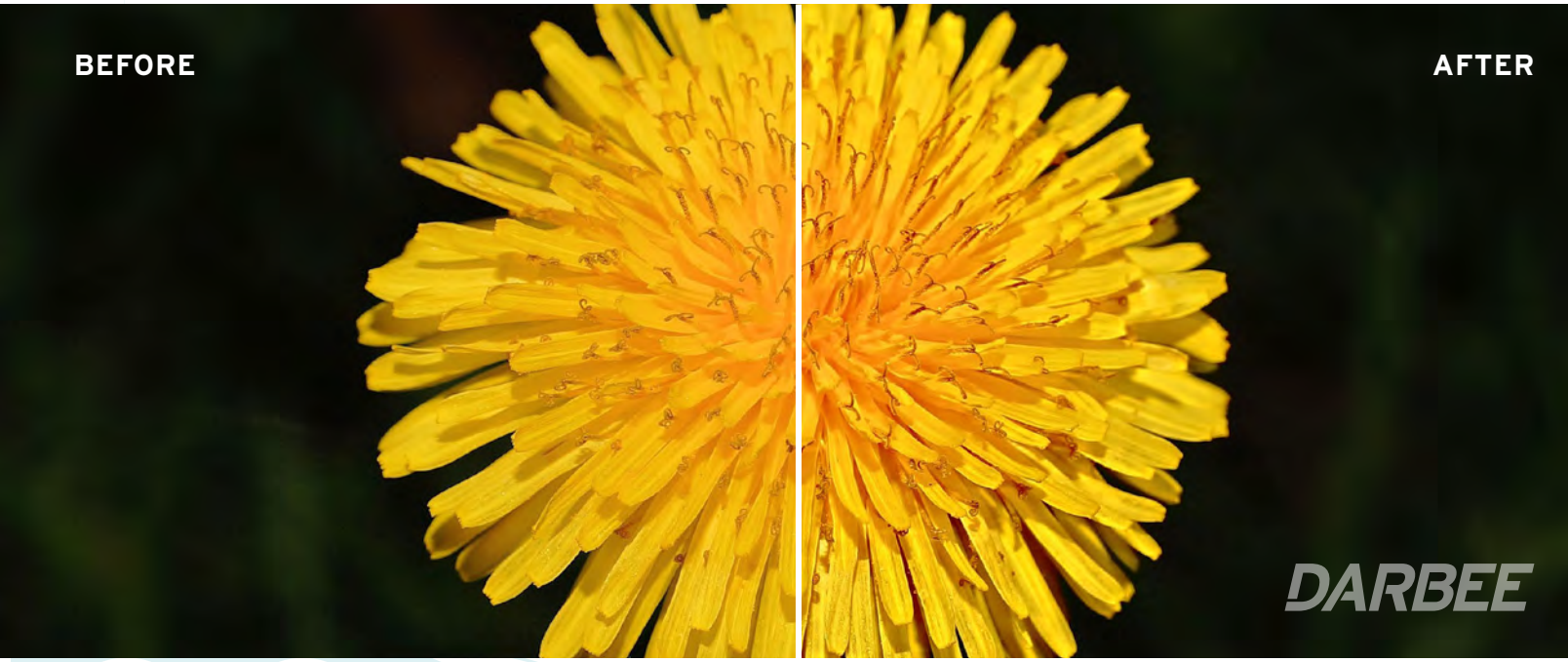

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Actress Felicia Day has been an Internet pioneer who's managed to split her time between Hollywood film and television work (*Buffy the Vampire Slayer, Eureka, Supernatural*) and running her own digital empire (Geek & Sundry). Day has a new book – *You're Never Weird on the Internet (Almost)* – that chronicles her life from home schooling in Huntsville, Alabama, to launching her successful video game-based Web series, *The Guild* to her present-day work with Legendary Entertainment running an entire Internet company.

The actress has been able to succeed in Hollywood by using her brains and talent. She was a National Merit Scholar and graduated from the University of Texas at Austin on a full scholarship in violin performance at age 19 with a double major in mathematics and music performance. She's also an avid video game player who's been able to take her love of gaming and blend them into her career with projects like *The Guild, Dragon Age: Redemption*, and *Fallout: New Vegas*. Day talks about the evolution of nerd culture in this exclusive interview.

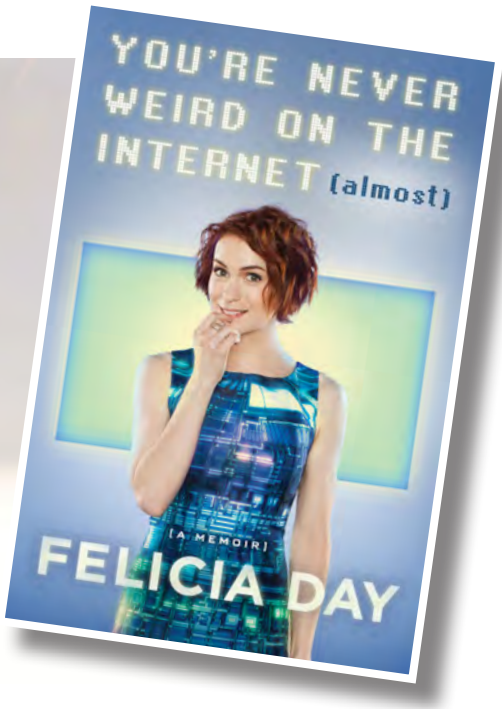
***Innovation & Tech Today:* How have you seen the notion of geek become cool since you were a kid?**

Felicia Day: Definitely geek or nerd culture has evolved a lot. Some of the things that we traditionally love have gotten very popular; a lot of blockbuster movies, and just everything. With that, there have been some growing pains. I don't self-identify, necessarily, as a girl geek or a girl gamer. I self-identify as a gamer or a geek, and I just happen to be a girl. I happen to dress as cute as I want or as shlubby as I want, and don't really bother to worry about what people outside me judge me as.

That's really my mantra. I'm just really confident in who I am, and my career is only a testament to finding myself. That took a long time to get there, and that's what I just encourage other people to do; just to find yourself outside of other people's judgment, and then you don't feel

Felicia Day Celebrates Nerd Culture

By John Gaudiosi



the need to justify yourself to them. You just love what you love, you look how you look, and you enjoy what you enjoy.

***I&T Today:* You addressed the GamerGate controversy head-on through a blog post. How is that covered in your new book?**

FD: When I wrote that post I just wanted to ask everyone to please put forth the face of gaming that I know, which is of people connecting and loving games together. Hopefully I made a contribution towards positivity with that. Unfortunately, there are a lot of people who use that as an example of me hating gamers or being afraid of gamers, which is hurtful to me and inaccurate if you read the post. The post is all about having an impulse around gamers that may feel like they don't belong because there was so much hate and betrayal, especially against women during that period. We should look at what we all love in commonality, which is gaming on both sides, and come to some conclusion where we can have disagreements but we can do them in a civil manner. That's really what I address in my book, and also just want to put out in the world. There are very, very small minorities who are very proactively negative and I want to counteract that with as much proactive positivity as we can. No matter what you believe, we can all agree that we love games. And let's disagree in a civil manner that makes gaming look good to someone on the outside.

***I&T Today:* Electronic Arts and other companies are hiring more female game developers as a result of the awareness. Have you seen any good come from GamerGate?**

FD: It's almost like Cecil the Lion in the sense that you have one incident that highlights something that's endemic and happening on a small level and gets people's attention. Industry leaders and game creators have stepped up and said, *"This is not our world, this is not what we want gaming to be. This is not acceptable to have this kind of abuse and make people feel unwelcome in something that we love."* Gaming is a growing entertainment field and you may have things that you don't necessarily agree with or like in the world of gaming. That doesn't mean you need to be aggressive towards anybody in counteracting that with hostility. The great thing is the leadership that has been shown in the industry and amongst creators to really be more inclusive and to have more representation and to make people step up and say that different voices are welcome. I do believe that some good has come out of that and I'm very glad to be a proponent for everybody who has a different opinion in gaming.

***I&T Today:* What games are you playing now when you have time?**

FD: I am obsessed with *Witcher 3*. I'm a little behind the curve with new games. I'm an RPG sucker in a way. *Towers of Eternity* is something I'm still pecking away at. It's such a deep game and those isometric RPGs are my childhood – from *Balder's Gate* and *Wasteland* and all those games. They're my favorite. I play a lot of smaller indie games. I've been playing *Regency Solitaire*, which is just a casual game that you can log on for thirty minutes and feel satisfied playing. I've been playing *You Must Build a Boat* on iOS as I go from airport to airport (on the book tour).

***I&T Today:* What opportunities do you see virtual reality opening up to gaming?**

FD: VR is the future. We're all going to have a way to project ourselves into a virtual world -- like a Holodeck -- which has been my dream my whole life. Whether it's renting a spot on the red carpet to see stars at a premiere, or being in the front row of a basketball game, or really being in a game like Skyrim and building a sword; that really is the future. Technology is going to be so sophisticated that we will not have to be in our bodies to be somewhere. There are some repercussions that probably we'll have to deal with, but it's a creative world that I'd love to play in as a consumer and a creator.

***I&T Today:* It will make book tours easier for you.**

FD: Well, you can't sign books in VR.

Vikings Star Alexander Ludwig Talks Sports

By John Gaudiosi

Actor Alexander Ludwig rose to fame playing Cato in *The Hunger Games*. More recently, he's shared the big screen with Mark Wahlberg in Peter Berg's *Lone Survivor* and starred with Jim Caviezel in the true high school football story, *When the Game Stands Tall*. But over the last four years, the actor has spent months in Wicklow, Ireland (an hour outside of Dublin) with the cast of History Channel's hit scripted TV series, *Vikings*. Ludwig plays Bjorn Lothbrok, a Viking warrior and first born son of Ragnar Lothbrok (played by Travis Fimmel). With Season 4 of the show premiering in February (and the first three seasons on Blu-ray and DVD from Fox Home Entertainment), Ludwig talks about everything from Vikings sports to Irish rugby to NHL hockey in this exclusive interview.

***Innovation & Tech Today:* What did you find personally interesting about how the real Vikings lived from working on this show?**

Alexander Ludwig: It was shocking to me how progressive their culture was. If you were a Viking woman, you had just as much say as any Viking man. Somewhere along the line that got lost and obviously we're back to that now, but it took us a long time. It's pretty remarkable that so long ago there was equality that men and women shared.

***I&T Today:* What do you feel the Vikings' idea of sports was back then?**

AL: They had coins they would flip into barrels. But a lot of their sports had to do with hunting. That was where they'd get their entertainment from: finding new ways to hunt. They'd also train for their next raid, throwing axes at trees and stuff like that.

