



Engineers Make a World of Difference

ENGINEERS WEEK 2007
FEBRUARY 18-24

Engineers Week 2007

Final Report

“Clearly our companies need to attract a diverse, young work force and expand globally. I have agreed to serve as Honorary Chair of Engineers Week because investing here will help meet these challenges. Our participation will not only bring recognition to the positive contribution our companies make to society both in the US and among our many international communities, but will help improve our future generations of engineering, scientific and technological talent.”



**Dr. Juergen Gromer, President, Tyco Electronics Corporation
Honorary Chair, Engineers Week 2007**

“Engineering is a great calling. There's really no other occupation where you can make such an immediate and lasting impact on the quality of life within our society.”



**Richard C. Peters, Society of Manufacturing Engineers
Chair, Engineers Week 2007**

The Society of Manufacturing Engineers and Tyco Electronics Corporation led Engineers Week 2007.





Collaboration

Partners are the reason Engineers Week succeeds.

In the following pages, you are invited to enjoy a brief glimpse into the collaborative volunteer efforts of thousands of engineers and engineering students who rolled up their sleeves to make Engineers Week 2007 a success. Whether motivating the next generation of engineers, connecting women engineers around the globe, or finding the engineers who inspire others through personal and professional achievements Engineers Week is - quite literally - about collaboration that works.

[Click here for a complete list of Engineers Week 2007 partners.](#)





Education

The Foundation is dedicated to ensuring a diverse and well-educated future engineering workforce by promoting pre-college literacy in math and science and increased understanding of and interest in engineering and technology careers among young students. The centerpiece of Engineers Week is **DiscoverE**, founded in 1990. Engineers Week headquarters provides programming ideas and products to support local outreach to students in K-12. Hands-on activities are also available online and in various languages.

The National Engineers Week Foundation's strongest educational focus is in middle school. Programs targeting this age group include:

National Engineers Week Future City Competition

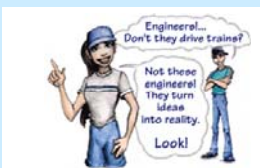
The National Engineers Week Future City Competition, launched in 1993 for seventh and eighth grades, commemorated its 15th anniversary by inaugurating a Future City Hall of Fame. The first inductees include former student competitors who are now in engineering careers ranging from restoration of historical architectural concrete to designing health and medical devices to testing new aeronautical launch systems.

The Future City program recently received the most recent *Connect America Partner of the Year Award* during the National Conference on Volunteering and Service. The Future City Competition alone engages approximately 7,500 volunteers who donate 225,000 hours to more than 1,000 middle schools. Half of participants, including national champions, are girls. In the 2006-2007 program,

more than 30,000 middle school students participated.

The 2007 National Champions are the teammates from **St. Thomas More School in Baton Rouge, Louisiana**;

second place went to Nevada Christian Home School from Sparks, Nevada, and third place was captured by Helen Keller Middle School in Royal Oak, Michigan. Microsoft became the most recent contributor on the occasion of the program's 15th anniversary. Bentley Systems, Inc. is the National Finals Sponsor.



www.discoverengineering.org

created in 1999 for middle school students, parents, and educators.

Design Squad

A new live-action reality television series about engineering and focused on a middle school age audience debuted in February 2007 as the result of a renewed collaboration with WGBH-Boston.

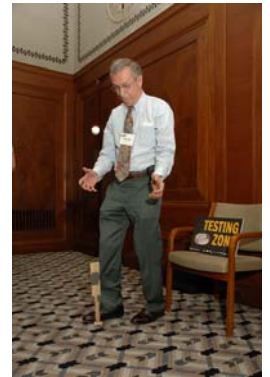
Design Squad airs nationwide as well as in 100 percent of the top ten PBS markets. The series aims to introduce nine- to 13-year-olds and their families to the engineering design process. The show is hosted by **two young engineers**. Each week **two teams of high school students** use their problem-solving skills to design, construct, and test an intriguing, fully operational and, typically, off-beat engineering project.

