ASQ
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Continuity

Newsletter of the Electronics and Communications Division

Electronics and Communications Division

Summer 2015

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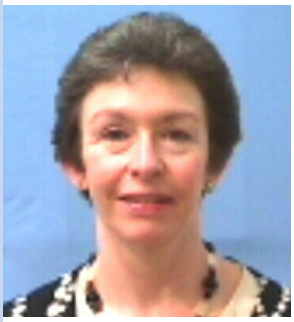


Hello ECD Members,

We enjoyed seeing several of you at the World Conference on Quality and Improvement in Nashville, TN, in May. Plans are already underway for next year's conference in Milwaukee, WI. If you have ever thought about presenting a paper at the WCQI, the submission deadline of August 3, 2015, is quickly approaching. Each speaker selected gets their conference fee waived, so there is an incentive for selected submissions. In addition, you could be eligible for the ECD Best Paper Award. This is your opportunity to share with the rest of the quality community the information that you are expert in. Look for more information on the submission process in upcoming communication from ASQ. We had several applicants for this year's ECD scholarship and are pleased to announce four recipients of the scholarship: Arden Stayer, Evan Kelemen, Timothy Spichiger, and Victoria Walsh. Please see the article on p. 2 for more details on the scholarship recipients. If you missed this year's scholarship deadline, check the website and newsletter this fall for information on the 2016 scholarship.

Plans are in full swing for the annual Reliability and Maintainability Symposium (RAMS®), which will be held at Loews Ventana Canyon in Tucson, AZ, January 25 – 28, 2016. RAMS is the premier event in the reliability, availability, and maintainability engineering disciplines. In addition to the RAMS tutorials and presentations, the ECD will offer pre- and post-conference workshops on the ASQ Certified Quality Engineer (CQE) exam and risk-based auditing. Make plans now to attend this exciting conference in Tucson and watch for more information on the ECD workshops.

Your feedback to the division is critical to ensure we are continually improving the value we provide to our members. If you have an idea, please tell us. Whether you have been a member of the ECD for one month or several years, your input and participation are welcomed and encouraged. A list of open positions is included in this newsletter. For more information contact me or another member of the leadership council. You can find our contact information here.

Regards,

Marion Bize

2015 Electronics and Communications Division Scholarship

The Electronics and Communications Division Scholarship Committee is pleased to announce that it awarded $2,500 in scholarships to four deserving recipients.

Arden Stayer

Arden Stayer resides in Coopersburg, PA, and is a graduate of Southern Lehigh High School. She is a member of the National Honor Society and a four-year member of her school's varsity swim and dive team. Arden is an accomplished artist who has earned several awards and has had her work displayed at a gallery show. She also serves as a tutor.

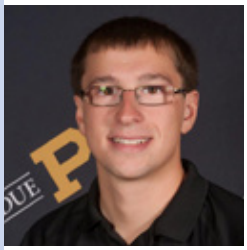
Arden speaks fluent Spanish and plans to learn Polish. She enjoys traveling abroad and has had the opportunity to travel to Costa Rica, Greece, Italy, and Poland, and she will soon be visiting Ireland. During the summers Arden is a lifeguard and swim instructor. Currently she is working part time as a hostess and expeditor for a local restaurant.

Beginning this fall Arden will attend Swanson School of Engineering at the University of Pittsburgh.

Timothy Spichiger

Timothy Spichiger graduated from Granville High School in Granville, OH. He was a senior class officer, a member of the National Honor Society, and an all-state swimmer in both the 200 freestyle and 500 freestyle in both his junior and senior years. He is an academic letter recipient, a four-year varsity athlete, the swim team captain, and the team's MVP. Timmy is a year-round competitive swimmer and has achieved numerous U.S. sectional and junior national cuts.

During the summers, Timmy is a lifeguard, a swim coach, and teaches swim lessons. This fall he will continue his academic career as a pre-med major at DePauw University in Greencastle, IN. In addition, he will continue his swim career at the collegiate level.



Thomas Evan Kelemen

Evan Kelemen is from Westlake, OH, and is currently a sophomore biological engineering student at Purdue University in West Lafayette, IN. In addition to his studies, he is an undergraduate researcher at Purdue's Tantama lab, which researches biosensors, fluorescent proteins, neurobiology, and microscopy. He is also an undergraduate calculus teaching assistant.