***I&T Today:* What have you learned about the ancient Gaelic sport of hurling from your time in Ireland?**

AL: Very, very little. Surprisingly enough, every time that they have a game I'm not able to go. So I still have people explaining to me how they play that.

***I&T Today:* It seems pretty complex, almost like rugby.**

AL: I grew up playing rugby, so that's one thing I actually know. I've been to a few rugby games in Ireland, but never hurling.

***I&T Today:* What sports do you follow back in the U.S.?**

AL: I actually grew up in Canada, so I'm very much a hockey fan. I grew up freestyle skiing competitively when I was younger and I spent a lot of time in the mountains. Now that I live in Los Angeles, I always go surfing.

***I&T Today:* Who's your hockey team?**

◀ (Left) Ludwig as the villain Cato in The Hunger Games.

Vikings continues to get rave reviews as The History Channel's first scripted drama, due to its historical accuracy and the personal love the cast feels toward the story and scenes — right down to recreating fight and hunting scenes in Ireland's forbidding cold, rainy climate. As Alexander Ludwig says, "We're here to make something great."

AL: The Vancouver Canucks. A few of my buddies that I grew up with got drafted in the NHL, so I've got to spread out a little bit of love to whatever teams they play for.

***I&T Today:* Do you support the Kings?**

AL: Of course I support the Kings. Whenever I'm in Los Angeles, that's the team I see. But if the Canucks come to town, I draw the line and cheer for the team I grew up with.

***I&T Today:* What type of training did you do to prepare for the fighting sequences this season?**

AL: It really is up to every actor to decide how they want to look. It's not like every Viking looked like some super hero. They were bigger than most people but at the same time their bodies were different. My character is supposed to be a warrior, so I do my best to stay in pretty good shape. I do my best to go to the gym every day. I have this routine that I've created that I've taken from what I learned when I was training for *Lone Survivor*, but I use less heavy weights than when I was trying to be a Navy Seal.

***I&T Today:* What's it like orchestrating the Viking battles in Ireland's unforgiving climate?**

AL: There's days like when it's just sh*t, when it is awful. You're crushing everything and thinking, *This is just a disaster* because it's raining, it's cold, it's muddy. You really have to love what you're doing. That's why I'm so in love with our crew and our cast. Everybody who is there knows what they signed up for, and no one is a princess or prince. They're there to make something great. That's why I think that people like this show because they're seeing all this effort come to life.

***I&T Today:* What do you guys do for fun when you're not filming in Ireland?**

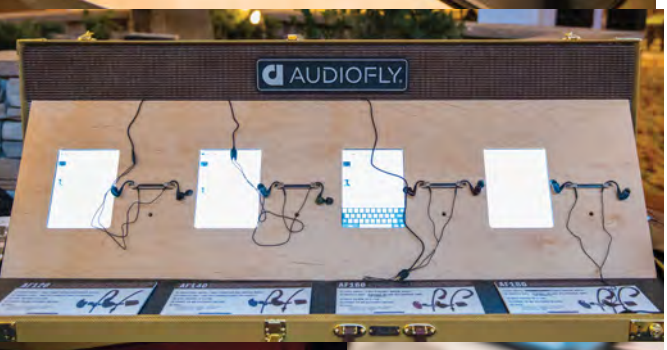
AL: We travel. It's great being able to hop around Europe. Whenever we have a few days off, Travis (Fimmel), Gustaf (Skarsgard) and our friend Bob would travel. We also spend a lot of time training, we go horseback riding so we can get better at that. And Ireland has a lot of great places to explore from Dublin to the countryside.

***I&T Today:* Have you guys ever ventured north to where they film *Game of Thrones*?**

AL: Yeah, I went to a boxing match in Belfast with a few friends. That was a lot of fun. UFC feather-weight fighter Conor McGregor is a fan of *Vikings*. He's from Dublin and the patriotism there is awesome. He came up to us and told us how much he loves the show.

Mile High Music

at the Rocky Mountain Audio Fest



There are trade shows and expos, and then there is the Rocky Mountain Audio Fest. Having attended a fair amount of these kinds of events, we thought we knew what to expect: lots of jet-lagged industry people crammed into a giant expo hall. But RMAF was a different experience – emphasis on the word 'experience.' Although speakers, head phones, and ear buds are the results of thoughtful engineering, at the end of the day, they're about the pleasure they bring to the listener.

The audio fest reflected this. Attendees took over the Denver Tech Center Marriott and checked in at the main level, which was also filled with exhibitors. Favorites were the Hi-Def AF 180 earbuds at Audiofly. These buds made you think the song you've heard a million times was brand new. Paired with the Comply memory foam ear bud tips, the AF 180s were comfortable and clear. (Side note: the Comply memory foam tips are compatible with your ear buds, no matter the brand; they're perfect for isolating outside noise, and they're comfortable, too.)

The first floor also contained the CANJAM section of RMAF, a room filled with quiet talking as enthusiasts, industry people, and the media tried out the latest headphones from the best in the music business. One of the CANJAM standouts was the Sennheiser HD630VB (pictured) over ear headphones. Combining the classic Sennheiser sound quality with contemporary conveniences (play, pause, next and back controls, bass control, and even the ability to answer calls) and old-school design (navy, silver, and red), these headphones attracted attention at CANJAM.

Where RMAF really took a turn for us, though, was in the guest rooms of the Marriott. Attendees could hop on an elevator, get off on almost any floor, and walk down the halls for a unique trade show experience. Inside each room was a different speaker and setup. Speakers from around the world played classic rock, jazz, movie clips, and video game trailers, displaying considerable versatility and sound quality. They also reflected every price point in the market.

Although you couldn't turn around without seeing another Bluetooth speaker, one managed to stand out above the rest: The Riva. (See photo.) Previewed at the RMAF, the Riva S became available a few weeks after the show. "We've been working on this speaker for a year, going back and improving it because it was never good enough," said Don North, President and Chief Engineer at Riva.

The high standards paid off. Watching an excerpt from the Pixar classic *WALL-E* (the scene in which WALL-E uses the fire extinguisher to fly around space with Eva) with the Riva S proved its incredible clarity and range, as well as the movie's cuteness. The impressive feature about this speaker? Its tiny size: 7.5 in x 2.5 in x 2.6 in. It only weighs 1.5 lbs.

In a different room, and on the opposite end of the spectrum, was the price-is-no-object, luxuriously old-school ModWright products. The 845 DS SET Tube Mono Blocks (pictured) were like visual works of art. Walnut material and gorgeous mirrored plating ensure these boxes produce beautiful music. The Mono Block concept pieces go for $50,000.

The individualized experience and opportunity to appreciate the products more deeply were ultimately what made the Rocky Mountain Audio Fest memorable for the *I&T Today* team. Bottom line? Highly recommended for audio-philes and music lovers alike.

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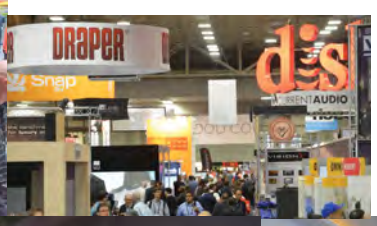
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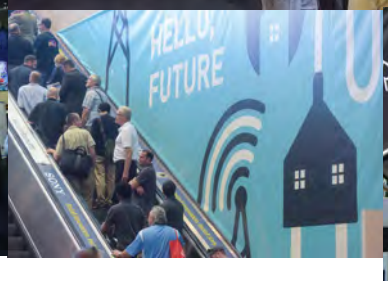
HELLO
FUTURE

SAVANT

CEDIA

New Vision. New CEDIA.

By Charles Warner

CEDIA '15 was held in Dallas, TX, after a two-year stint in Denver. All things considered, this year's annual Home Automation and Entertainment event was the biggest and best yet. Attendance rose across the board to 18,700 integrators and over 500 exhibitors, including 124 first-timers. Throw in worldwide media coverage and new, energized CEDIA leadership with a fresh brand strategy, and you get the feeling the best is yet to come from the experts in one of the fastest growing areas of consumer demand: home automation.

So what exactly is home automation? Basically, it's the use of one or more devices to control home functions automatically and sometimes remotely, connecting through the Internet.

An automated home is more often called a 'smart' home. Going into 2016, more objects than ever are smart and have the ability to work with other smart devices in your home. The benefits? Convenience, cost and energy savings, functionality, and of course, entertainment. Although home automation has been around for decades, the popularity of home automation has been increasing greatly in recent years due to much greater affordability and simplicity through smartphone and tablet connectivity. You may have also heard the buzz-phrase the 'Internet of Things' to describe home automation.

Today, we are on the precipice of a new era where existing technology is surpassing science fiction. CEDIA is the place where the whole world comes to learn about the newest technology and how to integrate it in our homes and businesses. From home security systems that can be installed by yourself, to dimming lights and self-watering irrigation systems, smart shades and vents, to televisions and kitchen appliances, to robotic vacuums and smart thermostats, the best of the best were on display in Dallas, and we are proud to bring you the vision for CEDIA from renowned industry veteran and new CEDIA CEO, Vin Bruno.

New Vision. New CEDIA.

Continued from page 107

***Innovation & Tech Today*: Why should companies move into the Home Automation space?**

Vin Bruno: Home Automation will be a $60 billion industry worldwide in five years.. That's from less than the 20 billon that it is today. But let's just say it's massive. The opportunity is massive!

***I&T Today*: Did you guys drop the Expo from CEDIA?**

VB: We did! We thought that the 'Expo' was dated for what this event actually is. At the same time, I want to separate CEDIA's show from CEDIA's organization, because we are so much more then just a show.

***I&T Today*: What developments in the industry as a whole are you most looking forward to seeing?**

VB: Everybody talks about the future, but these things are happening today. The best development is that it's not just for the super wealthy. So today, our members make that tech available for apartment owners all the way up to mansion owners. It is available.

Of course, it is developing. We're not completely there, but soon enough your home will 'know' who you are and when you are there. That's not so surprising anymore.

The problem is not enough people know about it. We are here to communicate that it's available now.

***I&T Today*: What trends do you expect to stick around? Any trends you predict won't stand the test of time?**

VB: The Internet of Things is fast becoming the Internet of Everything (IoE), and connected devices will number in the tens of billions very quickly. Certainly, technology being all around us is a trend that is here to stay.

A trend that will not stand the test of time is the increasing number of people watching movies on portable devices. Watching movies on a laptop, cell phone, or tablet compromises the quality home theater experience. That's no substitute for watching a movie on the big screen the way directors envision movies should be experienced. I expect sales of dedicated home theaters to grow providing our homeowner clients prioritize the movie watching experience they deserve. Increasing demand for dedicated home theaters will mean increased business for our CEDIA member manufacturers of video projectors, speakers, screens and theater seats, as well as increased installation business for our CEDIA member home technology professionals.

