Center of Excellence
WIRELESS AND INFORMATION TECHNOLOGY
AT STONY BROOK UNIVERSITY

NEWSLETTER
AUGUST 2016

CEWIT2016 New Developments: Postponement and Symposium Spinoff, Cyberinfrastructure, Digital Transformation, CEWIT Business Insights

CEWIT is an unparalleled resource, advancing the science and technology underlying the next epoch of the information revolution.

AUGUST COVERAGE: CEWIT2016 New Developments: Postponement and Symposium Spinoff, Technology Frontiers: Cyberinfrastructure, Henry Schein's Digital Transformation, CEWIT Business Insights

New Developments: CEWIT regrets to inform our readers, that due to unforeseeable and unavoidable circumstances, the 13th International Conference & Expo on Emerging Technologies (CEWIT2016), scheduled for November 2 & 3, 2016, **will be postponed to 2017**. However, a series of programs are planned for the coming months that will bring a dynamic schedule of technical talks and entrepreneurial workshops to the Center, including the **CEWIT2016 Business Track spinoff, the CEWIT Technology Entrepreneurship Symposium to be held in-house on November 2, 2016.**

Technology Frontiers: Stony Brook University's key role in a **national effort to give big data power to thousands of new researchers** and accelerate the translation of basic science into new, critical technologies.

CEWIT Industry Partners: Fortune explores what CEWIT industry partner and 84-year-old Long Island company, Henry Schein, Inc., can tell us about the digital revolution and **how almost every big company, is on a journey of digital transformation.**

CEWIT Business Insights: CEWIT's experts team up to tackle the challenges of starting, running and funding a new business and help entrepreneurs to navigate the playing field. **Their perspectives in this newsletter and at the CEWIT Technology Entrepreneurship Symposium.**

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The Next Big Thing:
CEWIT Symposium

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Stony Brook University

CEWIT 2016

The 13th International Conference & Expo on Emerging Technologies for a Smarter World

POSTPONED TO 2017 | Melville Marriott Long Island | Melville, NY, USA

Due to unforeseeable and unavoidable circumstances, **the 13th International Conference & Expo on Emerging Technologies (CEWIT2016), scheduled for November 2 & 3, 2016, has been postponed to 2017.** However, a series of programs are planned for the coming months that will bring a dynamic schedule of technical talks and entrepreneurial workshops to the Center.

The 2017 Conference dates will be announced at our earliest availability.

For more information on the revised Conference schedule, the **upcoming CEWIT Technology Entrepreneurship Symposium**, business development and economic impact, as well as the Center's technology incubator and opportunities for partnership, **join the CEWIT Mailing List** — the one source for all things CEWIT.

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Center of Excellence
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IEEE

Stony Brook University

NEW DEVELOPMENTS The CEWIT Technology Entrepreneurship Symposium

Fostering new enterprise development and smarter business models — an integral part of CEWIT's mission and commitment to accelerating the region's startup community. We've taken our circle of noted business mentors, intellectual property professionals and venture capital experts and turned the CEWIT2016 Business Track into the in-house CEWIT Technology Entrepreneurship Symposium.

Their perspectives on the challenges of starting, running, and funding a new business, paired with networking sessions, on November 2, 2016. Limited Seating, Registration Required: More Information & To Register.

November 2, 2016, 9:30am-4:00pm
The Center of Excellence in Wireless and
Information Technology (CEWIT)
Stony Brook University, Stony Brook, NY
www.cewit.org/events/techentrepreneurship.html

TECHNOLOGY FRONTIERS: CYBERINFRASTRUCTURE

TWIN INSTITUTES UNLOCK BIG DATA POWER FOR NEW RESEARCHERS, A COMMUNITY-ORIENTED AND MULTIDISCIPLINARY PERSPECTIVE

Scientists increasingly rely on computers to gain insights about the world through simulations, data analytics or visualizations. These computational investigations typically rely on scientific software that makes it possible to perform virtual experiments and explore laboratory research data with reliable, reproducible results, whether one is using a desktop computer or the nation's most powerful supercomputers.

Cyberinfrastructure consists of the computing systems, data storage systems, advanced instruments and data repositories, visualization environments, and people, all linked by high speed networks to make possible scholarly innovation and discoveries not otherwise possible.