For example, in one segment, teams design and create new musical instruments for an actual rock band to amp up and play. Or, teams battle it out to see who can make the fastest dragster created from toys such as wagons and tricycles. In the kind of action that specifically appeals to the target audience, the teams then race their creations on a real drag strip.



hands-on activities spark kids' imaginations and make them feel comfortable with the notion of engineering and technology

Hands-on activities that work in conjunction with each episode play an integral role in a companion outreach campaign. Along with the drag racing episode, for example, *Design Squad* workshop activities call for the construction of a model car that runs on wound-up rubber bands. An **October *Design Squad* volunteer training summit** engaged more than 100 outreach leaders from dozens of Engineers Week partner organizations. The outreach officially launched on February 17 when *Design Squad* cast and "supporting cast" from the National Engineers Week Foundation, Intel, the National Science Foundation, WGBH and Howard University visited Howard University Middle School of Mathematics and Science. Classrooms competed in a rubberband car competition and participated in their own version of the show.



Design Squad outreach continues through an extensive website, a printed Event Guide for volunteers/engineers, and an Educator's Guide.

Major funding for *Design Squad* is provided by the National Science Foundation and the Intel Foundation. Also contributing are Tyco Electronics, the National Council of Examiners for Engineering and Surveying, The Harold and Esther Edgerton Family Foundation, Noyce Foundation, Intel Corporation, American Society of Civil Engineers, and the IEEE.

That nod to NASCAR, "American Idol," and other popular trends promises a message that connects to middle school students, while



Cyberchase

With a growing strength in the middle school area, how does the National engineers Week Foundation help to reach future middle schoolers? By joining the *Cyberchase*.

Cyberchase is an action-packed television math adventure that connect engineering to mathematics for elementary school age children. With an audience of three million children ages 2-11, over one third of *Cyberchase* households are African-American/Latino.

The *Cyberchase*/Engineers Week effort began for Engineers Week 2006 when volunteers deployed a new toolkit called *Cyberchase Activity Guide: Math in Science and Engineering*, provided by *Cyberchase* outreach staff from WNET and developed in collaboration with Engineers Week volunteers and staff. The guide won the 2006 Distinguished Achievement for

Excellence in Educational Publishing Award from the Association of Educational Publishers. A new and expanded toolkit called *Inventive Innovations* was developed for Engineers Week 2007. The outreach package helped volunteers present hands-on activities based on the invention theme in the new television season when one of the cartoon characters even uses the word “engineering.” Each guide contains reproducible materials to expand its usefulness beyond the initial recipient.



The National Engineers Week Foundation hosted teleconference training sessions with WNET staff for more than 150 volunteers during sessions in January and May.

Discover Engineering at the National Building Museum

Going from the controlled outreach of Design Squad, Future City and Cyberchase, a different project is evidence that controlled chaos also has appeal!

More than 6,000 visitors, and thousands of children of all ages, experienced the excitement of hands-on engineering fun, not to mention slime, at *Discover*

Engineering Family Day at the National Building Museum in Washington, D.C.

How do you entertain hordes of children filling 80,000 square feet of open space? You call on your partners. In addition to dozens of local volunteer engineers, IBM installed a bank of

computers for visitors to explore the *TryScience* website; Raytheon presented the online *MathMovesU*; *Design Squad* outreach staff, TV producer, and show host Deanna held hands-on training workshops for Girl Scout leaders and troops; and

Cyberchase staff built Bunny Copters while popular cartoon character Digit posed for photos with visitors.



Intel provided support for a special screening of *Design Squad* and *Cyberchase* episodes.



In the high school area, the Foundation promotes JETS' career guidance efforts and its work with new partner Javits Wagner O'Day in the National Engineering Design Challenge.



Information

The Foundation works to increase public understanding of, and appreciation for, engineers and engineering.