***I&T Today*: What projects do you most look forward to taking on? What changes should members and attendees expect to see?**

VB: I've got ambitious plans, and they all require me being in front of our members. Research tells us that our industry is going to triple in size in just five short years, and it is CEDIA's responsibility to stay ahead of technology and facilitate success. Members and attendees will see changes across the board. They may not always be big or flashy, but they will be changes that we believe will bring positive results to every corner of the industry.

***I&T Today*: Tell us about the infrastructure. How will the show itself change? Will communications between CEDIA and members change? How?**

VB: Currently our member categories include manufacturers, integrators, manufacturer reps, distributors, and industry professionals and that makes up the attendance and exhibitor base for the show. As we move forward, CEDIA is looking to add several more membership categories including service providers and retailers/e-tailers.

As far as changes in communication between CEDIA and members, we often hear that the show is the main connection point for members not only with CEDIA, but with one another. We are looking at programs that will expand that sense of community and make it easier for members to connect with one another on a year-round basis. One of these programs, CEDIA Groups has already launched. Each group consists of 5-7 CEDIA member integrators that meet monthly to discuss opportunities and challenges – all with the goal of improving their businesses.

My number one priority is communication: I am forward-thinking by nature and I want to hear from members and what they need. I will be out proactively working with our members across the globe, but I am also always open for any member to call me at any time.

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EDITOR'S innovation & TECH CHOICE

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2015 CEDIA™ Award Winners

INDIVIDUAL AWARDS

Lifetime Achievement Award	J. Robert Stuart
Fellows	Bill Skaer
Humanitarian Award	Luke Dixon, Imagine That Audio & Video Design
	Beneficiary Lone Survivor Foundation
Volunteer of the Year	*Two Trophies*
	Jamie Briesemeister, Integration Controls
	Patrick Hartman, Diversified Systems International
New Volunteer of the Year	Henry Clifford, Livewire
Training Volunteer of the Year	Sergio Gaitan, GME Electronics
Manufacture Representative of the Year	Paul Collins, Paul Collins Group

MANUFACTURER CATEGORY AWARDS

Best New Product Winners

Digital Projection	INSIGHT 4K Dual-LED
D-Tools, Inc.	System Integrator 2015 (SI 2015) featuring Mobile Install
DynaQuip Controls	WaterCopPRO Integrated
Future Automation	HSE - Large Motorised Wall Mount
IC Realtime	IC720 360-degree x 360-degree 4K Virtual PTZ Camera
ihiji, Inc.	ServiceManager
Kaleidescape, Inc.	Strato Movie Player
Savant	Savant App
Séura	Storm Outdoor TV
Sonance	DSP Amplifiers with SonARC

Product Hall of Fame Inductees

Danna Innovation's iPort	iPod In-Wall Dock
Sonos, Inc.	ZP100
URC	MX-850 IR/RF Text-based Remote Control

HTP CATEGORY AWARDS

Best Home Theater

$100,000 & Under (Level I)	AV Prestige
$100,000 - $200,000 (Level II)	Electronics Design Group, Inc.
$200,000 - $450,000 (Level III)	Twilight Solutions
$450,000 & Over (Level IV)	PMI, Ltd.

Best Integrated Home

$100,000 & Under (Level I)	AV Prestige
$100,000 - $250,000 (Level II)	Advanced Technologies
$250,000 - $500,000 (Level III)	New Space Technologies
$500,000 & Over (Level IV)	La Scala Integrated Media
Best Media Room	La Scala Integrated Media
Best Innovative Solution	Union Place, Inc

Sub-categories

Best Wiring Documentation	La Scala Integrated Media
Future Home Experience Award	La Scala Integrated Media

EDITOR'S innovation & TECH TODAY CHOICE

CEDIA '15

- Monster Products
- Z-Wave Alliance
- Custom Integration Solutions
- FireFX
- ELK Products

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Featured CEDIA Attendees

Positioned For Internet Taxation

For the second straight year, FIREFX was among the most talked about media systems at CEDIA. Having solidified a partnership with SAVANT and being featured in SAE Audio's High Performance Audio Room in Dallas this year, its line of media systems has integrators buzzing.

This is welcome news to FIREFX CEO Larry Allhands, whose team has focused on helping integrators realize the potential of their network based high performance product line. "They're catching up, for sure," Allhands said. "When we first entered this market, I was greatly surprised at how many of the system integrators were not highly technical when it came to TCP/IP networking. And this is when home automation is moving to IOT networking; to IP-based stuff. They're catching up, but it's still a sharp curve."

The product line FIREFX has built is completely modular allowing system integrators of all IP networking skill levels to have a system up and running in less than 15 minutes. Now that integrators are "loving to share our product" when building home entertainment systems, as Allhands puts it, FIREFX is in position to accommodate the possible influx of new customers. And with new Internet taxes looming with possible impact on streaming media of all types, FIREFX is positioned perfectly for those who wish to store, access and control their media locally.

"I think any new Internet taxes or fees will only boost our situation, where people have their own TV shows and movies on their hub," Allhands said. "We are built for people to take that step."

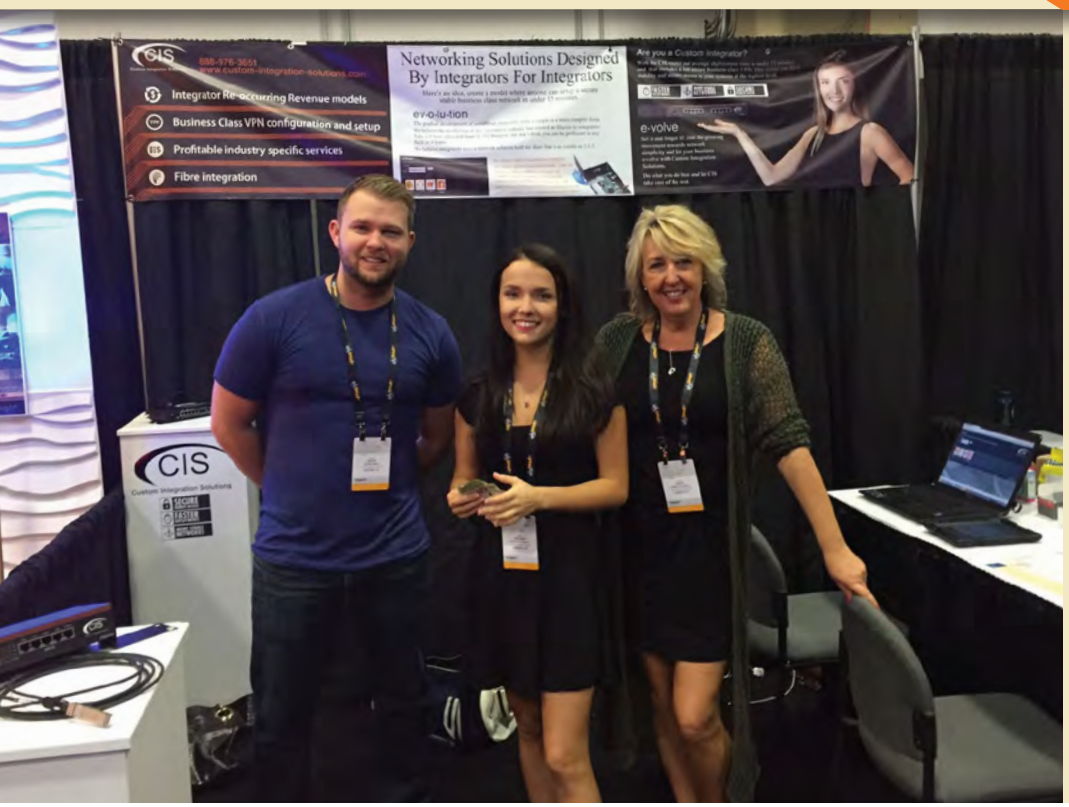
Z-Wave Alliance at CEDIA

The Z-Wave Alliance displayed a strong presence at CEDIA Expo 2015, with 11 member companies in the Pavilion and 14 members on the show floor and the debut of new certified installer training sessions. The Alliance also unveiled a slew of announcements, including a new membership option for the integrator community and a training course. This new integrator membership option includes many benefits, such as access to Z-Wave Alliance integrator forums and working groups and technical resources for deployment, trouble-shooting, design and testing of Z-Wave products.

At the show, the Alliance offered installers interested in becoming proficient in smart home installations to attend the Z-Wave Certified Installer Training program, which offered attendees the tools to design, implement and maintain Z-Wave smart home solutions, saving them time and money and boosting customer satisfaction. As the new integrator membership unfolds, additional benefits will be available including access to a brand new installation maintenance application tool and discounts from select Alliance manufacturer and service provider members.

Member companies in the Z-Wave Pavilion showed off new Z-Wave enabled devices, such as Nortek Control's GoControl portfolio, Fibaro's Home Center 2, FortrezZ's water flow monitoring device, and Yale's door viewer. MCO Home, Poly-Control, Oomi, Yale, Schlage, SecureNet Tech, and Telguard also demonstrated new products. For the Alliance and member companies, CEDIA 2015 was a success!

Above: FireFX shares its media systems with integrators at CEDIA. Below: Attendees check out the latest in home automation innovations at CEDIA.



I&T Today Award Winners, Custom Integration Solutions

Kevin Smith, Madison Russell, and Sandra Russell representing Custom Integration Solutions at CEDIA. "The show was a tremendous success for CIS," said Founder Rudy Kern.

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Compiled by Kayla Kimmett

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EDITOR'S innovation &TECH TODAY CHOICE

[1] Redfox Rover IPX7

You may think portable Bluetooth speakers are a dime a dozen, but the Rover IPX7 waterproof Bluetooth speaker stands out. Interchangeable mounts mean you can secure the Rover to your bike, golf cart, kayak or toolbox. Another plus? It works with any GoPro or media threaded mounts you already own. Available for $99.99. Buy the Rover and shop different mounts at **www.redfoxwireless.com.**

[2] Sennheiser: HD 630VB

These audiophile head phones are accessible for anyone from casual music listeners, enthusiasts, and even to bona fide music snobs. Ear cups allow for track navigation, volume control, and even bass control – which means a personalized listening experience for the user. The transducers ensure you hear every nuance of your favorite songs, and the contemporary conveniences allow you to answer incoming calls while you listen. Available for $499.95 at **www.sennheiser.com.**

[3] INVIXIUM Touch

The IXM Touch allows for complete indoor control. Use your fingerprint to access your home, store other fingerprints that will also allow access, and even unlock remotely. Touch screen and Wi-Fi capability ensure ease of use. The IXM Touch is sleek, tough, and runs like a champ. Learn more and purchase at **www.invixium.com**.

