

# NPSS NEWS

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Robert Reed  
NSREC General Chair

## Nuclear and Space Radiation Effects Conference July 11<sup>th</sup>–15<sup>th</sup>, Portland, Oregon

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The 53<sup>rd</sup> annual International Nuclear and Space Radiation Effects Conference (NSREC) will be held July 11<sup>th</sup>–15<sup>th</sup>, 2016, at the DoubleTree Hotel and the Oregon Convention Center in Portland, Oregon. Our committee has worked hard to offer an interesting venue and outstanding program for this year's conference. We will continue the tradition of previous NSRE Conferences by offering a Technical Program, a one-day Short Course that precedes the technical sessions, a Radiation-Effects Data Workshop, and an Industrial Exhibit. Engineers, scientists, and managers from around the world who are interested in radiation effects will attend. Professor Robert Reed, Vanderbilt University, is the Conference General Chair.

Technical and social programs have been planned to maximize opportunities for information exchange and networking in the areas of radiation effects in microelectronics and photonic devices, circuits, and systems. Supporters of the conference include

Atmel, Boeing, Cobham Semiconductor Solutions, Freescale Semiconductor, Honeywell, Intersil, International Rectifier HiRel Products, Northrop Grumman, Southwest Research Institute, and VPT Rad.

### TECHNICAL PROGRAM

The technical program chair, Philippe Paillet, CEA (France), and his committee have assembled an outstanding set of contributed papers that are arranged in ten sessions of oral and poster papers for the Technical Program. Those papers are eligible for publication after the conference in the IEEE *Transactions on Nuclear Science*, subject to further review. A Radiation-Effects Data Workshop is also included, with papers that emphasize data on electronic devices and systems, and descriptions of new simulation tools and radiation test facilities. In addition to the contributed papers, three invited talks will be presented that are of general interest

to conference attendees and their companions. "Where's the Spruce Goose?" presented by Colonel Larry Wood, USMC (retired), former Executive Director, Evergreen Aviation & Space Museum; VLSI Technology Reliability Beyond the 'Golden Age' of Moore's Law Silicon Scaling, Jeffrey Hicks, Intel, and Cascadia Subduction Zone—Are We Ready for the Big One?" Scott Burns, Professor Emeritus of Geology, Portland State University.

The conference will also include a Women in Engineering event, featuring a talk by Nina Patel, L-3 Warrior Systems, "Women in Leadership: A Personal Perspective." A breakfast for Young Professionals will also be included, with a talk by Professor Ken Galloway of Vanderbilt University, "Reflections at a Half-Century or How I Stumbled Through."

CONFERENCES Continued on PAGE 2



Phillippe Paillet  
Technical Program Chair



Ken Rodbell  
Short Course Chair



Steve McClure  
Local Arrangements Chair

## NSREC Continued from PAGE 1

### SHORT COURSE

Ken Rodbell, IBM, is the chair of this year's Short Course, which will feature the theme "Techniques for SEE Modeling and Mitigation." The course will be held on Monday, July 11<sup>th</sup>, and is an excellent learning opportunity for those who are new to the field as well as those who want to stay abreast of current issues.

The four speakers and their respective topics are:

- » **Jerome Mitard**, IMEC, who will discuss Device Scaling;
- » **Paul O'Brien**, Aerospace Corporation, who will present a talk on Radiation Environments;
- » **Klaus Lilja**, RCI, who will discuss Modeling Neutrons and Heavy Ion SER, from Planar CMOS to FinFETs; and
- » **Jeff Kauppila**, Vanderbilt University, whose topic is Single Event Modeling for Rad-Hard by Design Flows.



**Keith Avery**  
Industrial Exhibit Chair

### SOCIAL EVENTS

Steve McClure, Jet Propulsion Laboratory, is the Local Arrangements Chair. He has arranged a very interesting social program in Portland. The Conference Social on Wednesday evening will be held at the World Forestry Center, a local museum

### NSREC EXHIBITOR LIST:

- » 3DPlus
- » Analog Devices
- » Anaren/MSK Products
- » Atmel Corporation
- » BAE Systems
- » Boeing
- » Brookhaven National Laboratory
- » Cobham Semiconductor Solutions
- » Crane Aerospace & Electronics—Interpoint
- » Cypress / DPACI
- » Foss Therapy Services
- » Freebird Semi
- » HILEVEL Technologies
- » Honeywell
- » International Semiconductor HiRel Products, Inc.
- » Intersil Corporation
- » Ixblue
- » JD Instruments
- » J. L. Shepherd & Associates
- » Jazz Semiconductor Trusted Foundry
- » Lawrence Berkeley National Laboratory
- » Linear Technology Corporation
- » Maxwell Technologies
- » Micropac
- » Micro-RDC
- » Microsemi
- » Modular Devices
- » Northrop Grumman
- » PULSCAN
- » Robust Chip, Inc.
- » Science and Technology Facilities Council—ChipIR
- » Silvaco
- » ST Microelectronics
- » Synopsys, Inc.
- » Texas A&M Cyclotron Institute
- » Texas Instruments
- » ULTRA TEC
- » VPT RAD
- » VPT, Inc.

that includes exhibits from forests around the world, and emphasizes their unique characteristics and sustainability issues. In addition to the exhibits, the museum has local hiking trails and facilities for dining and entertainment. Two companion events will also be included. Tuesday's event will be a tour of the famous Portland Rose Garden, along with a guided walking tour of the city. The event on Thursday will feature the Oregon Museum of Science and Industry, as well as a ride on the Portland Aerial Tram, which provides outstanding views of the city.