Summer vacations will be educational and memorable this year by visiting one of the hundreds of engineering marvels featured

at www.engineeringsights.org. Nearly 300 attractions across the country are listed on the site, which tells the story of American engineering ingenuity through intriguing and often offbeat tourist sights. Take for instance the Fontana Dam in Robbinsville, North Carolina, one of the newest additions to the site. At the height of World War II, the U.S. was in desperate need for metal to build aircraft. An aluminum plant in Tennessee was ready to produce, but it lacked the massive amounts of energy necessary to power the operation. The solution? An intense three-year marathon to construct the tallest concrete dam east of the Rockies. The area was so remote that the government even built a town for the 5000 workers who labored in three shifts, 24 hours a day, to complete the project in record time.

On the Tuesday of Engineers Week, radio stations across the U.S. - including major cities such as Philadelphia, Detroit, Cleveland, Hartford, Tucson and Boston - interviewed Engineers Week Chairman Rick Peters. During a rapid-paced satellite radio tour, Peters answered questions on everything from getting into engineering careers to where to find Engineers Week events.

Taking the engineering message to the general public through targeted news releases and electronic newsletters was particularly successful this year. Potential readership of print media mentioning Engineers Week was well over 50 million, while the Future City Competition was featured in 115 television and radio spots, as well as in USA TODAY and TIME for Kids. Traffic on the www.eweek.org website increased 25 percent.

Future engineers think up cities

Middle-schoolers tackle problems around the globe

By Ryan Holeywell
USA TODAY

In the future, people will communicate via lasers, be protected by police officer robots and live inside pyramid-shaped cities. Those ideas are among the visions of the next generation of engineers.

Teams of middle-school students from across the country brought colorful scale models of futuristic cities to Washington, D.C., last week to be judged by engineering professionals in the national Future City Competition.

The event drew 105 students from 35 schools who were chosen in last-



First place: Emily Ponti, left, Krishna Sherburne and Jake Bowers, of St. Thomas More School in Baton Rouge, designed a Congo Republic city.

The winners

- **First place:** St. Thomas More School in Baton Rouge for Nevada, in the Congo Republic. Renewable energy resources power the city; hydrogen-powered hover cars and buses whisk residents around.
- **Second place:** Nevada Christian Home School in Sparks for Alpine Living Tahoe Adventure. Vehicles are powered by fuel cells; streets feature a geothermal de-icing system.
- **Third place:** Helen Keller Middle School in Royal Oak, Mich., for Mirai on Tokyo Bay, a high-tech pyramid that protects against earthquakes and tsunamis. Residents travel in pods on automated walkways, get fresh water from condensation traps.
- **Fourth place:** Kutztown (Pa.) Area Middle School for Waikiki, three floating islands off the west coast of Japan. Citizens get



Inspiration

National Engineers Week Foundation programs are designed to inspire the future generation of engineers with the limitless career possibilities open to them; encourage engineering students and young engineers at the beginning of their careers; and recognize achievement across a diverse spectrum of engineers and engineering disciplines.

Introduce a Girl to Engineering Day



A 2005 study by the Extraordinary Women Engineers Project – a coalition of engineering associations and the WGBH Educational Foundation – found that exposure to role models is among the most

effective ways to draw young women into the profession.

Since its inception in 2002, one cornerstone of the National Engineers Week Foundation's philosophy is its direct introduction of engineering to girls, mostly by women engineers. Throughout the year, women engineers and their male counterparts reach as many as one million girls with a host of activities that showcase engineering as an important career option for everyone. The National Engineers Week Foundation supports an online activity roster and prepares and distributes thousands of special posters and print materials.

Local reports of Girl Day 2007 (February 22) events poured in to National Engineers Week Headquarters. ExxonMobil hosted 175 middle school girls at their Houston, Texas, and San Juan, Puerto Rico, facilities. Government agencies invited girls to their sites in Maui (Hawaii), Argonne National Lab, Port Authority of New Jersey and New York, and Los Alamos Labs. Motorola held its first Girl Day event at its innovation center and received coverage by major Chicago media.