A term first used by the US National Science Foundation (NSF), cyberinfrastructure typically is used to refer to information technology systems that provide particularly powerful and advanced capabilities. Furthering their efforts, the National Science Foundation (NSF) has recently **announced two major awards to establish Scientific Software Innovation Institutes (S2I2).** The awards, totaling $35 million over 5 years, will support the Molecular Sciences Software Institute and the Science Gateways Community Institute, both of which will serve as long-term hubs for scientific software development, maintenance and education.

High-performance computing expert **Dr. Robert Harrison, CEWIT affiliated faculty member and Director of the Institute for Advanced Computational Science (IACS) at Stony Brook University,** is one of the leaders of the new The Molecular Sciences Software Institute (MolSSI), supported by the five-year $19.4 million award from NSF. His membership on the board of directors and will oversee the Institute's activities for sustainable, forward-looking and standards-oriented approaches to parallel computing, including both hardware and software strategies — a community-oriented and multidisciplinary perspective that is well aligned with the vision of IACS here at Stony Brook University.

Located at Virginia Tech and lead by Daniel Crawford, MolSSI will fund an interdisciplinary team of software

scientists who will develop software frameworks, collaborate with code developers and cyberinfrastructure centers, and partner with industry in support of the computational molecular sciences community.

"The Molecular Sciences Software Institute will act as **a nexus for science, education and cooperation** serving the community of computational molecular scientists — a broad field that includes biomolecular simulation, quantum chemistry and materials science," Crawford said.

Ultimately the Institute will enable computational scientists to more easily navigate future disruptive transitions in computing technology, and most importantly, tackle problems that are orders of magnitude larger and more complex than those currently within their grasp and to realize new, more ambitious scientific objectives. This will **accelerate the translation of basic science into new technologies essential to the vitality of the economy and environment**, and to compete globally with Europe, Japan, and other countries that are making aggressive investments in advanced cyberinfrastructure.

Software developed by the Molecular Sciences Software Institute will expand scientists' understanding of the molecular phenomena that underlie chemical processes, **leading to solutions that will improve citizens' health and security and grow the nation's economy.**

Internationally recognized scientists from Virginia Tech and eight other universities will head up the institute, including those from Stony Brook University. **The University's IACS will lend the number-crunching might of its high-speed SeaWulf computer cluster to the Institute, playing a key role in a national effort to give big data power to thousands of new researchers.**

The second award, led by the University of California, San Diego, establishes the Science Gateways Community Institute, a multi-institutional consortium that will increase the capabilities, number and sustainability of science gateways. Gateways are mobile or web-based applications that provide broad access to the nation's shared cyberinfrastructure to scientists and citizens alike.

"Gateways foster collaborations and the exchange of ideas among researchers and can democratize access, providing broad access to resources sometimes unavailable to those who are not at leading research institutions," said Nancy Wilkins-Diehr, associate director of the San Diego Supercomputer Center and principal investigator for the project. "Sharing expertise about basic infrastructure allows developers to concentrate on the novel, the challenging, and the cutting-edge development needed by their specific user community."

In astronomy, bioinformatics, nanotechnology and many other disciplines, science gateways have greatly expanded the number of investigators who can perform computational research on cutting-edge cyberinfrastructure.

The institute will transform the way science gateways are developed by incubating new gateways, improving the usability of existing ones and training young gateway developers.

Together, the twin Institutes will endeavor to create new software norms that bring the big data-unlocking power of multimillion-dollar supercomputers to researchers' laptops. Rajiv Ramnath, Program Director in the Division of Advanced Cyberinfrastructure at NSF comments, "The institutes will ultimately impact thousands of researchers, making it possible to perform investigations that would otherwise be impossible, and expanding the community of scientists able to perform research on the nation's cyberinfrastructure."

CEWIT NETWORK: CONFERENCE & PROGRAM WATCH
CUTTING-EDGE RESEARCH AND INNOVATIONS IN MEDICAL IMAGING, BIOTECHNOLOGY & BIOELECTRONIC MEDICINE

CEWIT colleague and returning Conference speaker, Dr. Eliot Siegel of the University of Maryland School of Medicine and VA Maryland Health Care System, chairs the SIIM Scientific Conference on Machine Intelligence in Medical Imaging on September 12 & 13, 2016 in Alexandria Virginia at the Westin Alexandria. The scientific meeting will feature experts on machine learning and medical imaging informatics covering topics that include state-of the-art methods, best practices, tools for research, and regulatory/business considerations in applying machine learning methods to medical imaging informatics.