Evan is involved with several student organizations, most notable as a member of the Purdue student chapter of the American Society of Agricultural and Biological Engineers, where he currently serves as its treasurer. He serves as the treasurer for the Biological and Food Process Engineering Club.

Evan serves on the Purdue Stadium Rescue Squad and is an Eagle Scout.

Victoria Walsh

Victoria Walsh is a graduate of Morris Hills High School in Rockaway, NJ, and will continue her education as an exercise science major at East Stroudsburg University of Pennsylvania. She is a member of the National Honor Society, the Pi Alpha Theta Social Studies Honor Society, her high school's Business Honor Society, and the National Society of High School Scholars. She is also a multiple recipient of the Excelsior Award.

Victoria was a cheerleader for four years and served as the cheer captain during her senior year. She has also performed countless hours of community service, particularly with Special Olympics and the Rockaway Twp. Rockets cheerleading squad.

The Electronics and Communications Division's Scholarship Committee and its Management Committee wishes all the scholarship recipients the very best during their academic careers and congratulates them on this noteworthy accomplishment.

Additional information about the Electronics and Communications Division and its scholarship is available at asq.org/ec.

Fiat Lux! Let There Be Light …

by Marc Kelemen, ASQ Fellow

… And from Genesis forward humanity has been measuring: comparison measuring, measuring against standards, measuring nonetheless …

And so it was as our species emerged from the dark ages into the age of enlightenment …. in the 17th century Isaac Newton showed that "white" light is made of different colors (frequencies) of light. Now, as proud members or ASQ's Electronics and Communications Division, we cannot help but marvel at the improvements in communications and storage as optical data manipulation replaced the copper conductor chassis.

As we return to our jobs and families from a wonderful 2015 World Conference on Quality and Improvement in Nashville, TN, we are recharged with new skills and insights. We are energized by the camaraderie and enthusiasm of the annual assembly of quality professionals. We are excited and chanting, "Let there be light. *FIAT LUX*!"

Whether we shine the spotlight on existing processes through enhanced auditing techniques …

Whether we shine the spotlight on the big picture through lean, Six Sigma, or TRIZ …

Whether we shine the spotlight on top leadership through the quality management toolbox …

Whether we shine the spotlight on industry specifics by deploying the rich body of knowledge generated within the various divisions of the technical community …

We recall the words of Peter Drucker: "**What gets measured gets managed**," and the wisdom of Tom Peters: "**What gets measured gets done**."

Fiat lux. "What gets measured gets done." World Metrology Day, May 20, 2015.

World Metrology Day is an annual celebration of the signature by representatives of 17 nations of the Metre Convention on May 20, 1875. The Metre Convention set the framework for global collaboration in the science of measurement and in its industrial, commercial, and societal applications. The original aim of the Metre Convention—the worldwide uniformity of measurement—remains as important today as it was in 1875.

The theme for World Metrology Day 2015 was "**Measurements and Light.**" The World Metrology Day website (http://www.worldmetrologyday.org/) reports their theme was chosen to align with the UNESCO International Year of Light and Light-Based Technologies 2015, a global initiative designed to highlight the key role light and optical technologies play in our lives and their importance for our future and for the sustainable development of society.

The world metrology day website further explains how metrology plays a central role in enabling light-based technologies. The international year of light website (http://www.light2015.org/Home/WhyLightMatters/What-is-Photonics.html) reports Max Planck and Albert Einstein—early in the 20th century—proposed that light was a wave as well as a particle. We may ask, "How can light be two completely different things at the same time?" Decades of statistics and experimentation later confirmed this duality in the nature of light … *and* that a single particle can pass through two different slits at the same time. (Is anyone buying their cats from Schrödinger?)