The conference location at the Oregon Convention Center is a ten-minute tram ride from the downtown area. There is also convenient access to the Portland International Airport by the light-rail system.

### INDUSTRIAL EXHIBIT

Keith Avery, Air Force Research Laboratory, is the Industrial Exhibit Chair. The exhibit will allow conference attendees to discuss with participating vendors new developments in radiation-hardened and radiation-tolerant electronics, engineering

services, facilities, and equipment. A reception will be provided on Tuesday evening in the exhibit area for attendees and their companions that showcases the Industrial Exhibit. If you need more information on the exhibit, please visit <http://www.nsrec.com>, or contact Keith Avery at 505-846-0210, [Keith.avery.2@af.mil](mailto:Keith.avery.2@af.mil).

### PORTLAND, OREGON

Portland is one of the major cities in the Northwest, with easy access to numerous scenic attractions



Oregon Convention Center



**Teresa Farris**  
RE Vice Chair-person of Publicity

and activities. The city is compact and pedestrian friendly, with many small shops as well as major stores. The nearby Pearl District is home to galleries, boutiques, and the legendary Powell's City of Books. Numerous restaurants include casual and fine dining, featuring local cuisine and wine, as well as food carts (a Portland tradition) that provide a wide range of ethnic foods. The Portland Rose Garden, the Oregon Museum of Science and Industry, the Japanese Garden, and the Aerial Tram are popular destinations within the city. Portland's big city excitement and small town charm make it one of the favorite destinations in the West.

Nearby attractions include ocean beaches, the Columbia gorge, Multnomah Falls, and Mount Hood. Biking, hiking and windsurfing are some of the major outdoor activities. The region is home to many wineries, including those in the renowned Willamette Valley, as well as craft breweries.

### ADDITIONAL INFORMATION

For the latest information on the conference, including the technical program, local arrangements, hotel and travel information, and registration forms, please visit our web site at <http://www.nsrec.com>.

Alternatively, you may contact the General Chair, Professor Robert Reed, 615-791-4357, or E-mail: [robert.reed@vanderbilt.edu](mailto:robert.reed@vanderbilt.edu).

You may also contact the Publicity Chair, Teresa Farris, Cobham Semiconductor Solutions, at 719-594-8035, or E-mail: [teresa.farris@aeroflex.com](mailto:teresa.farris@aeroflex.com).

## The 2016 Real-Time Conference

June 6<sup>th</sup>–10<sup>th</sup>, 2016, Padova, Italy



**Adriano Luchetta**  
General Chair, RT-2016

By the time you read this, the Real-Time Conference will be about to begin. The conference will be held in Padua (Padova), Italy this year. It brings together experts on real-time techniques from the fields of nuclear and particle physics, astrophysics, plasma and nuclear fusion, space science, accelerators, medical imaging, nuclear-power instrumentation, and other radiation-instrumentation areas.

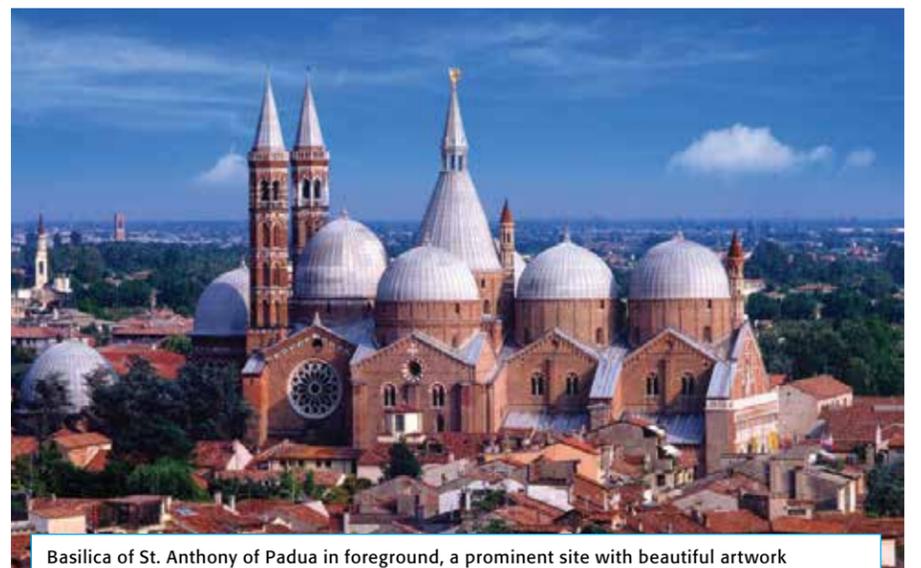
This year we had 268 abstract submissions—a record number. Normally we see around 200 abstracts; we believe that this new record speaks to the good reputation of this conference as a first-rate scientific venue for many different fields of real-time applications. The participants can look forward to a well-balanced and interesting scientific program, which has been put together by our program chairs Réjean Fontaine (Univ. of Sherbrooke) and Martin Grossmann (PSI). The student award committee, led by Christian Bohm (Univ. of Stockholm) will select four student papers to receive those prestigious

awards. We will also honor this year's recipient of the CANPS award, who will join the ranks of our chair Adriano Luchetta (the 2010 award recipient), Chris Parkman (2012), Cheng-Yi Chi (2014), and many other distinguished Real-Timers.

Sign up on site for the conference and also participate in one of the two interesting short courses offered on June 5<sup>th</sup>, the Sunday before the conference starts. One short course is about FPGA and GPU programming by Mariano Ruiz, the other about "Real-time data visualizations and controls using modern Web technologies" by Stefan Ritt.