[4]

[5]

[6]

[4] Ozobot

Don't let its small size fool you – this little bot that teaches kids to code is packed with features. Versatile playing surfaces, from the tablet screen to a board drawn on a piece of paper. It plays for 80 minutes and recharges quickly. The Ozobot comes in 2 colors with free apps, and tons of fun paper & web-based gamified activities Available for $59.99 at **www.ozobot.com.**

[5] Scout Alarms

Scout Alarm is a self-installed smart home security system that can be controlled and monitored from your smartphone with no contract required. After installing in minutes, you can watch the live activity feed, arm and disarm the system, and provide access to visitors from anywhere. Integrate Scout Alarm with Nest, Amazon Echo, Hue, LIFX and IFTTT. Scout is available a la carte in three colors to blend into your unique home. Prices start at $129 **www.scoutalarm.com.**

[6] One-Piece Custom Goalie Skate: VH

Meet VH Footware from Winnipeg, Manitoba and what could be one of the most innovative hockey skates ever manufactured. Carbon fiber layered on thermo plastic makes the boot the most moldable on the market. Couple that tech with the fact that it is custom made for you, and the fit is, by definition, 'perfect'. To learn more, visit **www.vhhockey.com**. For a first person account of the complete customization process, visit **www.innotechtoday.com**.

MUST HAVE GIFTS

[1] VXi V150 DECT Wireless Headset System with 300 Foot Range

This wireless headset provides a variety of amenities. With 300-feet of wireless sound capability and a charge that holds up to 10 hours, this headset has quickly grown in popularity. It is known for having some of the best noise-cancelling technology on the market, and allows you answering and volume control right from the headset. Wearability options include a headband, earhook, or neckband. Retail: $119.99 **www.amazon.com.**

[2] Monster Octagon Over-Ear Headphones

The result of a partnership with UFC Championship, Monster Octagon over-ear headphones were designed with champions in mind, and you can tell. The bold design and color choices (black or red) reflect the bold sound these headphones produce. A tangle-proof cord and the ability to answer calls and switch phones make the Octagons easy to enjoy. Available for $279.95 at **www.monsterproducts.com.**

[3] FireFX

The FireFX Bulletproof media system delivers a premier media control experience. When set up with a residential control system, the FireFX system home media solution makes your entire movie and TV collection instantly available. There is a near-zero delay accessing content, and with the Cinema-FX feature, upcoming trailers and bumper videos are in the mix instantly, putting 'theater' in the home. Purchase at: **www.firefx.tv.**

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MUST HAVE GIFTS

[1] Andiamo iQ Smart Luggage

Finally, a company has made luggage smart. The bag's app (yes – app!) can provide your bag's location, and you can access its weight. The bag itself features a battery pack, so you don't have to be that person hovering around the outlets. The iQ bag is estimated to retail for $300.00. Visit **indigogo.com** for more information.

[2] PSB M4U 4 Headphones High Performance In-Ear Headphones

These High Definition In-Ear monitors combine on-the-go comfort and style with true-to-nature sound quality. With PSB's RoomFeel Technology and Hybrid Dual-Driver System, you'll experience true hi-fi listening wherever you go. Retail: $299.00. **www.psbspeakers.com.**

[3] Cooper Products: iPad Air2 case

This case is one of a kind, keeping in mind that iPad users need something durable and stylish to put their tablets in. This case is easy to use, is a folio design, has a leather exterior, and is form fitting to the iPad. It also has a protective inner lining that doesn't scratch and comes with a stylish Microfiber Screen Cleaner. The Folio Case and iSlip cleaners come in a variety of colors. Retails at $19.99 **www.cooper-product.com.**

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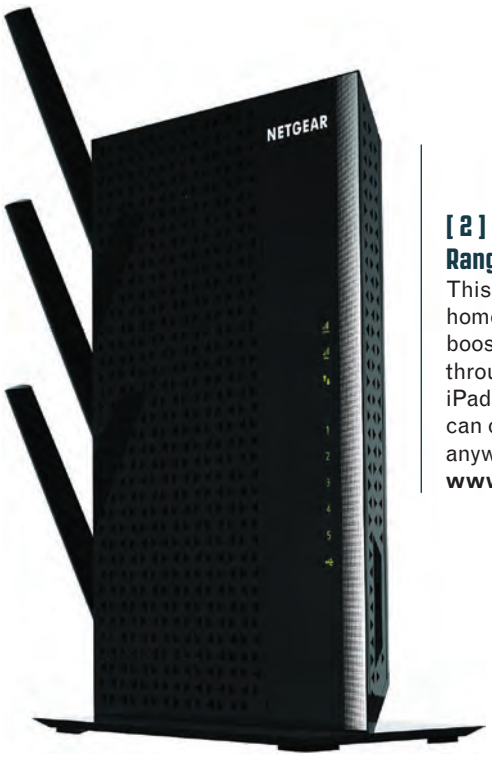
[1] NAD VISO HP30 Headphones

NAD VISO headphones were created exclusively for 'digital natives'. They offer the convenience of a 3-button multi-click remote and microphone as well as RoomFeel technology, designed to give the sensation of listening to a live performance and produce a crisp sound unlike any other. Retail: $229.00. **www.nadelectronics.com.**



[2] AC1900 Nighthawk Wi-Fi Range Extender Model EX7000

This device allows for the whole-home connectivity experience by boosting your Wi-Fi signal throughout your home. Ensure iPads, smartphones, laptops, & more can connect to the Internet from anywhere. Retail: $169.00 **www.netgear.com.**

[3] RIVA S

RIVA S comes with all you need for premium sound. This innovative Bluetooth speaker delivers a personal entertainment with Trillium for best-in-class audio and multi-dimensional surround sound. A small size and sleek design offers a convenient and impressive audio-visual experience. Retail: $249.99. **www.rivaaudio.com.**

EDITOR'S innovation &TECH TODAY CHOICE

[4] FUJIFILM X-T1

The FUJIFILM X-T1 is a fun camera. Use the old-school dials to adjust your ISO and shutter speed, and change your aperture with the ring on your lens. The electronic viewfinder automatically detects when you bring the camera to your eye, and may be disorienting if you're a DSLR user. But, its benefits include perfectly level and perfectly exposed photos – including a real-time histogram. Make your favorite photographer feel like a photojournalist from the film days with the convenience of the digital age. Body and 18-55 kit lens available for $1699.99; visit: **www.fujifilm.com.**

[5] GE MyTouchSmart Indoor/Outdoor Timer

This innovative tool offers a simple and convenient way to regulate your lights. Set custom on & off times, enable countdown features, and choose any presets to complement your schedule. The GE branded MyTouchSmartTimer system not only saves you money, but keeps your home environmentally friendly. Starting at $14.99 **www.jascoproducts.com.**

[6] Polar Loop 2

One of the most popular wearable brands on the market, the Polar Loop 2 provides advanced and easy-to-access analytics about your activities, broken down into five different levels of intensity from sleep to hard workouts. Perhaps most exciting is the Smart Coaching feature, which helps you reach your fitness goals quickly and safely. Available for $119.95 at **www.polar.com.**

[1] AC1900 Nighthawk Cable Modem Router C7000

This modem router allows for top WiFi speeds and is ideal for the fastest cable internet services around. With WiFi speeds of 1.9 Gbps, this device ensures HD video streaming using the industries first 24x8 channel bonding for unbeatable downloading speeds. Retail: $249.99. **www.netgear.com.**

[2] Arlo

You can literally see your home from anywhere you go with Arlo. The new security camera that is wire-free, weather proof, and HD. With Night Vision, Motion Alerts and the ability to connect to any mobile device, it is sure to put your mind at ease when it comes to home security. Retail: Starting at $179.99 **www.arlo.com.**

[3] LiftMaster MyQ Garage

Ever spend your whole drive to work wondering if you closed your garage door? Make your current garage door opener smart with LiftMaster's MyQ Garage. Set up email or push notifications on your smart phone to alert you when the garage has opened, access information on how long the door was open, and open or close the door remotely. Available for $129.99 at **www.LiftMaster.com**.

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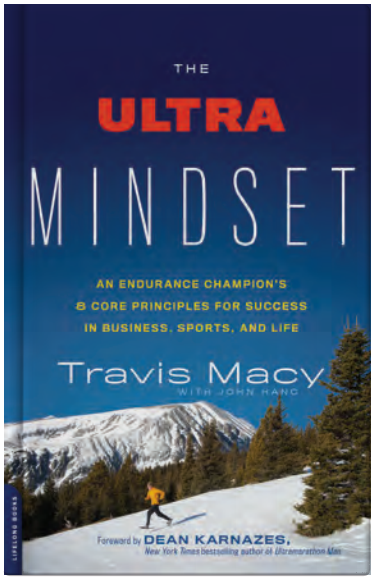
Seizing The Opportunity

Our Turn is an inspiring, intelligent, practical read for everyone from CEO to Sales Associate. Kirstine Stewart draws inspiration from her own extensive leadership experiences to take the conversation of women in business to a new level. Stewart is adamant; now is the time for new styles of leadership – and women are best-suited to set the pace.

According to Stewart, the time to question how women might create change in the working world has long since passed. Instead, it's time to exploit the fact that profound change is already underway. The age of technology is now, and the wave of millennials entering the workforce are emerging with very different expectations than those preceding them. The world is a new place, one that demands different leadership, new styles, and perspectives that enable women to become front-runners. The opportunity is here. The question Stewart tackles in *Our Turn* is, 'How do we seize it?'

Our Turn asks businesses and individuals to redefine roles, break the stereotypes, and re-learn attitudes that have been instilled in us from a young age.



Mixing Business With Sport

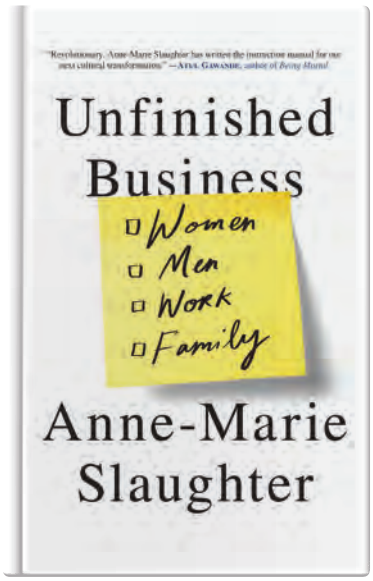
I'm usually leery about sports-oriented content doubling as a business principles book, but *The Ultra Mindset* is a welcome exception. First of all, ultra sports athletes are a breed like no other. They are driven, relentless, full of vision, great time managers, adaptable, and successful. Very successful. Sound like the make-up of a great business leader?