The word *photonics* appeared in 1960, when Theodore Maiman invented the laser (http://www.laserinventor.com/bio.html). Photonics is the science of generating, controlling, and detecting light waves and photons, which are particles of light. The characteristics of the waves and photons can be used to explore *and* manipulate the universe, cure diseases, and solve crimes. The electromagnetic spectrum extends well beyond the visible spectrum wavelengths in both directions, from gamma rays to radio waves. It includes X-rays, ultraviolet light, and infrared light. The fast-evolving lighting industry needs reliable standards and authoritative calibrations to produce energy-saving lamps based on light-emitting diodes. In many areas of science, medicine, and commerce, NIST (http://www.nist.gov/pml/commercial-lighting.cfm) is meeting the need for more sensitive and precise ways to characterize advanced materials, provide new techniques for medical and environmental imaging, improve light-based radioactivity detection, and more. We are learning to tease (or torture) the most information out of the light …

cont. on p. 4

almost like "industrial light and magic" (with apologies to George Lucas circa 1975).

So, on May 20, 2015, the National Economic Council and the Office of Science and Technology Policy held a forum at the White House to discuss opportunities to accelerate the commercialization of nanotechnology. Let's focus a bit more on photonics.

The international year of light website reminds us that photonics (light and magic) is integral to telecommunications (Internet), consumer electronics (scanners, DVDs), health (surgical and medical instruments), manufacturing (additive and subtractive), defense/security (infrared camera, remote sensing) and entertainment (holography, laser shows). Beyond our little corner of the world, cosmic microwave background (discovered circa 1965 at Bell Labs) is an electromagnetic echo of the origin of the universe. This fossil radiation was released soon after the Big Bang—an echo or shockwave of the Big Bang currently detected in the microwave domain. *Fiat lux*.

Yes, the word *photonics* appeared around 1960. Anyone still remember the advent of Amana's radar range circa 1967? This consumer application followed from defense contractor (and 1920s manufacturer of battery-less radio receivers) Raytheon's World War II era work with microwaves (http://en.wikipedia.org/wiki/Amana_Corporation). *Fiat lux*.

For those of you following my nanotechnology series in *Continuity*, you probably realize that Maiman's laser followed quickly after Richard Feynman's 1959 Caltech talk, "There's Plenty of Room at the Bottom"—the genesis of nanotechnology (at least the genesis of the terminology). http://www.its.caltech.edu/~feynman/plenty.html. Feynman got us thinking about the problem of manipulating and controlling things on a small scale—a very small scale. The most enduring definition remains "at least one dimension being 0.1 – 300 nanometers" where one nanometer is one-millionth of a millimeter. For comparison, the wavelength of green light (the center of the human visible range) is 550 nanometers. Thus, the natural inhabitants of the nano world include DNA (small), proteins (typical), and viruses (large). The NIST website (http://www.nist.gov/pml/frontiers-of-measurement.cfm) reports on motion metrology for nanoelectromechanical resonators and characterizing nanomaterials with improved Raman spectroscopy.

In 2015, NIST researchers (http://www.nist.gov/pml/quantum-light.cfm) continue to develop techniques to characterize and control single photons—the smallest units of light—for quantum information exchange as well as investigate the properties of atoms, ions, and various subatomic particles using precision-regulated beams of light. And so, nanotechnology has indeed become our final frontier. And our time-honored measurement standard—light—may be stretched beyond its limits (certainly in the visible spectrum). Ultra high-energy gamma rays may be the key to measuring in the nanoscales. These photons will have energy levels exceeding 1 million electron volts! *Fiat lux*!

Shining the spotlight once more on metrology, we recall a common form of acceptance and rejection used in industry is the epic "four-to-one rule" given in MIL-STD 45662A. http://www.aspe.net/publications/Summer_2004/04su%20extended%20abstracts/phillips-1622.pdf. Another seminal document on measurement uncertainty is The GUM: International Organization for Standardization, "Guide to the Expression of Uncertainty in Measurement," Geneva, Switzerland, 1993. (This document is also available as a U.S. National Standard: NCSL Z540-2-1997.) Can we do this at over a million electron volts?

The large hadron collider at CERN, in Switzerland, can generate tera electron volts—or a million million electron volts—clearly capable of measuring deep into the nanoscale. And well beyond the measurement uncertainty rules (the observer's paradox of quantum physics not withstanding). http://lhc-machine-outreach.web.cern.ch/lhc-machine-outreach/lhc_glossary.htm. Talk about expensive certified reference materials!

Measurement uncertainty meets Heisenberg uncertainty. I can't wait for ISO 17025 accredited calibration labs to work in these realms. "**What gets measured gets done.**" *Fiat lux*!