Following a long tradition, this conference has only plenary talks and poster sessions. Each poster presenter has the opportunity to give a two-minute mini-oral "teaser summary" of the poster. These mini-orals make it easier for attendees to select the posters that most interest them. This is also a great educational opportunity for young participants. For many of them this is the first time to present and promote their work in front of a supportive audience.

We selected Padua for its wonderful Italian charm and flair with a number of nice hotels for every taste and budget, its proximity to places such as Venice, but also for its modern and state-of-the-art conference facilities for a pleasant and high-quality scientific meeting. The conference is hosted by the "Consorzio RFX" under Conference Chair Adriano Luchetta. The conference will be held at the



Basilica of St. Anthony of Padua in foreground, a prominent site with beautiful artwork including Donatello bronze sculptures; city in background.

"A. Luciani" Padua Congress Center, which is the most versatile and spacious event venue in Italy's Northeast.

Please visit the conference web site at <https://indico.cern.ch/e/rt2016> for further information. Please stay

tuned to see more information about the highlights of the 20<sup>th</sup> Real-Time Conference in future editions of this newsletter.

For further information contact Martin Purschke, CANPS chair, by E-mail at [purschke@bnl.gov](mailto:purschke@bnl.gov)

### NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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# North American Particle Accelerator Conference



**Marion White**  
Conference Chair



**Vladimir Shiltsev**  
Scientific Program Chair



**Maria Power**  
Conference Editor/Scientific Secretariat

NA-PAC16, the 2016 North American Particle Accelerator Conference, will be held at the Sheraton Grand Hotel, Chicago, Illinois, from October 9<sup>th</sup> through 14<sup>th</sup>, 2016. NA-PAC16 provides a forum where scientists, engineers, technicians, and students from laboratories, universities, and industries worldwide, and from a very broad range of accelerator-related disciplines, can come together in one place and be exposed to the state-of-the-art in accelerator science, technology, and applications. The talks, posters, tutorials, short courses, and lab tours are selected with the intent of exciting, informing, updating, and educating the attendees.

The conference begins with short courses the morning of Sunday, October 9<sup>th</sup>, followed by a student poster session that afternoon. Regular conference sessions are held for the rest of the

week. The conference's scientific program is unique in its breadth and depth, with many leading researchers, engineers, students and industrial partners covering the entire spectrum of accelerators and their applications. Laboratory visits to FNAL and Argonne will be held on Saturday, October 15<sup>th</sup>, following the conference.

Six short courses will take place Sunday morning with two 90-minute courses being offered in each of three parallel sessions.

Student grants are offered to offset expenses for students attending the conference and should be applied for by following links on the main website (see below for address). Student grants cover travel, per diem, and conference fees. Setup for the student poster session will begin at 13:30 on Sunday, and

visitation by the student poster judges will take place from 14:00 to 16:00. The student poster session will be open to all after 16:00.

Teachers from around the area will participate in Teacher's Day, an event that allows teachers to get continuing education credit. Teachers listen to lectures, participate in experiments that they will be able to take back to their classrooms, and will also listen to some of the regular conference presentations.

Planners of the IEEE- and APS-sponsored Women in Science and Engineering (WISE) event are creating an exciting program, open to all, and showcasing women working in the accelerator field. The WISE reception provides an excellent opportunity to meet friends and make valuable professional contacts.

Both IEEE NPSS and APS offers stipends to cover attendee's child care expenses during the conference. The conference website will have further information.

The Costrell Awards Session will be held Thursday afternoon, followed by a conference banquet.

Industrial partners and exhibitors attending NA-PAC will be able to meet scientists and engineers who set requirements and select hardware for current and future accelerator construction projects. They will also meet students and other up-and-coming leaders.

Register early for tours of Argonne National Laboratory and Fermi National Accelerator Laboratory on Saturday following the conference. Registration for the tours is available on the conference website.

There are excellent networking opportunities for all. Attendance is planned at around 600 people, and we look forward to seeing you in Chicago in October.

For further information, please email [NAPAC16@aps.anl.gov](mailto:NAPAC16@aps.anl.gov).

<https://napac2016.aps.anl.gov/>

# President's Report

2016 is off to a roaring start, welcoming new NPSS AdCom members and a slate of NPSS conferences coming up shortly. I have much to report from the February Technical Activities Board (TAB) series, as well as from the NPSS retreat and AdCom meeting in March.



**John Verboncouer**  
IEEE NPSS President

**NPSS Awards.** One of the best duties of this position is the announcement of NPSS awards, which gives us the opportunity to recognize the outstanding work of our colleagues through the efforts of the NPSS Awards Committee, led by Craig Woody. The NPSS Awards committee reported the 2016 NPSS Richard F. Shea Award, which recognizes outstanding contributions through leadership and service to the NPSS and its fields of interest, was awarded to Richard (Dick) Kouzes, Laboratory Fellow at Pacific Northwest National Laboratory. Many of you know that Dick is our dedicated webmaster, and that he recently played a major role in redesign of the NPSS web site, including making it scalable for mobile platforms, among his many other contributions to NPSS over the years. The 2016 NPSS Merit Award, which recognizes outstanding technical contributions to the NPSS fields of interest, was awarded to Meyya Meyyappan, Director of the Center for Nanotechnology at NASA-Ames. The 2016 NPSS Early Achievement Award, which recognizes outstanding contributions to any NPSS field of interest within the first ten years of the candidate's career, was awarded to Allen Garner, Assistant Professor of Nuclear Engineering at Purdue University. Allen is also currently serving as the Technical Program Chair for the IEEE International Power Modulator and High Voltage Conference this summer in San Francisco, technically co-sponsored by NPSS. The Charles K. Birdsall Award, which recognizes outstanding contributions in

computational nuclear and plasma science, was awarded to John Cary, Professor of Physics at University of Colorado at Boulder and CEO of Tech X Corporation. The 2016 NPSS Graduate Scholarship Awards, which recognize student contributions within the fields of NPSS, were awarded to Jin Chen, Zachary Fleetwood, Guen Bae Ko, and Shijun Liang. See FUNCTIONAL COMMITTEES, Awards, for their biographies and citations.