CEWIT's fellow NYSTAR Center for Advanced Technology at Stony Brook University, the Center for Biotechnology, hosts the 2016 Life Sciences Summit on November 2 & 3, 2016 at 10 on the Park, New York City. The Summit, an early stage investor and business development conference, connects emerging biotech companies and academic innovators with the capital and strategic partners needed to move new discoveries into clinical development. The two-day program features
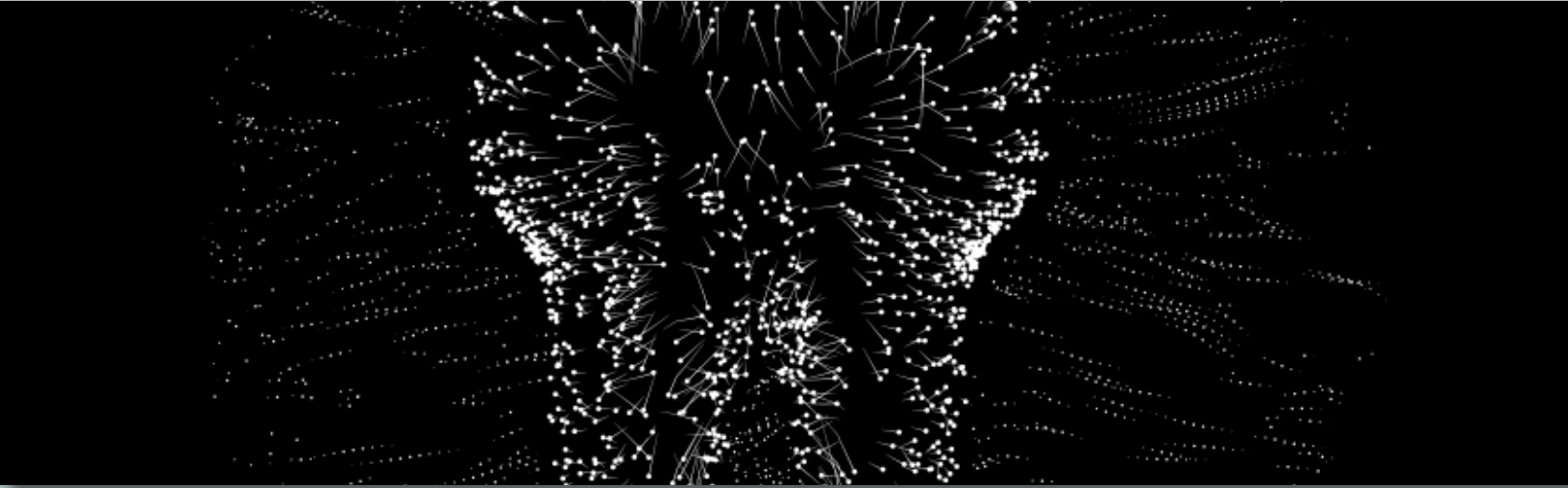
corporate presentations by promising young companies with transformative science that targets unmet medical needs.

Join bioelectronic medicine pioneer, Kevin J. Tracey, MD, President and CEO of The Feinstein Institute for Medical Research and CEWIT Industrial Advisory Board Member, at the **13th Key Symposium 2016: Bioelectronic Medicine: Technology Targeting Molecular Mechanisms from September 21-23, 2016** held and organized by CEWIT's partners at the New York Academy of Sciences and the Feinstein Institute for Medical Research.

Also On The Calendar: Events from our Stony Brook University partners including the Department of Computer Science's **CS Tech Day 2016 and the Information Technology Job Fair (get your company some Stony Brook University student brainpower by joining the fair) on September 16, 2016**, and a schedule of September workshops from our Small Business Development Center covering hot topics for entrepreneurs: **Building a Small Business Website, Writing a Business Plan, and Financial Management.** More for Long Island's entrepreneurs (and investors) at **LI Tech Day on October 18, 2016** and at CEWIT's **Technology Entrepreneurship Symposium on November 2, 2016**.

DIGITAL TRANSFORMATION
FORTUNE: WHAT HENRY SCHEIN, INC. CAN TELL US ABOUT THE DIGITAL REVOLUTION AND THE INTERNET OF THINGS TRANSFORMING HEALTHCARE

Every company is a technology company.