It sure does. This book hits on all cylinders. I greatly appreciate the way the author breaks out the Ultra Mindset principles (see below), and then provides self-assessment charts throughout so we can measure ourselves on the spot. The combination of great ultra running stories and business examples flows seamlessly and is so inspiring you can almost feel your higher potential oozing from the pages into your mind.

Here are the eight Ultra Mindset principles: It's all good mental training; be a 'wannabe'; find your carrot; have an ego and use it — until it's time to put your ego aside; think about your thinking: what and why; the 4:30 a.m. rule: when you have no choice, anything is possible; bad stories, good stories: the ones you tell yourself make all the difference; and never quit… except when you should quit.

You won't want to quit after reading this book. You'll want to go beyond your previous limits.

— R.Y.



Taking A Step Forward

Anne-Marie Slaughter takes on some of the greatest questions of our time: how do we find equality between men and women? Between work and family?

Slaughter's thought-provoking vision of balance makes for a universally engaging read that applies to men and women.

One of the reasons this book stands out so much from the crowd of business and self-help book models is Slaughter's inclusion of actionable steps for those with children. Single mothers are unfortunately not always included when leaders deliver advice for those aspiring to move up in their careers. Slaughter sees all women, in all positions of life, with no restrictions. Her inclusive discussion is, in itself, an innovative step forward for all.

Our Turn
By Kirstine Stewart
($31.95; Random House Canada)

The Ultra Mindset
By Travis Macy
($16.99; DaCapo Books)

Unfinished Business: Women Men Work Family
by Anne-Marie Slaughter
($13.99; Random House)

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The Green Giants of Sustainability

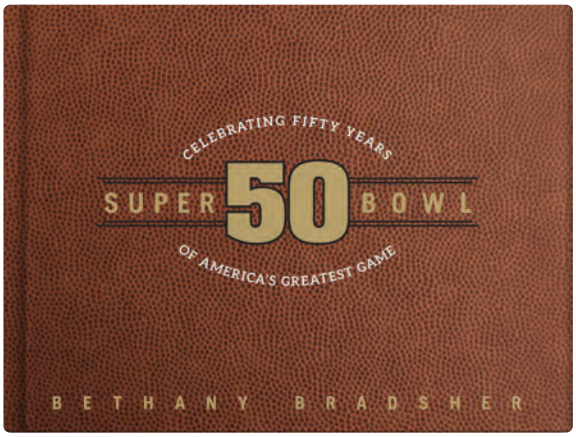
As more businesses embrace sustainability and more resourceful, transparent and streamlined practices, they also are learning to embrace new profit centers. This has been a hard nut for large companies to crack, as they've had trouble seeing how sustainability can be profitable.

Then along comes a book like *Green Giants* to unlock their secrets. As author and OgilvyEarth co-founder E. Freya Williams notes, large companies can do very well indeed while adopting sustainable practices. Williams, who has worked with Coca-Cola, Unilever, the United Nations and others to fold sustainable practices into their operations, lays out nine splendid studies of very familiar companies that have found new success while sharply upgrading their social and environmental profiles.

Calling them "the Green Giants", Williams shows how Coca-Cola, Chipotle, Tesla, Toyota, Whole Foods, Unilever, Nike, G.E., and IKEA became adopters of sustainable practices and transformed themselves into nine of the world's coolest, hippest large brands in the process. She found six common traits, all adaptable with a little ingenuity and effort:

- **Iconoclastic leadership:** Inner conviction, the courage to change, and a healthy contrarian streak — "we'll do it our way";
- **Disruptive innovation:** Embracing counterintuitive ideas, and striving to make products better, not just greener;
- **Higher purpose:** Think Chipotle's slogan, "Food with Integrity." Such lofty ideals connect with the customer, and increase profits;
- **Built in, not bolted on:** Integrating sustainability into the center of the business, rather than regarding it as an image-building 'add on';
- **Achieving mainstream appeal:** Opting to target needs and desires of wide-ranging customers, and enhancing their awareness of green business.
- **New behaviors:** A new way of doing business, led by transparency, social responsibility, and collaboration.

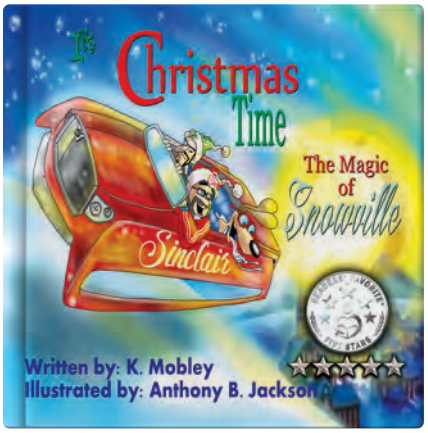
Green Giants reads as easily as a biography. In a sense, it is one — the biography of how nine companies completely transformed their existences. In so doing, they provided clues on how to make sustainability really work. Williams, in her astute manner, connected those dots. Now, we reap the benefits.



Super Bowl 50: Celebrating 50 Years of America's Greatest Game

Only an immaculate book could properly commemorate the golden anniversary of the Super Bowl. We've found it with *Super Bowl 50*. Veteran sportswriter Bethany Bradsher provides great recaps of the Super Bowls, players, and teams, as well as fabulous essays on varied side features including the stadiums, musical guests, and cultural features behind the game that consumes our lives every year. A sideline and locker room pass, all the way —the biggest compliment for any sports book. With the 50th anniversary game coming to the nation's most green-savvy stadium, Levi's Stadium in Santa Clara, CA (see *I&T Today*, Summer 2013 issue), it even has a great tech twist. For holiday gifts, or a personal keepsake, this is a must-own book. (www.superbowl50book.com)

— R.Y.



It's Christmas Time: The Magic of Snowville

It's Christmas Time: The Magic of Snowville puts a technological, space-age twist on a familiar tale. Set on a distant planet, this book delights children with innovations created by Randall, the engineer sidekick. This book replaces mysticism with technology while still sending a message about the spirit of Christmas.

Super Bowl 50: Celebrating 50 Years of the America's Greatest Game
By Bethany Bradsher
($50.00; JKR Ventures)

Green Giants: How Smart Companies Turn Sustainability into Billion-Dollar Businesses
By E. Freya Williams
($27.95; Amacom)

It's Christmas Time: The Magic of Snowville
By K. Mobley
($12.31; K. Blue Publishing)

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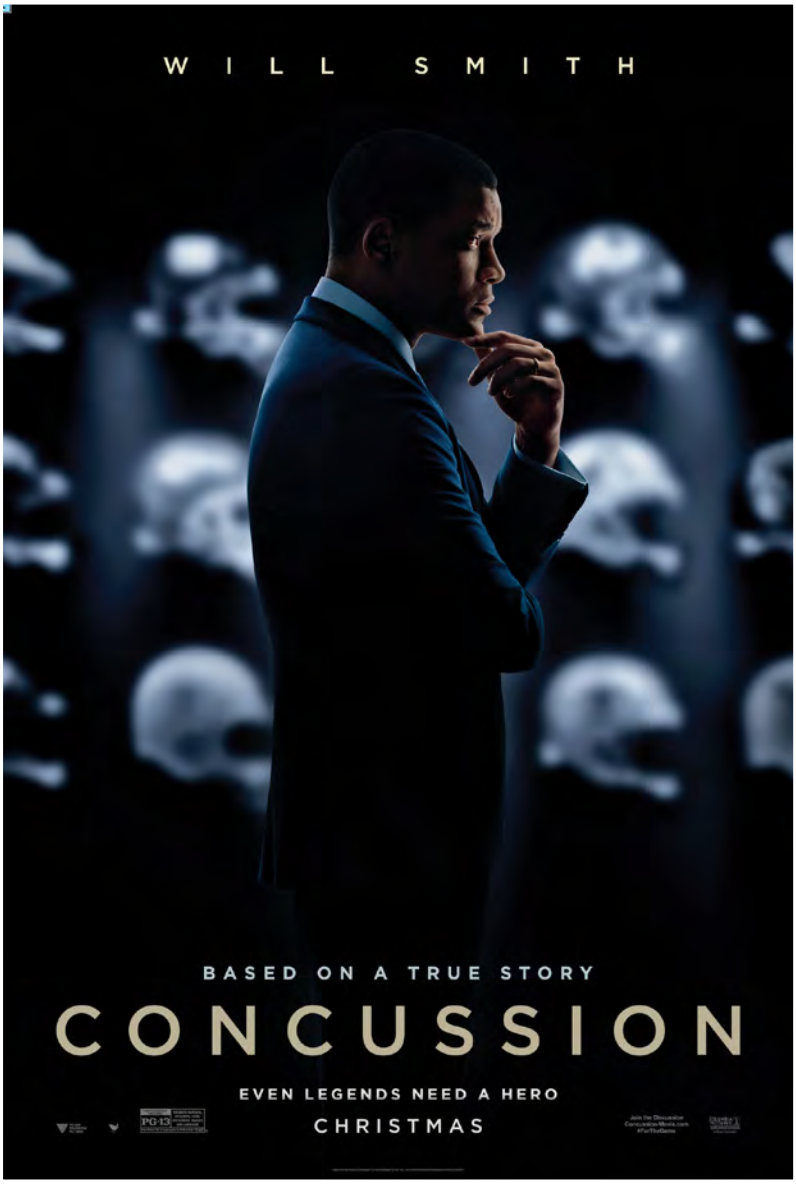
MOVIES

The Martian

In a NASA exploratory mission gone wrong, astronaut Mark Watney (played by Matt Damon) is left fighting for survival in the harsh elements of Mars. To make it through, he must rely on his scientific creativity to create an enclosed environment where he can hold on for his life. When the astronauts he works with learn of the tragedy, they gather an international alliance of scientists to go against NASA protocol and risk everything to rescue him.

Concussion

This film portrays the true story of forensic neuropathologist, Dr. Bennet Omalu (played by Will Smith) and his discovery that raised public awareness about Chronic Traumatic Encephalopathy—an injury resulting from high-impact sports such as professional football. This discovery sends him into a full-fledged fight up against one of the nation's biggest organizations, the NFL.



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Star Wars: The Force Awakens

The epic return of the *Star Wars* saga begins approximately 30 years after the previous film, *Return of the Jedi*, ended – and kicks off a new trilogy. Leia, Han Solo, and Luke Skywalker return, joined by new leads Finn, Rey, and Poe Dameron.