You can read more about the NPSS Awards, including the key criteria, nomination forms, and past award recipients here: <http://ieee-npss.org/awards/npss-awards/>.

**Constitutional Amendment and IEEEin2030.**

Here, I will provide an update since my last report. For background, the IEEE governing documents, including the Constitution and Bylaws, can be found here: <http://www.ieee.org/about/corporate/governance/index.html>. The proposed changes to the Constitution can be found here: [https://www.ieee.org/about/corporate/election/2016\\_constitutional\\_amendment.html](https://www.ieee.org/about/corporate/election/2016_constitutional_amendment.html). Similarly, you can learn more about the IEEEin2030 effort to evolve the IEEE organizational structure, with the stated objective "Create a nimble, flexible, forward-looking organization," here: [https://www.ieee.org/about/corporate/ieeein2030\\_archive\\_m.html](https://www.ieee.org/about/corporate/ieeein2030_archive_m.html). These two elements are related since the amendment is intended to introduce the organizational flexibility needed to implement the latter.

The proposed IEEE Constitutional Amendment has two key points, which I will summarize in plain English, rather than provide the full details in legalese, which I do not speak:

1. Separation of the role of Delegate to the Assembly from that of Director. This is an important change, which has legal ramifications. Essentially, Directors by law have fiduciary responsibility for the entire IEEE, and hence must perform certain actions.

The Board of Directors (BoD) can delegate the operational details, but ultimately must review and approve many actions. We can therefore view the role of Director as one with legal responsibilities for the execution of corporate actions and oversight. The role of Delegate to the Assembly, however, is more parliamentary in nature, and can be defined with less legal encumbrance.

2. The addition of the IEEE Executive Director (ED) as a nonvoting ex-officio member of the Board of Directors. This change ensures the ED a voice on the BoD, and a seat at the table. The ED can sensibly be excluded from BoD executive sessions in which the ED may be conflicted, such as when ED compensation and performance evaluation are being discussed.

The proposed Constitutional Amendment was approved by the BoD in November of 2015, and assuming no further action, will appear on the IEEE-wide ballot in the Fall of 2016. By 01-May 2016, the proposed Amendment must be provided to all voting members via the *IEEE Spectrum* and/or *The Institute*. Opponents will have an opportunity to add self-aggregated (for substantial uniqueness) statements to the ballot, with initial statements due by 13-May, to be distributed to initiators and opponents by 03-Jun (presumably to aggregate similar statements to reduce redundancy). Note that only opposition statements are allowed aside from the statement of the initiator (the BoD in this case), so TABin2030, for example, cannot submit a statement enumerating strengths and weaknesses of the proposal for inclusion on the ballot. We can use other venues, however, including the *Sentinel*, *The Institute*, the TABin2030 website, and our newsletters. Rebuttal statements will be due by 24-Jun, since BoD rebuttals must be approved.

At the February Technical Activities meeting, we heard from past IEEE President Howard Michel, current IEEE President Barry Shoop, and IEEE

President-Elect Karen Bartleson on the subject of the proposed Constitutional Amendment and on the present status of the IEEEin2030 effort. Following the presentation, Karen, Barry, and Howard, assisted by IEEEin2030 members Kathy Land, IEEE Secretary Parviz Famouri, and NPSS Conference Chair Bill Moses took questions from both the Technical Activities Board (TAB) comprising the society and council presidents and division directors, as well as from the audience of additional TAB leaders and affiliates. The ensuing discussion was spirited.

Following the discussion, I asked TAB Vice President José Moura to create an ad hoc committee to study the impact of the Amendment and the IEEEin2030 proposals on TAB and its constituent societies and councils, and to provide feedback to the IEEEin2030 Committee. José agreed, and asked me to chair the committee. We designed the committee to include people with backgrounds in key areas within TAB, including finance, conferences, publications, operations, and many more. We are calling the ad hoc committee TABin2030.

TABin2030 held its first webinar on 06-Apr-2016, focused on the proposed amendment and directly related governance issues, with Bill Moses serving as the speaker, and Karen Bartleson contributing as well. A broad array of TAB leadership and affiliates who had demonstrated interest were invited to attend, and could submit questions during the webinar. We had about 80 people accept the invitation to attend. The questions were curated to combine similar questions. After a brief presentation by Bill, the TABin2030 committee members asked a series of questions, followed by the curated questions from the other attendees. Many attendee questions could not be answered in the time allotted, but answers should be forthcoming shortly, which will likely be posted to both the IEEEin2030 and the TABin2030 web sites. The entire webinar lasted a little over two hours. The tone was respectful, the questions were well posed, and detailed answers were delivered. IEEE members can replay the webinar, and obtain the slides, here: <http://taops.ieee.org/operations/tabin2030.html>, feel free to distribute broadly to IEEE members.