The National Coalition of Girls Schools sent copies of the book *Changing Our World, True Stories of Women Engineers* to all member schools with tips on how to get involved in Girl Day.



For the first time the Foundation offered small grants to local Girl Scouts troops. The grants were intended to stimulate hands-on activities in connection with *Design Squad* and *Cyberchase*, interviews with women engineers at www.engineergirl.org and trips to science centers and colleges. For example, a troop in Urbana, Illinois, built popsicle stick bridges in advance of a planned summer trip to New York City; a troop in south Florida visited an electrical engineering doctoral student in her lab and learned about new ideas in solar energy; and the Girl Scouts in Darien, Connecticut, built a conveyor belt that fed them – of course! – Girl Scout cookies. The Foundation provided many troops with complimentary copies of *Changing Our World: True Stories of Women Engineers* from the Extraordinary Women Engineers Project.

Says one happy Girl Scout leader:



Thanks again, you really have opened a door that we would not have looked at this year had it not been for your grant and wonderful books! I have at least half of my girls who now want to go into an engineering field.

Girl Day at the United Nations

Girl Day has been growing organically outside the U.S. for several years. The National Engineers Week Foundation was invited to facilitate and organize a workshop at United Nations Headquarters in New York City in September,

2006. Executive Director Leslie Collins led the panel, which addressed "Nurturing Science, Technology, Engineering and Math Skills in Young Females in Developing and Developed Countries."

24-Hour Global Marathon

To stimulate worldwide discussion, the National Engineers Week Foundation instituted the *Global Marathon For, By and About Women in Engineering*. The 2007 24-hour marathon occurred March 21-22, during Women's History Month in the U.S. For the first time, the marathon was led by two co-chairs, and a live Webcast kicked off the 24 hours. Co-chairs Fran O'Sullivan, senior vice president of the Product Group at Lenovo, and former astronaut Sally Ride, the first American woman in space and now President and CEO of Sally Ride Science, hosted an audience of middle school girls at Lenovo headquarters in North Carolina.

Women Behind Design Squad," a chat with an engineer from The Gap, and then a discussion with students from MIT.



Lenovo and the National Engineers Week Foundation collaborated with Verizon Business to produce several live global Webcasts. For the first time a block of programming in the evening was dedicated for families and included live telephone conversations with a host of the popular kids' show "Cyberchase" interacting with a female engineer. That session was followed by a live presentation from the new PBS series *Design Squad* with "The

Verizon Business Senior Vice President and Chief Information Officer Judith Spitz conducted a live Webcast to close the marathon. She talked with a panel of high school girls beginning to think about their career options. In addition to the US sessions, Verizon Business supported presenters and audience connections for Egypt, Germany, China, India, Australia, Japan, Poland, the United Kingdom and Canada.

Presentations and conversations are available for replay on www.eweek.org. Says Lenovo's O'Sullivan, "With an emphasis on mentorship, this vital worldwide program connects current and future generations of women – and men too – who aspire to achieve excellence in science, technology, engineering and mathematics. This is a race without a finish line, so we must continue to work together, do more, and build upon our efforts every year."

New Faces of Engineering

The 2007 recognition of young engineers at the cutting edge of their profession – the annual New Faces of Engineering – found 15 women and men truly changing the world for the better in remarkable ways. What makes them particularly notable and inspirational is that they have accomplished so much for so many before the age of 30. For example:

Danielle Stephens, a structural engineer with the U.S. Army Corps of Engineers, was among the first in the nation to volunteer after Hurricane Katrina devastated the Gulf Coast region, managing sewer and water projects. Carlos Cordeiro, a senior research staff member at Philips Research North America, also helped those on the front lines of Katrina relief as a



pioneer in wireless technologies which can be installed quickly and efficiently in unpredictable environments.