You probably don't think of Henry Schein as a technology company. **Though in fact, Henry Schein has managed to place itself at the center of a technological revolution, turning its the 84-year-old Long Island business into the leading platform for digital dentistry, and increasingly for other medical practices.**

Herein lies a lesson, or several. **In today's economy almost every big company, even one selling dental drills, is on a journey of digital transformation.** Cloud and mobile computing, ubiquitous sensors producing endless streams of data, and ever more intelligent algorithms have created the potential to transform nearly every aspect of nearly every business. Getting ahead in the digital journey can lead to outsize success, as the Henry Schein story illustrates. Falling behind, in a race with winner-take-most dynamics, can cause fatal disruption.

Today's savviest executives recognize that. In a survey of Fortune 500 CEOs, conducted by Fortune for this issue, **the rapid pace of technological change was cited most often as the single biggest challenge facing their companies. Three-quarters of the CEOs said a transformative trio of technologies—cloud computing, mobile computing, and the Internet of things—will be either "very important" or "extremely important" to their businesses in the future.** More than 50% added artificial intelligence and machine learning to the list.

Asked whether they now consider their company to be a technology company, 67% of the CEOs said yes. Whether they pump liquids, make machines, mine minerals, or print magazines, digitization has become their

destiny. But, hey, no reason to ask corporate chieftains. Four out of five dentists can tell you that—or at least those who shop at Henry Schein.

Have you ever had a crown put on your teeth?

Here's the standard process at most dental offices around the country. The dentist puts you in a chair and inserts gag-inducing goop into your mouth to make an impression of your teeth. The goop is then shipped to a lab, where it's turned into a mold used to make your crown. Artisans apply a white enamel powder to the crown in an attempt to match the color of your teeth. The whole process is very labor-intensive—and hasn't changed much in a century (except, perhaps, for the recent "innovation" of moving some of the lab work to China).

At the charity-run dental clinic adjacent to Henry Schein's offices south of Salt Lake City, however, the experience is dramatically different. The dental assistant uses an imaging rod that can quickly make a 3D computer image of the affected teeth. The assistant then designs the crown on the same screen and sends it to a nearby drilling machine that's about the size of a large toaster oven. Thirty minutes later the crown is done. The entire design and manufacturing process takes less than an hour—and the dental chair provides a back rub while you're waiting.

"The paradigm shift going on in dentistry is the most major and significant in my long career," says Dr. Gordon Christensen, a leading provider of continuing education to dentists. **And Henry Schein, whose main presence in the dental office used to be a 1,000 page catalogue, is at the center of it.**

For that, Stanley Bergman, the company's CEO and Chairman of the Board for 26 years, deserves the credit. A CEWIT industry partner, Henry Schein is the world's largest provider of healthcare products and services to office-based dental, animal health and medical practitioners.

In regards to the transformation of Henry Schein from catalogue to digital platform, in the early 1990s a number of small companies sprang up offering DOS-based software packages to help dentists handle basic accounting. As dentists weren't convinced the startups would still be around years later to provide product support, experimentally, Henry Schein agreed to put its name on the product and service the customers. The software began to sell. Following its success, Bergman bought the company in order to keep his commitment to his customers.

Just like that, Henry Schein found itself in the software business. As a provider of software, Bergman found he was no longer merely a wholesaler, but a service provider too. That, in turn, required a complete retraining of the sales force, turning them "from order takers into people who brought advice to the customer."

The resulting combination—software manufacturer plus consultant plus wholesaler of equipment and supplies—**turned Henry Schein into a one-stop platform for dentists and put it in a position where it could ultimately drive the digital transformation of the dental office.**

Bergman says that even today, when he employs 120 computer coders in Utah's "Silicon Slopes" and 400 globally, he thinks of the company as primarily a service provider—not a tech company. Rarely is Henry Schein the first to introduce new technology, he says. **"But when the price becomes such that 80% of the bell curve can afford to adopt it, you will find us there."**

A report out of McKinsey last year said the Internet of things could create as much as $11 trillion of value a year by 2025—primarily from its business and industrial applications. In Fortune's survey of Fortune 500 CEOs, they asked whether the CEOs agreed with the statement that these new technologies "will cause a profound change in my business, on a par with the Industrial Revolution." Four in 10 said yes. Stanley Bergman is one of them. **Interoperable digital technology, he says, "will propel advances in productivity" and "profoundly change how we live in ways that we probably haven't even imagined."**

The CEWIT affiliate adds, "At Henry Schein, we help practitioners comfortably enter or expand further into the world of interoperability, not by just looking at the individual technology and products available on the market today, but by uncovering how these solutions can best be integrated into the practice or laboratory, and by seeing how it can enhance the care they provide to patients."