The first issue addressed was to the impetus behind the proposed governance change. Bill delivered an evolved version of the familiar litany of problems

## President's Report Continued from PAGE 3

faced by the BoD. One key point made was that the separation of roles between Director and Delegate would clearly delineate between representation of the IEEE (Director responsibility) and representation of the Operating Unit (OU) such as TAB or MGA (Delegate role) which poses conflict of interest challenges when performed by a single individual. Among other key problems, the most salient is that the BoD members, acting as both Director and Delegate, spend most of their time on operation matters, and lack time for strategic planning. One problem that is fixed by separation of roles is that of unequal representation. Ten Directors are chosen based on geographic regions, but the relative member populations have shifted significantly such that the number of members represented by each Regional Director is dramatically different. To a lesser degree, natural growth and decline in technical area membership has led to similar problems for Division Directors, who represent a group of societies and councils. Separation of Director from Delegate would allow the addition of members to the Assembly without creating a larger BoD. Even the staunchest opponent must concede that a larger board leads to more deliberation, even if there is disagreement on the scaling or the level at which it becomes a problem. Since in the proposed IEEEIn2030 framework, the Assembly will play deliberative and representative roles rather than operation and fiduciary roles, one key element in its purview will be the deeper consideration of fundamental issues such as changes to the Constitution and Bylaws. While the decisions on the Bylaws must legally be made by the BoD, the Assembly allows representational advocacy of member and OU interests which the BoD cannot. It seemed to the TABin2030 Committee that some problems, such as heavy workload, could be mitigated by relying on delegation to non-BoD committees, although in many instances the BoD must receive a report and ultimately approve any actions.

Bill next showed that some of the listed problems could be solved under the existing structure, but with some negative consequences. He also demonstrated that many bad changes could be made under the existing structure. The TABin2030 committee indicated that indeed the same set of bad changes could still occur under the new structure, should the BoD choose to do so. This leads to what we viewed as the chief concerns of the TABin2030 committee:

1. By separating Delegate from Director, and deferring how Directors will be constituted to a future revision of the Bylaw, which requires only 30 days of notice and only a vote of the BoD to enact, large error bars are introduced on what the BoD may look like. Immediacy is the only argument for not providing the corresponding Bylaws that implement the vision. More on this later, as I learned more details while attending the IEEEIn2030 meeting just before writing this.

2. Many on TABin2030 were strongly opposed to a nonvoting ex-officio role on the BoD for the ED.

3. IEEE-wide election of BoD may lead to dilution of smaller societies and council experiential representation on the BoD, a key element of diversity. In particular, there was concern over the representation of MGA and TAB going from 11/31 each to as little as 2/15 each. More on this later as well.

4. The purpose of a constitution is to define the core principles of an institution, and to ensure those principles protect the interests of the members, in the case of the IEEE. Given that all involved including Bill saw lack of protection of the key principles on which IEEE is built, such as member representation and volunteer control, both with and without the proposed Amendment, we felt that modifying the Constitution to ensure these protections would be a better solution.

Having just attended an IEEEIn2030 meeting, I will now summarize the key take-away from my individual perspective, rather than that of the TABin2030 Committee. First, I note that IEEEIn2030 Chairperson (and IEEE President-Elect) Karen Bartleson invited me to attend, and allowed me to speak to the group, with no preconditions. I also discovered there were no scales and horns to be found, and even opposing views were taken into consideration in the discussion, including concerns coming from TABin2030. Indeed, although IEEE President Barry Shoop and I are diametrically opposed on the most important things like sports (he is a Stanford grad and I am a Cal grad, same year), sitting between him and ED Jim Prendergast for 16 hours, there are no bite marks, at least speaking for myself. My report from TABin2030 was well received, including the concerns detailed above, and indeed some of the concerns were addressed during the ensuing discussions. The summary of the IEEEIn2030 meeting as it pertains to those concerns enumerated above:

1. Much of the work at this IEEEIn2030 meeting was aimed at defining the principles on which to base the Bylaws for implementation of the reengineered IEEE structure. The vision remains a shared governance among BoD which holds the fiduciary responsibility and authority, and delegates deliberative and representational functions to the Assembly, and operational functions to the Enterprise Board. It is notable that the new Enterprise Board will have specific advocates from the OUs directly involved in the operational decision process, something that is not allowed under the present BoD. The shared governance structure, with special focus on the new Enterprise Board, will be the subject of our next TABin2030 webinar.

2. I do not see how ED membership on the BoD enhances his/her participation in the BoD, since the ED job description can compel participation

and grant voice without membership. The one strong argument I heard for ED BoD membership was prestige and respect, which could in fact be an important factor in attracting candidates. Present Bylaws provide all IEEE members and staff the right to attend all BoD, Major Board, and other OU meetings with the exception of executive sessions. BoD members, ex-officio or not, have the right to attend or receive the minutes from executive sessions except where they have a conflict of interest.

3. I was impressed by the thoughtfulness going into the process of defining the BoD qualifications and the process for selecting candidates in slates that ensured diversity across multiple dimensions. Indeed, rather than prescribe diversity by OU representation, we discussed skill- and constituency-based diversities, such as finance, technical background, corporate operations, regional expertise, gender, and so on. A strong N&A committee would be needed to manage slates competing various expertise needed for the BoD, with the Assembly representing constituents in nominating the strongest candidates for the slates based on skill diversity qualifications. Yes, this is different from the BoD construct from the last presentation or even from the recent TABin2030 webinar. And yes, it may need to evolve further to be practical, but I thought this was an example of a nimble strategic exercise in satisfying multiple constraints that offers potential to transcend the silos of the present OU-based BoD composition and ensure needed skill sets and perspectives.

4. This is one area I still wish we could improve, both in articulating and ensuring the fundamental principles of the IEEE within the Constitution, and in mitigating risk in the future. The counterargument here is while many others agree this might be ideal, it may not be achievable in practice.