When **Merwin Yellowhair** achieved his Professional Engineer (P.E.) license, it was a major step for an individual and an entire people, as he became one of the first members of the Diné (Navajo) Nation to ever do so. A chief engineer with AmericaBuilt Development in Tucson, Arizona, Yellowhair was determined to show engineering as a career option for Diné community members.

The New Faces of Engineering were recognized in a full-page ad in *USA TODAY*, on February 20.

Asian-American Engineer of the Year Awards

The Chinese Institute of Engineers–USA recognized a dozen outstanding engineers nominated by corporate America at the 2007 annual Asian American Engineer of the Year Awards on March 31.

Additionally, Dr. Taylor Wang, the first Asian American astronaut-scientist, and Dr. James Wei, former Dean of Engineering at Princeton University, received the 2007 Distinguished Science and Technology Awards.

Norman Mineta, former US Secretary of Transportation as well as former US Secretary of Commerce, and Mr. Minoru (Sam) Araki, retired president of Lockheed Martin Missiles and Space Co., received Lifetime Achievement Awards.



A special Distinguished International Services Award went to Dr. Hwa-Nien Yu

for his contribution to the development of information and electronics technologies overseas during and after his engineering career at IBM, USA.

National Academy of Engineering Awards

On February 20, the engineering profession recognized historic accomplishments. The National Academy of Engineering (NAE) awarded the 2007 recipients of the engineering profession's highest honors. The awards recognized achievements that have revolutionized how people use information, opened new frontiers of medical research and humanitarian service, and guided promising engineers into leadership roles.

Timothy J. Berners-Lee received the prestigious Charles Stark Draper Prize, a \$500,000 annual award that honors engineers whose accomplishments have significantly benefited society, “for developing the World Wide Web.” **Yuan-Cheng “Bert” Fung** won the Fritz J. and Dolores H. Russ Prize, a \$500,000 biennial award recognizing engineering achievement that significantly improves the human condition, “for the characterization and modeling of human tissue mechanics and function leading to prevention and mitigation of trauma.”

The \$500,000 annual Bernard M. Gordon Prize for innovation in engineering and technology education went to **Harold S. Goldberg, Jerome E. Levy, and Arthur W. Winston** of the Gordon Institute at

Tufts University recognizes “for the development of a multidisciplinary graduate program for engineering professionals who have the potential and the desire to be engineering leaders.”

The new million dollar Grainger Challenge Prize for Sustainability Gold Award for stimulating innovation for the betterment of mankind was presented to **Abul Hussam**, associate professor, Department of Chemistry and Biochemistry, George Mason University, (Fairfax, Virginia) for his SONO filter, a household water treatment system that removes arsenic from drinking water. The filter is already being used by thousands of people in Bangladesh.

Grainger Prize for simple arsenic filtration system



Thousands of these arsenic filters are in regular use. Shown here are primary school children collecting arsenic-free water. The filters are made of indigenous raw materials. It is estimated that more than a billion liters of clean water were filtered from 10,000 such filters.

U.S. Congressional and Presidential Recognitions

The U.S. House of Representatives passed House Resolution 59 (Report No. 110-5) in recognition of Engineers Week 2007. The resolution states that the House of Representatives supports the goals and ideals of Engineers Week and will “work with the engineering community to make sure that the creativity and contribution of that community can be expressed through research, development, standardizations and innovation.”



THE WHITE HOUSE
WASHINGTON

President George W. Bush, in his annual greeting on the occasion of Engineers Week, said “...engineers expand our knowledge and lay the foundation for the progress of our country. Your efforts contribute to a brighter future and embody the spirit of American innovation.”



Looking Ahead

Engineers Week 2008
February 17-23

Co-Chairs:

Samuel J. Palmisano
Chairman of the Board, President and Chief Executive Officer, IBM
Honorary Chair, Engineers Week 2008

Patrick Y. Chang
Chairman, Chinese Institute of Engineers-USA
Chair, Engineers Week 2008

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Leslie Collins, Executive Director



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