Steve Jobs

Writer Aaron Sorkin (*The West Wing*) introduces a new biographical drama that highlights the intelligence and weaknesses of the iconic technology leader, Steve Jobs (played by Michael Fassbender). The film highlights the ups and downs of his life, both professionally and personally all leading up to his revolutionizing career at Apple Inc.

MOVIES

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Tomorrow's Water Technology, Today

Continued from page 59

This has pushed forward-thinking Internet of Things tech company Terepac, among others, into action.

"There is a desperate need for water optimization," CEO Ric Asselstine said. "If municipalities can have the ability to observe how their water systems behave and optimize them, the return on investment is tremendous. In California's case, it also might be for the sake of maintaining the quality of life and business economy people there enjoy."

Added VP IoT and Marketing Communications Fraser McNaught, "When a city puts in a water pipe, the last time they see the pipe is when they put it into the ground. In Canada, we lose $3 billion per year in potable water because of tiny leaks underground that people can't see. Now, with our OneWater solution, part of our overall vision for the Internet of Things, they can tell by specific vibrations and pressure where problems are occurring, or might occur, and can head off major problems, like bursting pipes. It also enables municipalities to have greater knowledge of their systems."

Terepac and its solutions will find a receptive audience, but they aren't alone. Chicago has activated its MeterSave program, a voluntary program that provides homeowners with incentives to install water meters. Incentives include a seven-year rate guarantee and a free rain barrel, among others. Imagine how that would fly in other populous areas with high water and energy bills.

While California is still working it out in its cities, the statewide solution is already reaping benefits. "Information technology has played a critical role in enabling California to develop and deliver solutions to help mitigate the impacts of the drought," said Department of Water Resources Chief Information Officer Tim Garza. "Our new self-service portal will soon be expanded to automate infrastructure provisioning for more than 30 other organizations within the California Natural Resources Agency."

Agricultural concerns have also become pro-active, no doubt buoyed by water cut-offs in the nation's breadbasket, the San Joaquin Valley, in 2014 and 2015. Agricultural managers and farmers in at least 15 states now use the EEFLUX app, based on metric technology that utilizes satellite imagery to create digital field maps that evaluate specific water consumption and management in fields and orchards. Among happy EEFLUX users? The California Department of Water Resources, California Water Control Board, and the World Bank.

"Having water consumption maps produced quickly on Smartphones has been everyone's dream," said Ayse Kilic of the University of Nebraska, one of the app's developers. "In two years' time, we hope to see all farmers watching their fields from their phones and scheduling irrigations. EEFLUX is making Landsat the evapotranspiration satellite."

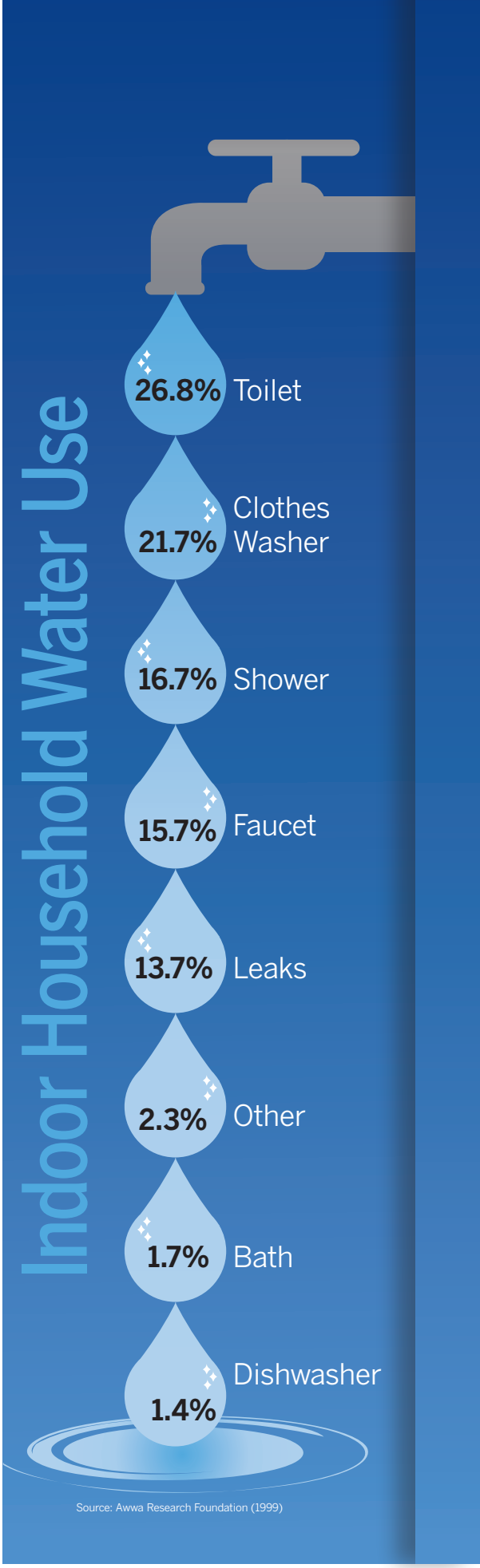
Not everyone is consciously saving, though. The U.S. Forest Service is reviewing the practices of Nestlé, the French conglomerate that owns Arrowhead bottled water, a product drawn from the San Bernardino National Forest east of Los Angeles. Despite the fact that, for 18 months, snowpack has been non-existent, Big Bear and Arrowhead lakes sit at a fraction of capacity, and creeks and stream beds are dry, Nestlé has continued to pull 50 to 150 million gallons a water per year from the region. When requested to cut back, they pointed to the letter of their permit, as Nestlé spokesperson Jane Lazgin put it, "that remains in full force and effect." The review could take 18 months before action is either taken or not.

Other new technologies are emerging. One is transforming wastewater into a resource for energy generation and drinking water, saving again by reducing water consumption for electricity. According to a study by water technology firm Xylem, these types of solutions can save up to 50% in energy efficiency and treatment costs.

Another is modular hybrid activated sludge adjusters, which remove nutrients that can be used as fertilizers while reducing the energy required for treatment in half — a direct savings also to our huge agricultural water usage. Mobile water treatment facilities are sprouting up. There is even technology in development to recycle water used for fracking, which, to this point, has made headlines because of how badly it has polluted rivers, streams, and aquifers.

"There will be knock-on benefits as products [will be developed] with new applications where the price tolerance is much lower," says Peter Adriaens, professor of environmental engineering and entrepreneurship at the University of Michigan.

As Terepac's Asselstine points out, systems developed and implemented successfully now, even in test market or prototype states, *will* find a receptive audience due to the huge buyers' market for water solutions. "What we're seeing is the first draft of sensors and hardware going online," he said said. "A year from today, a lot more of those systems will be deployed. We've also got five to ten more solutions in the works."



Building Community for Our Sustainable Future

A Conversation with KoAnn Skrzyniarz, Founder/CEO, Sustainable Brands

Continued from page 61

Markets that face the most serious resource constraints are obviously driven faster by supply risk rather than consumer demand.

***I&T Today*: Coca-Cola, Levi's, Patagonia, and HP, all Sustainable Brands community members, are among companies driving better treatment of workers. Can you discuss this issue, which is one of the central components of sustainability today?**

KS: This is something that is much more broadly of interest to consumers globally than even the health of our planet. It is much more tangible for people to understand the connection between their purchase of a product and who and how it was made. For example, the textile and electronics industries continue under pressure to improve conditions in their factories. The issue of conflict minerals in the jewelry and tech sectors is of growing visibility and concern, and therefore innovation.

> **'The bar for all businesses and sectors is being raised every day as more businesses commit to improving the impact of their operation, and more consumers learn more about the negative impacts of business in each sector.'**

***I&T Today*: Do we need a revolution to move from an industrial society to a service society? How can we manage to make this transition?**

KS: Yes, this is one important way to think about how we can decouple economic growth from the use of environmental resources. Business model innovation is a big part of the solution to moving toward a circular economy, so moving from ownership to access, or shareability. Much great thinking is being done around both of these models: Circular/Cradle to Cradle Design, and Collaborative or Shareable Consumption.

***I&T Today*: Are there people thinking of ways to make this change happen more smoothly? Or do you think that inevitably we will have a crisis when this happens?**

KS: This is a primary goal of our work at Sustainable Brands. Some organizations and individuals are out to see the dismantling of global brands like Coke or Starbucks or Walmart. We see the economic tragedy that would befall our world if all those people employed by the world's biggest brands fell apart. This is why our efforts are squarely focused on accelerating the transition of all these companies to sustainable ways of operating, by connecting them with great ideas and entrepreneurs who they can help scale as alternates to their less sustainable offerings.

***I&T Today*: Advertising has traditionally followed the mission of increasing consumption and strengthening brands. Now, we are bombarded by ads from every direction and platform imaginable. How is it affected by the strengthening of the concept of sustainability? What changes can we expect?**

KS: We're already seeing many terrific examples of companies using advertising to help encourage healthier consumption. Just this month, REI launched its #optoutside campaign with a commitment to close its stores on Black Friday and encourage its employees and customers to get outside rather than go shopping. If results of this campaign mirror Patagonia's *Don't Buy This Jacket* campaign, they are bound to see better sales connected to this campaign. Intermarche's 'Inglorious Fruits' campaign to tackle food waste through its grocery chain in France is another great example. We chronicle great examples of this transition taking place every day at Sustainable Brands.

***I&T Today*: Will sustainability be at some point a theme for the masses? Should we develop courses and curricula for this in high schools, colleges, and grad and business schools? What is its relevance in coming decades?**

KS: Embedding sustainability as an intrinsic mindset into all people around the world is the number one requirement for this century. We cannot progress as a species until we understand that our actions have impact on our own individual and collective survival. We need to behave in ways that enable the long-term survival of our species – if only for the sake of our own kids.

Once we arrive at a global population that understands these issues and how to tackle them, we can move on to further develop our capacity as humans to fully self-actualize and experience true joy and enlightenment. As it turns out, this is something much more disconnected from our capacity to consume than we have come to assume over the past 50-60 + years.

25 MOST SUSTAINABLE U.S. COMPANIES

Over 500 companies were ranked on corporate sustainability and environmental impact. The factors considered were: energy productivity, carbon productivity, water productivity, waste productivity, green revenue, sustainability pay link, and sustainability themed committees.