The specific functions delegated to each leadership group is pretty far along, and I expect we will see it presented shortly. One of my complaints about IEEEIn2030, and one which I think is the root of what some will call a lack of transparency, is really a problem in not being able to engage middle leadership and interested affiliates in the creative process. Speaking as someone who knows little, and therefore benefits from listening and absorbing the wisdom of others, I believe that there is great untapped wisdom in IEEE volunteers, and bringing that wisdom to bear here would greatly enhance this effort. As many of you know, I can be direct, and I made it clear that I think not only would much concern over this design be alleviated, but a better product would result, if this design could be tested and improved by the wisdom of the broader leadership before solidifying it at the BoD. Maybe this could be accomplished via panels or some other method that people smarter than I am could propose. I think many are reacting negatively to being informed of what others have come up with for their IEEE without their participation; we should view that ownership as a good thing, and make full use of that passion – that volunteer attitude is,

after all, what makes IEEE great. Now, as a practical matter, success in that framework is only possible with a commitment to respect and an understanding that an institution with such diverse interests, needs, and people will require reasoned compromise. If we can manage that, we can tap the “hidden geniuses within our membership” for the beneficial mutation that allows IEEE to evolve and grow even stronger.

To summarize, I am convinced that there are some problems that are best solved by decoupling the Director-Delegate roles, including equitable member representation, and others that are mitigated by creation of the Enterprise Board to handle operation issues, freeing the BoD to focus on fiduciary issues and longer term strategy. The IEEEIn2030 is getting better at articulating the issues and the vision, and each evolution is becoming more refined. I also believe that risk-aversion and inefficient discussion and decision processes are mitigated, although not solved, by a smaller BoD with a more targeted skill set, coupled with delegation of key functions to the Assembly and Enterprise Board. However, I wish that the protections in the Constitution were strengthened by enshrining more of the fundamental principles for constituting the BoD there. I am encouraged by the possibilities that can come from IEEEIn2030, but I wish we could vote on the final product, or at least discrete elements of it, rather than incomplete pieces that facilitate the subsequent changes. I wish the other 429,999 members of IEEE could sit with IEEEIn2030 for a few hours and participate in the give and take of creation. But alas, we Berkeley types are perhaps too idealistic, and need to be tempered by the pragmatism of Stanford types, to find a way to bring out the best in each of us to benefit all of us.

In the next Newsletter, which will be released just before the next IEEE ballot, I will provide a full discussion of the background and motivation of any governance issues appearing on the ballot, and advantages and disadvantages of those issues as they pertain to Societies and Councils in general, and specifically to NPSS. My expectation is that we will have a more detailed picture of the Bylaws that will accompany the amendment, both the initial static set that retain the present organization structure, and the subsequent set that are intended to go before the Board of Directors in November, after discussion throughout IEEE.

Each of you should weigh the pros and cons I have presented here, and if you feel strongly about some of those or the many others I missed or omitted to conserve electrons, I urge you to contact your leadership, including your presidents, directors, and others. Help them to understand via a dialog, so that they can represent your ideas and concerns at each level in IEEE right up to the BoD. It is your IEEE, and you should play a role in reengineering it.

Sincerely,



John Verboncoeur, NPSS President  
[John Verboncoeur, IEEE NPSS President, can be reached at johnv@msu.edu](mailto:johnv@msu.edu)

## Secretary's Report



Albe Larsen  
 IEEE NPSS Secretary  
 and Newsletter Editor

The IEEE NPSS Administrative Committee (AdCom) held a one-day retreat followed by its first general meeting of 2016 on March 11<sup>th</sup> and 12<sup>th</sup>, at the La Fonda Hotel in Santa Fe, NM. These meetings were preceded by meetings of the Finance and Communications Committees on Thursday, March 10<sup>th</sup>.

Issues discussed at the retreat included an introduction to Indico, an extensive discussion of IEEE organization and governance, especially in light of a possible vote in the fall to change dramatically the constitution of the IEEE Board of Directors (see article under Finance Committee) and the role of

societies. There was also discussion of our newly approved journal, *IEEE Transactions on Radiation and Plasma Medical Sciences*, to be launched in January 2017, on conference software and on new initiatives for 2017. The retreat offers a yearly opportunity to discuss a few issues in depth and to look at planning for the future of NPSS.

AdCom met on Saturday, March 12<sup>th</sup>. Ron Keyser, our treasurer, noted that conferences are slow to close and that recent conference losses, while individually small, do add up and will impact our budget projections. Budgets for conferences need to be prepared well in advance and reviewed by the FinCom chair, the NPSS treasurer and assistant treasurer, the NPSS VP and the relevant TC chair, of whom three-quarters must approve the budget.

Our budget tool has been moved to an IEEE server. Upgrades and some modifications and new features are happening, but slowly. The tool will be used for all IEEE conferences within the next two years.

We are still waiting for a solution to on-line sign-up of new members at conferences. Achieving this has been remarkably slow.

Publications are doing well and bonuses were received for both for accurate page estimation in 2015. We are working toward using 50% of prior year surplus on new initiatives. For 2016 an operational loss of about \$100k is anticipated.

President John Verboncoeur emphasized that TC chairs have fiscal responsibility for the conferences

their TC sponsors or cosponsors – i.e., has fiduciary involvement. He also reminded members that AdCom minutes are legal documents and their accuracy is the responsibility of voting AdCom members who accept or reject them. He also commented on various events from the recent TAB and IEEEIn2030 meetings. See his report, above, as well as FinCom chair Hal Flescher's report, concerning IEEE proposed Constitution and Bylaws revisions.