ALAN MURRAY, FORTUNE MAGAZINE · JUN 2016

CEWIT BUSINESS INSIGHTS: TECH ENTREPRENEURSHIP
LEADING PERSPECTIVES AT THE CEWIT TECHNOLOGY ENTREPRENEURSHIP SYMPOSIUM

Fostering new enterprise development and smarter business models — an integral part of CEWIT's mission and commitment to accelerating the region's startup community. Our circle of noted business mentors, intellectual property professionals, and venture capital experts team up to tackle the challenges of starting, running and funding a new business and help entrepreneurs to navigate the playing field.

Their perspectives, paired with networking sessions, at the **CEWIT in-house Technology Entrepreneurship Symposium on November 2, 2016, 9:30am - 4:00pm.** Seating is Limited, Register Today.

Alon Kapen, Partner
Emerging Companies and Venture Capital, Farrell Fritz
Seed Round Model Structures, Part I: Equity

The cost of launching an Internet-based startup has fallen dramatically over the last 15 years. This democratization of internet-based entrepreneurship resulted primarily from two innovations: open source software and cloud computing. During the dot-com era, Internet-based startups had to build infrastructure by acquiring expensive servers and software licenses and hiring IT support staff. With the emergence of open-source software, however, startups for the most part were no longer forced to acquire software packages bundled with hardware. Another issue, though, was that startups had to acquire and maintain bandwidth to accommodate peak loads, resulting in expensive underutilization. But this all changed with the advent of cloud computing: **Continue Reading.**

Richard Chan, Assistant Professor
College of Business, SBU
How Images and Color in Business Plans Influence Venture Investment Screening Decisions

Want to land a venture investment? Adding photos of your product to the business plan might be a big help. Just make sure they're not red. It's no surprise that investors (like everybody) often make decisions based on first impressions—and that those first impressions often have little to do with the merits of a business. Chan's study is shining light on a couple of seemingly trivial factors that go a long way toward making good impressions, illustrating that investors were more likely to invest in a business plan that had images of the product or prototype, and using the color red in logos or elsewhere scared off investors. The study provides evidence that rapid-fire investment choices rely partially on heuristics—mental shortcuts that help people arrive at a decision quickly: **Continue Reading.**

Lori Hoberman, Founder
Hoberman Law Group
How to Grab an Investor's Attention and Land Funding

A cold email or phone call is generally not the best way to reach a potential investor. Once you do your research to make sure you're targeting the right venture funds, reach out to your attorney or accountant or anyone else you know who networks in the venture space and see if they can make a warm introduction. A busy venture investor is much more likely to open an email from a contact and much more likely to ignore an email from an unknown party.

When I reach out to venture investors on behalf of a client, I like to send a very simple email with a very brief executive summary. All we're doing at that stage is testing interest — if the investor wants to hear more, there will be plenty of time to wow them with your detail: **Continue Reading.**

UPCOMING EVENTS:

August 30, 2016 · Tech Together Happy Hour

September 2016 · Small Business Development Center Workshops for Entrepreneurs

September 16, 2016 · Stony Brook University Computer Science Tech Day: Student and Start-up Focus; Information Technology Job Fair

September 16, 2016 · Long Island Capital Alliance Technology Capital Forum

September 21-23, 2016 · NYAS Bioelectronic Medicine Symposium

October 18, 2016 · LI Tech Day 2016

October 20, 2016 · 20th Annual LISA Awards: The 2016 Long Island Sluggers Awards

October 29, 2016 · NYAS From Scientist to CSO: Experiencing the Scientific Method as your Guide to Career Success

November 2, 2016 · The CEWIT Technology Entrepreneurship Symposium

November 2 & 3, 2016 · Life Sciences Summit

June 8, 2017 · Save the Date: Stony Brook University 2017 Incubator Company Showcase

OUR COMMUNITY:

The Advanced Energy Center

The Center for Advanced Technology in Diagnostic Tools and Sensor Systems (Sensor CAT)

The Center for Biotechnology

The Center for Corporate Education and Training at Stony Brook University

The Center for Dynamic Data Analytics (CDDA)

The Clean Energy Business Incubator Program (CEBIP)

The College of Business at Stony Brook University

The College of Engineering and Applied Sciences at Stony Brook University

Empire State Development: NYSTAR

IEEE Long Island Section

Long Island Forum for Technology (LIFT)

Long Island High Technology Incubator

Long Island Software and Technology Network (LISTnet)

The New York Academy of Sciences

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