Marc Kelemen is an ASQ Fellow and a voting member of several ASTM Technical Committees and subcommittees including E-56 Nanotechnology, F-04 Medical & Surgical, and E-60 Sustainability. He is president of NanoSynopsis Consulting and director of quality, engineering, and regulatory affairs at ROE Dental Laboratories. After three decades in alternative energy and consumer electronics, he joined the business/management faculty of South University and remains active on three nonprofit boards. Kelemen is a named inventor on eight patents and holds ASQ certifications as Manager of Quality/Organizational Excellence (CMQ/OE), Six Sigma Green Belt (CSSGB), and Quality Auditor (CQA). He earned his chemical engineering degree from Case Western Reserve University and his MBA from Baldwin-Wallace University. Kelemen is also an ISO Lead Assessor for A2LA and a problem-solving/decision-making LDI-validated trainer for Kepner-Tregoe. He is secretary of the ASQ Electronics and Communications Division and director-at-large of the Chemical Engineers (AIChE) Nanoscale Engineering and Science Forum.

2016 Reliability and Maintainability Symposium (RAMS®)

RAMS® 2016 will be held at **Loews Ventana Canyon in Tucson, AZ, January 25 – 28, 2016**. Make plans now to attend this information-packed conference. RAMS is the premier event in the reliability, availability, and maintainability engineering disciplines. Combining tutorials, presentations, CEUs, certifications, and networking into one week-long program, RAMS delivers cutting-edge information to all technical industries. The ECD is a sponsor of RAMS along with the Reliability Division of ASQ and seven other societies. One of your member benefits as an ECD member is a $200 discount on RAMS registration.

Reliability is not just an attribute to be measured: It can be engineered into your products to provide an objective justification for customer confidence. Our entire world depends on technology, systems, and systems of systems, thus the theme for RAMS 2016, "R&M: Critical to Success in a Technology Reliant Word." For more information, please visit www.rams.org.

QuEST Forum Sustainability Strategic Initiatives

Based on 10 key assessment areas related to sustainability originally developed by the BT Group and epi Consulting, this initiative has now collected four quarters of benchmark data. There have been six to eight contributing companies each quarter.

The benchmark data is being used by the organizations to drive improvement and significant cost savings in their businesses including ecological design, circular economy, carbon emissions, and ozone depletion among other assessment areas. The benchmark activity is open to members and nonmembers. Details on the goals and activities of this group and other initiatives can be found at questforum.org.

QuEST Forum Updates

The QuEST Forum conference schedule for the rest of 2015 and 2016 includes:

Americas Conference – San Diego, CA, September 15 – 16, 2015

APAC Conference – Shenzhen, China, April 12 – 13, 2016

EMEA Conference – Barcelona, Spain, June 14 – 15, 2016

Americas Conference – Nashville, TN, September 13 – 14, 2016

The conferences are open to members and nonmembers. They feature expert speakers on all topics of concern to today's quality practitioners. Details about the conferences are available at questforum.org.

ISO 9001:2015 and TL 9000 Update

As reported previously, QuEST Forum is updating the TL 9000 Quality Management System standard in accordance with ISO 9001:2015. Mapping of the ICT industry-specific requirements to the new structure of ISO 9001 has been completed. The evaluation of the need to add, change, or remove requirements based on the changes made to ISO 9001 is nearing completion. Final modifications will be made when the FDIS of ISO 9001:2015 is published, which is expected in July 2015. A formal review of the revised document will be conducted by all QuEST Forum members once the draft has been completed. The schedule to publish the R6.0 version of the *TL 9000 Requirements Handbook* roughly nine months after the official release of the new ISO standard is on track.

CALL for PAPERS!

38th ASQ North Jersey Annual Spring Quality Training Conference
March 24, 2016

Conference is organized by the ASQ North Jersey Section 304
http://springqualityconf.org

Location: **Marriott Hanover**, Whippany, NJ
1401 Route 10 east, near I-287

Theme: **Global Quality Marches On**

Proposals will be reviewed by the committee for relevance, innovation, demonstrated application, and technical content. Priority will be given to new and unique approaches that have resulted in measurable improvements to organizational processes and customer satisfaction. The following is a list of suggested topics; however, you are not limited to the list. Feel free to send proposals in all areas you feel are relevant to this year's theme.