John also suggested that people look at Collabratec, an IEEE on-line collaboration tool that allows collaborations of up to 300 people. It may be used instead of Base Camp, for example, for sharing documents and discussion.

The Division IV presidents met with Division IV Director Bill Moses who reported that while IEEE has strong membership from academia, industrial membership has dropped significantly. When IEEE was formed these were essentially equal partners. More effort will be directed to attracting engineers from industry as well as younger engineers. We need to discover what will attract and hold these groups. What can NPSS do? If you have ideas, send them to John ([johnv@msu.edu](mailto:johnv@msu.edu)) or to me ([a.m.larsen@ieee.org](mailto:a.m.larsen@ieee.org)).

## TECHNICAL COMMITTEES

Martin Purschke reported on the upcoming Real-Time Conference to be held in Padua (Padova). See CONFERENCES above. They are using a two-step paper acceptance process to facilitate obtaining visas. They are using Indico software for conference management. They have also developed a very conservative conference budget because of the challenges in estimating meeting attendance.

Charles Neumeyer of Princeton Plasma Physics Lab. Is the new chair of the Fusion Technology Committee. Committee job assignments have been realigned. They will update their web site soon. Their next SOFE will be in Shanghai in June 2017 with assistance from ASIPP. Hutch Nielson, also of PPPL, will be the General Chair and MCE is providing support. Conference challenges include the loss of most DOE support with the exception of some small support for students.

Paul Marsden is the new chair of NMISC. They are redefining selection processes for the general chair of NSS/MIC and of the awards committee. This year they will have a Constitution and Bylaws review. For the Strasbourg conference this November there will be a two-page paper summary for the Conference Record. Full papers will, if wished, be submitted to TNS for review. In future our new journal, TRPMS, will be an option. NMISC is technically cosponsoring the 2016 PET/MRI conference to be held in Cologne. Future NSS/MIC conferences will be in Atlanta, Sydney, Australia, and Manchester, UK.

Patrick Le Dù, chair of the Radiation Instrumentation Committee, noted that attendance has been dropping over the past five years. They have not yet determined why but changes in government funding, visa issues and the impact of worldwide events may be contributors. The RI committee will sponsor or technically cosponsor SORMA West, May 22<sup>nd</sup> – 26<sup>th</sup>, 2016, ANIMMA 2017, in Liege, Belgium, and SCINT 2017 in Chamonix, France.

Steve Gourlay, the new Particle Accelerator Science and Technology chair, noted that Fulvia Pilat is the new vice-chair. The 2016 North American PAC will be held in October in Chicago (see CONFERENCES). IPAC 18 will be in Vancouver, and the 2021 IPAC will be in Brazil.

Don Shiffler, Plasma Science and Applications chair, reported that Christine Coverdale is recipient of the 2016 PSAC award and Andreas Schlaich is recipient of the Igor Alexeff award. These will be formally presented at ICOPS 2016 in Banff, Alberta, Canada in June. ICOPS 2017 will be in Jersey City, NJ, 2018 will be collocated with PPC2018 in Denver, CO, in 2019 there will be a combined PPPS in Orlando, FL,

ICOPS 2020 will be in Singapore, and ICOPS 2021 will be in Tahoe, NV. Proposals are expected from Mexico and China for other meetings.

Andreas Neuber is the new chair of the Pulsed Power Science and Technology committee. The 2015 conference is closing. The 2017 conference will be held in Brighton, UK, the conference's first venture outside the U.S., and 2019 will be in Orlando, FL as part of PPST.

Allan Johnston the new Radiation Effects chairman, provided statistics for the 2015 NSREC. Books were sent to IEEE in January 2016. Future conferences: 2016, Portland, OR; 2017, New Orleans, LA; 2018 Hawaii's 'Big Island'; and 2019, San Antonio, TX.

## FUNCTIONAL COMMITTEES

The Awards Committee, chaired by Craig Woody, has selected the 2016 NPSS awardees for the Merit, Shea, Young Investigator, Birdsall, and Graduate Scholar awards. See the FUNCTIONAL COMMITTEES section for names and brief biographies of the recipients. Also see AdCom Actions for new Knoll Fellowships to honor Glenn F. Knoll.

Conferences Committee chair, Bill Moses, announced that no checks larger than \$25K could be issued on Concentration Banking accounts. To handle big amounts, request a wire transfer from MCE, or set up a non-IEEE local bank account. MCE is working on this issue because this is a hardship for large conferences. The PSPB edict about no republication of conference papers has not dealt with how to handle the issue of what to include in the Conference Record. Options include a brief summary report of the paper, not submitting anything to the Conference Record or, perhaps more ideally, have the *Transactions* paper supersede the Conference Record once it is published. Conference Record papers must now have a plagiarism check. To date compliance is about 40%. Slides cannot be used as a substitute for a paper as they are only considered as supplemental material and can be used as such.

The Communications Committee met prior to the AdCom meeting. The contract for website maintenance has been renewed. Web pages need to be reviewed and kept up-to-date. If you see needed changes contact the appropriate TC chair. Both Women in Engineering (WIE) and Young Professionals (YP) will be added as top-level items.

Sal Portillo, Membership chair, noted that most NPSS members are from the U.S. and most are men. South and Central America have only a very few members, and very, very few student members. Retention of members from these and other regions is poor. Why? What value does IEEE membership hold for you? Let us know!