Biogen	Health Care
Allergan	Health Care
Adobe	Information Technology
Broadcom	Information Technology
Sigma-Aldrich	Materials
Hershey	Consumer Staples
Ecolab	Materials
Coca-Cola	Consumer Staples
Aflac	Financials
Mead Johnson Nutrition	Consumer Staples
UnitedHealth Group	Health Care
Apple	Information Technology
MetLife	Financials
Keurig Green Mountain	Consumer Staples
DIRECTV	Consumer/Home
CVS Health	Consumer Staples
Johnson & Johnson	Health Care
Stanley Black & Decker	Industrials
Prologis	Financials
NVIDIA	Information Technology
Amgen	Health Care
Eversource Energy	Utilities
Humana	Health Care
Boeing	Industrials
American Water	Utilities

(Sources: Corporate Knights Capital, HIP Investor, Inc., Newsweek)

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Frankfurt has become the world's meeting place for publishing; more than 150,000 people from 125-plus countries attended to see publishers from 86 nations at Frankfurt Messe, covering more than 1.5 million square feet of floor space. This included robust English-language, Digital Hot Zone, children's, newspaper and magazine, and guest country (Indonesia) platform sections. There was even a nod to Comic-Con, as the YA sci-fi and fantasy area below the press center was packed with thousands of costumed teens and young adults for the final two days. Speaking of which, one American visitor was astonished to see tens of thousands of teenagers fully engaged at a book fair, as if there was a world outside video games. It reflected Europe's continuous focus on reading and learning as fun and work, a very refreshing sight.

It also included one of the most incredible antiquarian book exhibits ever presented at a book fair. When you're reading through Galileo's astronomy book that turned the Pope and Vatican upside down more than 500 years ago — in Galileo's hand — or the first books Johann Gutenberg churned out from his press 10 miles up the road from Frankfurt in circa 1440, you know you've died and gone to literary heaven.

As for the digital issues touched upon, or covered, at Frankfurt, we received a dazzling preview of what to expect in more extensive context at Digital Book World:

• **The next generation of digitized textbooks:** smarter, more responsive and collaborative, more media elements, greater tools — and interaction from teachers and even students in updating content. Think Wikipedia, but with better filters to sift out inaccuracies. The bottom line? Digital textbooks are no longer products. They are services.

• **E-book personalization and watermarking:** Photographers have been proficient copyright water markers for years. Now, thanks to companies like Booxstream, e-book owners and small publishers can personalize and watermark as well.

• **Customized stories and pictures:** Children's books are about to shift wildly on the digital stage, as technology emerges that allows parents and children to 'continue' or even create alternate paths to stories, in effect writing their own segments. In addition, publishers in Europe are utilizing tools to give children more interactive experiences within the books they read.

• **Choosing formats:** A Spanish company, Btwinbooks, enables readers to look at print and digital versions of books side-by-side, and then choose which format they prefer.

• **More mass-scale distribution platforms:** Canadian company Pressreader now distributes more than 4,000 magazines and newspapers digitally — the largest client list in the world. It, and the other companies (such as Zinio), continue to support more and more interactivity within the titles they distribute.

• **Self-curated digital libraries:** WJ Bookclub demonstrated a model that enables readers ages 6 and up to curate their own digital libraries — adding photos, descriptions and other media to deepen and explain their title choices.

• **Monetizing content:** At least 30 exhibitors around the Digital Zones touted cross-channel distribution, customer segmentation and acquisition, and repurposing tools to feed into the wave we're beginning to ride in digital publishing in these customer-driven times: creating unique money-making vehicles for our content, and not concerning ourselves with other models.

• **Customized magazines:** Yesterday's brand-specific magazines are today's person-specific digital mags, thanks to technologies such as Flipboard, Flipsnack, paper.li, and others on which you can literally create your own magazine — and be ready to link to a digitized distribution platform.

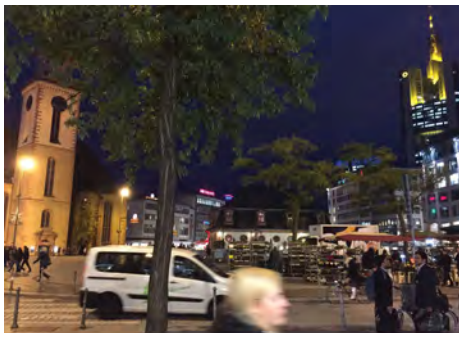
• **Text-to-speech:** This demonstration rocked, and indicated a very disruptive move in the years ahead. When this technology is refined, you will literally be able to write an article, paper or book, run it through software — and have a solid audio book or file in your hands. That is going to make the already robust audio book world explode.

There were numerous other examples (see our website for a longer list), all of which led to the next question: How do we import these technologies and tools into our strategies? Our business plans? Our publishing, reading, teaching, or writing models?

A good first step would be to attend Digital Book World Conference + Expo at the New York Hilton Midtown. The conference will focus on using metadata, networking, content marketing, consumer behavior studies, consumer interactivity, and the tools presented above — and more — to shape products, services, and models that carry across multiple platforms. Not only that, but, as Frankfurt indicated, each platform will provide its own rich (and increasingly interactive) experience while feeding the larger objective: how a publisher, educator, or creator wants to showcase to the world.

Never has the publishing world seemed more accessible — or more exciting.

ROBERT YEHLING is a Senior Writer and founding editor of I&T Today. *Two of his books were exhibited at the Frankfurt Book Fair. He also participated in a digital discussion at the event.*



Frankfurt teased out the digital publishing technologies that will be expounded upon at Digital Book World in New York in March. However, this city's print book roots are the deepest in the Western World, thanks to native son Johann Gutenberg's invention of the printing press in circa 1440.

Continued from page 89

"I HAD A YOUNG TEACHER DOING ANATOMY AND PHYSIOLOGY WITH BREAK DANCING. AMAZING! WE DID SPATIAL REASONING AND TALKED ABOUT CAREER LONG PHYSICS THROUGH GRAFFITI. AMAZING!

I do think that there's been a recent hyper explosion of coding academies, which I love.
I want people to be able to code for the games that they're creating. I want them to be able to develop apps. It's a big pathway to being financially viable. I understand all of that, but I also think it's a problem to use coding as a replacement for hands-on tangible play. I walked into a coding class the other day, and there were young people sitting in rows behind computers, staring at the screen, and the teacher was just standing up front and giving them instruction. I said, "Look, I know that they're coding, but the nature of how you're teaching them to code is criminal!" That's not how you engage them. You have to be creative. And so as we delve into a new frontier and have kids learn the back end kind of work, my only desire is that we don't end up with a bunch of STEM *workers*. We want to create STEM *innovators* and *creators*. We don't want to replicate the same process of learning we have now, particularly using youth of color in the lowest totem of the totem pole. We don't want to train them to just do the low-labor jobs in STEM fields. If you're going to enter into these new fields or domains, I want you to be able to capitalize and truly actualize yourself, which means I don't want you to just be blindly coding – I want you to be innovative and creative and learn business savvy and communication skills. I think all these things can be done together.

***I&T Today*: Would adding 'art' and changing STEM to STEAM solve a lot of that?**

CE: Absolutely, that's the answer. I'm a big advocate of STEM to STEAM. I mean there's nothing that I advocate for more than that, not only because I believe in it as a philosophy, but because that to me is what creativity is all about. What the arts do is they stimulate the mind. Art makes you see things you've never seen before. It gives you new avenues for expression. It forces you to question. It takes you into the inner core of the spirit and allows you to be your full self. If you do those things, you have a different relationship to the subject. You know you can memorize something, have a passion for it, and understand why you memorized it. That's what STEAM does.

I do like the idea of STEAM not just being art blindly, but art and culture. That has been the evolution of the arts education movement for a while, and I think now that we are going from STEM to STEAM, we want to include forms of cultural expression for young people. It should be viewed as art as much as highbrow art per se, including vernacular things like hip-hop, like dance, like movement. I had a young teacher doing anatomy and physiology with break dancing. Amazing! We did spatial reasoning and talked about career long physics through graffiti. Amazing! So, when we say 'arts', we're not just talking about classic art, but we're talking about art and culture creative forms of artistic expression.

In the words of Rick Ross, you want to be a boss. You want to be able to run things. That's STEAM. I always think about teaching young people how to be business savvy, and how you as a science educator are a consultant. Science, creativity, and business savvy don't have to be divorced from each other. The best educators I know do that concurrently, multimodally. This is a multimodal generation, and if you're teaching uni-directional thinking, you're not meeting them at their creative level. We have to be able to think about this more robustly.

Students can see Dr. Emdin at the X-STEM Symposium, sponsored by MedImmune, on Thursday April 14, 2016. Visit the USA Science & Engineering Festival's website at www.usasciencefestival.org to register for this event.

Sciren Taryn O'Neill: Putting the 'Science' in Science Fiction

Continued from page 90

I was obsessed with finding truth in my crazy ideas. And this opened the door to researching real science, physics especially. And once I went through the door, the light bulb went off. My whole world view changed. Understanding the laws of nature that govern our existence gave me this new inspired outlook. I derive so much joy from my news feed everyday seeing the work of scientists. I wake up and think, *This world is amazing!*

You know, when I was in school studying science, it felt forced, like there was no relevancy to the real world as to why I was supposed to be learning physics or chemistry beyond a grade. Unfortunately, I think this is pretty common. But now that I do understand how important and inspiring STEM knowledge is, especially with the looming challenge of climate change and a world that is becoming exponentially more dependent on technology, I want to share this knowledge and passion as much as I can through my work. I like to think of us Scirens as a Trojan horse – people wouldn't expect a quartet of actresses to be advocates for STEM! So we can reach people who wouldn't normally be exposed to science news.

***I&T Today*: Do you find people are surprised to hear you're interested in science? Are those stereotypes changing?**

TO: It's changing. People might be still surprised, but then they're like, *Oh okay. That's awesome.* As opposed to *Why? Why on earth would you do that?* The correlation between the arts and science is not so foreign now. And that's thanks to big celebs like Will.I.Am taking a stand for STEM education. And for people like Neil deGrasse Tyson and astronaut Chris Hadfield becoming mainstream media personalities. And I have to say that it's such a pleasure since we started the group that we have next to no online hate.

***I&T Today*: Wow.**

TO: Right? It is amazing. It's the internet after all so I expected there to be *some* sort of backlash. But ultimately I think people know we started Scirens because we are authentically passionate about science. We didn't start it to make money off of it. Of course, I'd love to ultimately make a living here at the cross section of science and entertainment!

***I&T Today*: What is the importance of keeping the 'A' in STEAM, and what value do the arts brings to the STEM skill set?**

TO: The middle letter of STEAM is the glue that binds everything together. It allows the wonders of STEM to be understood and shared. The reason I'm into STEM is that I first found the A – I first found the arts. That began my search for meaning in the universe and led me to #STEM. It's weird because I realize that I always write #STEM in a tweet just so people are clear what I'm referencing. But science and art are just different sides to the same coin. We're exploring the story of life. It all comes back to the narrative. Science and Art just use different paint brushes to illustrate the stories. And I think one can't do its job without the other. Technology is integral to creating and distributing entertainment and a scientist needs imagination and good storytelling skills to share the significance of her findings with the public and the institutions that fund the work.