Some Proposed Focus Areas:

- **Leadership** (innovation, change, empowerment, alignment to goals)
- **Auditing** (internal, external, third party, ISO, 16949, GMP)
- **What's New** (renewable energy, environmental, regulatory, lessons learned)
- **Electronics** (J-Standard, testing, inspecting, CEPM)
- **FDA Regulated** (pharma, medical devices, lessons learned, ISO 14971)

Timeline

June 2015: Call for papers open to the public

Deadline: September 30, 2015

Proposal Requirements

Session Type

Concurrent Session – 50-minute sessions meant to present real applications, real results, and provide attendees with real solutions that can be implemented immediately. Conference attendees come from a wide range of backgrounds and interests. Sectors represented at the conference include aerospace, automotive, chemicals, construction, defense, education, electronics, energy, equipment, financial, government, healthcare, information technology, medical devices, metals, pharmaceuticals, public administration, public safety, service, and telecommunications.

Proposal Submission Guidelines

a) Complete title of the presentation or workshop. Please limit the title to 50 characters.

b) Speaker(s) name(s), title(s), and organization(s).

c) Full mailing address, telephone, fax, and email for each speaker listed.

d) Indicate the target level of audience proficiency by specifying one of the following: Basic (beginner), Intermediate (practitioner), or Advanced (expert).

e) Indicate the industry sector for which the presentation is most suited: i.e., aerospace, automotive, education, finance, general, government, healthcare, manufacturing, service, etc.

f) A proposal not to exceed 500 words.

g) A biography of the speaker(s), 500 words maximum for each speakers.

h) For workshops, add a workshop description and a biography. Please submit a one-page workshop outline with key learning objectives, and indicate the optimum duration for the workshop.

Speakers of accepted proposals will be notified by mid-October 2015, and will receive further instructions for preparing their presentations/workshops. **There will be no compensation for the presenters. The conference registration fee will be waived only for the principal presenter.** Please submit your proposal electronically to: Lucy Kahn, lddy@aol.com, conference chair, 973-724-6437, or 201-861-2369.

Copy Mike Parrillo, program chair, parrillosr@aol.com, 973-626-3659, or 973-751-8937.

For regular updates, please visit the conference website at http://springqualityconf.org, or http://asqnorthjersey.org.

Hotel Information

For room reservations, contact the hotel directly at 1-800-442-3659. To take a virtual tour of the hotel, visit www.marriott.com. Please forward this email to friends or colleagues who might be interested.

ECD Best Paper Award

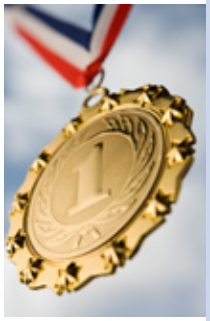
As a reminder, the Electronics and Communications Division leadership has established a Best Paper Award presented at either the ASQ World Conference on Quality and Improvement (WCQI) or The annual Reliability and Maintainability Symposium (RAMS®).

The purpose of this award is to provide recognition for the technical contributions made by ECD members.

This award is open to all ASQ ECD members, and the best paper will be selected from papers presented at WCQI and RAMS. The winner will be selected by a panel composed of the chairs of the ECD Technical Committees, and will be based on technical content, originality, and structure of the written paper. Assessment of the oral presentation may be used to supplement the assessment of the written papers.

This award will be accompanied by a $1,500 honorarium.

To be considered, a candidate must be a member of ECD at the time an abstract is submitted for consideration, through to and including the time of presentation at the conference. To ensure that all eligible papers are included in the evaluation, the author must notify ECD upon acceptance of their paper by the conference by sending an email to chair@asqecd.org and also to the ECD WCQI liaison or the ECD RAMS liaison, as appropriate for each conference. Liaison contact information can be found on the ECD website, asq.org/ec.



Presentation of the Best Paper Award will be at the annual ECD meeting at the next WCQI.

FAQS

Will there be multiple awards given for best paper? If there are co-authors, the honorarium will be divided. The primary author/presenter must be the ECD member. Everyone will receive an individual plaque.

What about travel and conference registration? There are no additional funds provided for travel or conference registration. Registration for WCQI is not required to attend the council meeting or certain activities associated with WCQI. In accordance with RAMS policy, the winner would receive gratis registration to attend the RAMS immediately following the award presentation at WCQI.

The ECD Technical Committees

Communications Technical Committee

The Communications Technical Committee interacts with the telecommunications industry through participation in the QuEST Forum conferences and local ASQ sections. Members of the committee contributed to the creation of the QuEST Forum and the development of the telecommunications quality management standard, TL 9000. Committee chairman is ***Tom Yohe***.

The Electronics Technical Committee

The Electronics Technical Committee covers a wide range of markets including data networking, supply chain management, industrial automation, audio and video systems, security and surveillance, aerospace, and many other specialty electronics markets. The products include test equipment, copper and fiber optic cables, connectors, cable management products, power equipment, RFID products, and a whole variety of microelectronics equipment.

Quality and reliability have played leading roles in advancing the development of tools to manage the manufacturing and distribution of electronic equipment. One example is the manufacture of components used to reduce failures in the field from harsh environments. ***Bernie Carpenter*** is the chair.

The Nanotechnology Committee

What is nanotechnology? The most enduring definition remains "at least one dimension being 0.1 – 300 nanometers" where one nanometer is one-millionth of a millimeter. For comparison, the wave length of green light (the center of the human visible range) is 550 nanometers. Thus, natural inhabitants of the nano world include DNA (small), proteins (typical), and viruses (large). Avenues to the nanoscale include the bottom-up approach (an additive process) and top-down approach (subtractive process). The U.S. Advanced Manufacturing National Program Office (AMNPO) proposed addi-

tive processing as the first focus of up to 15 centers of excellence in the National Network for Manufacturing Innovation (NNMI). The ECD Nanotechnology Committee co-chairs are ***Sanjiv Rai***, s.r@ieee.org, and ***Marc Kelemen***, nanomarc@wowway.com.

ECD Operations Manual

For the last two and a half years we have been developing an ECD Operations Manual. I invite you to view the Operations Manual index at asq.org/ec/about/DIV_EC_OPSMANUAL_COPY.

ECD Website, Discussion Boards, and Blogs

The ECD website is asq.org/ec/index.html. In addition, ECD has a discussion board, a blog, and is building a Nanotechnology Body of Knowledge:

- ECD Discussion Board: asq.org/discussion-boards/forum.jspa?forumID=29
- What's New in Standards–ASQ Knowledge Center: asq.org/knowledge-center/standards/index.html

You are invited to visit the website, discussion board, blog, and the Nanotechnology Body of Knowledge.

ECD Leadership Roster

Chair ***Marion Bize***
Fujitsu Network Communications
Richardson, TX
Phone: 972-479-2157
Email: mbize.tl9k@gmail.com

Chair-Elect ***Lucy Kahn***
Phone: 201-861-2369
Email: lddy@aol.com

Treasurer ***Melvin Downes***
Phone: 973-216-0070
Email: mcscam@optonline.net

Secretary ***Marc Kelemen***
Phone: 440-567-6276
Email: nanomarc@wowway.com

For the full leadership roster see asq.org/ec/about/leadership-ec.html.

Volunteer Opportunities

The ECD always needs volunteer leaders. ECD is like most organizations—you tend to get more from your membership when you put more into the organization. We need volunteers as speakers at section meetings and conferences, volunteers to serve on committees, and volunteers to serve in officer positions in the future.

The vacant positions are identified below. Some ASQ regions are very large and can have more than one regional counselor. Feel free to volunteer to serve as a regional counselor even if one or more of your colleagues are already listed for your region. Please consider volunteering to serve the ECD in some capacity. You can email anyone on the leadership roster for more information on how to volunteer.

Volunteer opportunities include:

- ECD operations manual chair
- Some ECD regional counselors
- ECD section representatives
- RoHS Committee chair
- Writing articles for our newsletter and other opportunities
- Speaking at section events
- Speaking at conferences
- Other (please specify)

In your reply, please include: name, membership number, address, phone, and email.

Send email to: ECD chair ***Marion Bize*** at mbize.tl9k@gmail.com.