***I&T Today*: What are your top 2 or 3 favorite movies related to science or science fiction?**

TO: *Contact.* I loved the big questions that *Contact* posed and the portrayal of a female scientist who studied the stars. *Alien* is a big favorite of mine – and I normally don't like horror films – but it was ahead of its time portraying a strong female character who was an engineer AND who kicked alien ass. Signorney Weaver will always be a hero to me. And my favorite all time movie is *Blade Runner*. It is phenomenal how that movie holds up. Come to think of it, the seeds of my science and Sci-Fi passion were planted back when I first watched it in film class at Duke. So thanks Ridley Scott! I guess we need to work together now.

Follow Taryn O'Neill (@tarynoneill) and the Scirens (@scirens) on Twitter!

Robert Kirkman: The Walking Dead is just the beginning

Continued from page 97

Making a movie is not entirely different than making a television show, but it is a different way of telling a story. A lot of my experience working on *The Walking Dead* TV show was used on *Air*. Producing new things and expanding into new directions is something that drives me. It's very exciting to take risks and do things I may need to learn on the go.

***I&T Today:* What role do you see movies playing moving forward for Skybound?**

RK: We had a really good experience with *Air,* and we've made a lot of good relationships that we want to maintain. Skybound is a company that doesn't have to do movies and it doesn't have to do video games, but we have the luxury of being able to do that if we want to. That allows us to position ourselves strategically to make the best products possible. There's not a corporate mandate or anything where we have to do three or four movies a year. Now that we've done it and we know that we can do it, as projects arise and as we feel passionately about them as we did with *Air*, we'll continue to stay in that space. Behind the scenes, we're working on a few other movie projects, and a couple of those look like they may be coming together. We will continue to travel down that road for as long as it's fun and exciting for us.

***I&T Today:* What do you feel your company can learn from what Marvel has done on the big screen over the years with comics?**

RK: The lesson to learn from what Marvel Studios has done with movies – which I think is fantastic – is that audiences love to be surprised, and they want to see things done that you wouldn't think are possible. The idea of a shared universe where *Nick Fury* showed up at the end of the first *Iron Man* movie was a big surprise. It's so exciting for a viewer to be in that movie theater and have something thrown at them that they didn't expect. Having watched superhero movies for so many years, the idea of

a connected universe is something that I didn't think was possible. The real lesson that people should be taking from them is to do things that are unexpected and to find new ways of telling stories with movies. It's important to try to reinvent the wheel and give the audience a movie experience that they couldn't get before. That's what we should be striving to do.

***I&T Today:* How does Skybound view video game developers within the entertainment landscape, and what opportunities are there to work with them beyond just making games?**

RK: From my experience, making video games is extremely difficult. A movie script is anywhere from 90 to 120 pages long, and a video game script is more like 500 pages long. People that direct video games end up with very different challenges that are much more difficult than directing a movie in a way. People that come from writing comic books, they're faster and they can think on their feet. They're able to tell a great story on their own because that's how comics are done. People that move from comic books into writing television and movies have a skill set that gives them a leg up over people that come into this media in a traditional way. Having worked on *Red Dead Redemption* and all the games, Christian Cantamessa has dealt with the kind of problems that you deal with as a Hollywood director, but also other problems that you would never have to deal with. Having that experience allows them to handle all of these other things that could come up. That's a talent pool that is able to easily transition into other media, and do so with great success.

Acting as a Second Career: Masi Oki

Continued from page 98

***I&T Today:* You need to tell Tim Kring that.**

MO: Tim's the producer. I'm just an actor on the show. I create games myself. I have my own Mobius Digital games studio where I do all my stuff. Tim can do his stuff.

***I&T Today:* What is it like for you to be able to create games, especially coming from the background of working on special effects?**

MO: It's wonderful. Anytime you can create something, it's so fantastic. *Outer Wilds* is something I'm very proud of because of the short development cycle. I love TV and film, but it takes so long to create things. I'm working on a film project that has taken 10 years to create from zero to script. With mobile, it's a three to twelve-month development cycle.

***I&T Today:* We're seeing virtual reality migrate to mobile. What do you see that opening up for you as a developer?**

MO: It's great. I'm actually working on some VR stuff, as well. I feel VR is a lot more immersive, and it is more about narrative-based content than it is about pure shoot-em-up stuff. VR is a Wild West right now. Everyone's investing in VR, and they're looking for the right content. We have some great ideas I think will work out.

***I&T Today:* Which VR headset are you interested in?**

MO: I am actually a big PlayStation fan. I had a chance to go visit Sony, and I've been pretty excited about what PlayStation VR can do. It's going to take awhile. At the end of the day though, where you want to end up is augmented reality. But that's going to be 10, even 20 years ahead. Between now and then, it's going to be all about VR. We'll see some changes in the next two to three years, and when you see the right content I think it will be great.

***I&T Today:* Microsoft HoloLens has cool AR technology.**

MO: Yeah. All of those platforms are great. PlayStation always has had a soft spot in my heart because I grew up on it, and those guys are really great. I'm trying to see what I can do with them.

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Your New Year's Resolution? Better Phone Etiquette

By Charles Warner

With 2016 right around the corner, it's about time we had a frank discussion about technology etiquette, particularly regarding smartphones.

For some of you, this will be a much needed wake up call (like the time I learned the rules about socks with sandals, or that men have cuticles). For others, you will probably violently defend your behavior and continue your abominable ways. If you don't trust me, just pretend this advice is coming from the ghost of Steve Jobs himself, and get your act together.

Do Not show everyone your fantasy football lineup and ask for an opinion. Just don't. No one cares really. Unless you are a professional fantasy footballer in one of those annoying daily fantasy leagues, keep it to your fellow fantasy geeks. They probably don't care, either.

Do turn your phone off at work and during gatherings with humans. Of course, getting updates every time someone likes your post satisfies your need for significance, but it's also distracting. Distraction is the enemy of accomplishment, and when taken to the extreme, can lead to relationships falling apart. Focus on being present, at work and with your loved ones, and you just may see your relationships flourish. For every fifteen minutes you spend with your phone in airplane mode, an angel gets its wings.

Do Not expect others to respond instantly to your text or PM. You know when you text someone and they don't respond right away, but then you see them post on social media? WTH?! Just shake it off, in the wise words of Tay Swift. Mobile phones were meant to complement our lives – not rule them. If we would all detach from our devices more often, we would be a lot healthier and happier. That means giving others a break when they detach. If it's really important, use the 'phone' function on your smart phone (yes, it makes calls, too) and leave a VM. Speaking of voicemails…

Do clean out your voicemails periodically. I just don't trust a person whose VM is constantly full – just like I don't trust gas station sushi.

Do Not make selfies your only (constant, relentless, repeated) contribution to social media. Selfie queen/king is not a badge of honor. This year, more people have died from selfies than shark attacks. This proves two things: there is a God, and that She is infinitely wise. If you can't add something of value to a social media feed (humor, interest, motivation, etc.), then your inflated ego is going to get you unfollowed. A lot. Try some substance instead. *Note:* If all your selfies are from the same exact angle and/or include you in your underwear and you are not an underwear model, you may want to consider a professional intervention. #Selfie #StopIt #SorryNotSorry #SelfieLivesMatter

Do Not check your phone first thing when you wake up; that's probably not healthy.

Do Not post or check your email while you're sitting on the toilet; that can't be healthy. Plus it's gross.

Do Not Tinder while driving; that is definitely NOT healthy. It's safer to stay single.

Do respond to this column with your reaction to these technology do's and don'ts. Know of any I missed? Send to: info@goipw.com. We will publish the best responses in our next issue.

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December 1st
Trout Tank
Denver, CO

January 20-22; 27-29
smith & beta Boomtown Pop-Up Learning Conference
Denver, CO

DETROIT

January 11-24
North American Auto Show
Detroit, MI

CALIFORNIA

December 1-2
Wearable Technology Expo
Santa Clara, CA

January 14
Los Angeles Tech Security Conference
Los Angeles, CA

January 14-17
Periscope Summit
San Francisco, CA

January 21-24
North American Music Merchants (NAMM) Show
Anaheim, CA

February 12-18
Hackathon:
February 13-14
Workshops: February 15
Conference & Expo:
February 16-17
San Francisco, CA

LAS VEGAS

January 2-4
IEEE Region 6 Rising Stars Conference

January 6-9
CES
Las Vegas, NV

January 10-13
NamesCon
Las Vegas, NV

February 29-March 4
Healthcare Information & Management Systems Society Show
Las Vegas, NV

March 16-20
International Wireless Communications Expo
Las Vegas, NV

TEXAS

January 13
Dallas Tech Security Conference
Dallas, TX

February 4
Small Business Expo
Houston, TX

March 10
Latin@s in Tech – XelerateTech
Austin, TX

NEW YORK AREA

December 3
New York, NY
MedTech Metro

December 27
Jamaica, New York
2nd International Conference on Science, Technology, Engineering, and Management

March 8-9
New York, NY
Digital Book World

D.C.

Nov. 18-19
Greenbuild International Conference & Expo
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FORT LAUDERDALE

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in our next issue

Vroom Vroom

Want to know the latest in auto innovation and tech? Our Spring issue will break down the cutting edge developments in connected cars, alternative fuels, hybrid cars, safety, and more!

Sustainability

We shift our focus to solar and wind energy in the Spring issue of *Sustainability Today*. We also visit with the Center for a New Economy in Ft. Collins, Colorado, and explore 25 killer technologies that are growing business while reducing our resource usage and pollution output.

CES Coverage

For the fourth consecutive year, *I&T Today* sends its entire in-house and freelance team to Las Vegas to bring you the insights, entertainment, ground-breaking products, technologies, edge devices, and sharpest minds and visionaries behind the world's premier consumer electronics show. Want to save eight miles of walking per day? We'll bring CES to you.

Spring Sports

As skiing and snowboarding season comes to an end, check out the hottest gear for spring and summer! We will explore the newest trend, adventure tourism, and continue exclusive interviews with innovators in adventure sports.

It's finally time for our USA Science and Engineering Festival Preview!

USA Science and Engineering Festival Preview! From the top-notch speakers, the sponsors and volunteers who make it all possible, and the real stars of this huge event: the students. *I&T Today* and media partner USA Science and Engineering Festival will present the best and brightest of what to expect at the 2016 event.

Look for these stories, along with our departments, Gaming & Entertainment, Gift Guide, Product Revolution, and much more in the Spring 2016 issue of *Innovation & Tech Today*.
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