Christian Bohm, new chair of the Transnational Committee, noted that their work in Europe has been successful but agreed with Sal that much more work needs to be done in other regions. The committee has been revamped with members from China, Japan, Australia and Brazil to work to promote NPSS in Asia and South/Central America, and a new recruit from South Africa to promote IEEE in Africa, and the committee is looking at prospective members from India which has a large number of IEEE members but not so many from NPSS. A list of current committee members is on the Transnational Committee's page linked to the NPSS web site. The committee works with Distinguished Lecturers and with chapters, especially Student Branch Chapters, to help give NPSS visibility. They also sponsor Instrumentation Schools. The first was in Japan in 2014 and the next will be in Vietnam this summer.

Christoph Ilgner, chair of the Young Professionals Committee, noted in his written report presented by me, that IEEE is still developing this program and that it includes all members who are within 15 years of their first professional degree. Christoph also provided text for the YP web site and noted that AdCom had approved funding for YP events at

conferences and more YP events should be seen in the next year. Christoph is also looking at creative ways to involve YPs including such things as speed CV checks, meetings with potential employers or guided company and/or lab tours. He called particular attention to the ICOPS Young Professionals Symposium to be held in Banff at the 2016 ICOPS meeting to connect and enhance contact between YPs and potential employers through a special YP poster session/symposium that also has a social component.

Steve Gold, Chapters and Local Activities Chair, noted the addition of a Student Branch Chapter in Costa Rica. Three chapters are in danger of dissolution: Czechoslovakia, Germany and Italy. Work to form new chapters continues in Beijing and in France with possible Student Branch Chapters in Toulouse, Marseille and St. Etienne.

Dan Fleetwood reported on the Distinguished Lecturers program and requested updates to our DL roster. The number of lectures being reported is growing, but there is plenty of room for growth. Most lectures are given at universities, followed by IEEE Summer Schools or conference tutorial sessions, and fewest are given to chapters. Check out the DL page on our web site and schedule a DL for your chapter or institution!

Publications chair Paul Dressendorfer noted that TNS will begin monthly publication. This should improve time to publication and will also bring some papers into print at a better time for impact factor consideration. Work continues to improve TPS's impact factor. The questionnaire for paper reviewers has been modified and improved. TPS is also considering publishing fewer special issues.

Gerry Cooperstein noted that nominations will be needed to fill AdCom seats for PSAC, NMISC, Fusion, the Transnational Committee. This is also the year in which AdCom voting members will elect a new president and vice president/president elect.

Finance Committee chair, Hal Flescher talked about budget for initiatives, which we should use. He also reviewed some issues discussed at the Finance Committee meeting held on March 10<sup>th</sup> before the retreat and regular AdCom meeting. See AdCom Actions.

Ray Larsen, liaison to IEEE Smart Village and to Social Implications of Technology on Society and to IEEE SIGHT, reported on fundraising progress for Smart Village and the status of partnerships. See his detailed update under LIAISON REPORTS.

Brendan Godfrey, our liaison to IEEE-USA's R&D Policy group is chair of that committee. It is IEEE-USA that can lobby the U.S. Congress. There is also a Global Public Policy Committee chaired by Gordon Day. IEEE-USA also has a package for new U.S. Presidents' transition teams including a detailed position statement.

Peter Clout, liaison to the ICALEPCS conferences, noted that the 2017 conference will be in Barcelona and 2019 in New York. We did not technically cosponsor the 2015 ICALEPCS held in Sydney, Australia because the request came too late for action. Technical cosponsorship of future conferences is possible. The 2019 conference will have close connection with our Particle Accelerator Science and Technology TC.

The Coalition for Plasma Science liaison, Lee Berry, noted that there is a need for judges at the Intel Science Fair to be held in Phoenix in mid-May. CPS offers a prize for the best plasma-science-related project. Their seminars for Congress held in Washington, DC have been cancelled. The web site has been redesigned. Kits with lesson plans are available on the web site These are focused at grades 7 – 12. They are also part of the R&D Caucus with APS and IEEE-USA. For information, contact James Savage at IEEE-USA.

Janet Barth reported that Women in Engineering is now using Collabratec to continue support for the

Women in Leadership Community. They will have a leadership conference in 2016 and hope to increase attendance significantly over the 700 in 2015. Program initiatives include Program partnerships, Affinity Group Support, a Travel Grant program, and new awards. There is also a Virtual Career Fair. This is the 20<sup>th</sup> anniversary of WIE and they have an anniversary logo and have updated their web site. Their largest membership, about half, is in Asia and the Pacific and membership is about 2/3 women, 1/3 men.. Most of our NPSS conferences sponsor WIE events, so keep an eye open for them.

Our TMI liaison, Michael King, reported that the TMI Steering Committee met in January. They are revising the statement of scope in preparation for their five-year review. They have also developed new templates. They are also considering a digital-only journal, but there is a question of how many readers they will lose and also of whether libraries will accept a digital version only. However, digital versions do offer the opportunity for 3-D images, short videos and overall enhanced graphics.

Edl Schamiloglu, our liaison to EAB, commented on a number of programs. It has been focusing on preuniversity, university and continuing education. There are a number of resources for preuniversity teachers and students including the Teacher-In-Service program and [tryengineering.org](http://tryengineering.org) as well as the on-line SPARK resources. Another strong focus at the university level is accreditation but there are also new programs such as IEEE Academic and the Early Career Faculty Development program. Seventy-five new on-line tutorials are under development by EAB with a very broad range of subject matter. There is an active New Initiatives program that will raise student awareness of engineering careers.

Stan Schriber, liaison to the PAC Organizing Committee, discussed in depth the relationships between APS-DPB and IEEE NPSS, and noted that the PAC-OC will include representation in all the Americas. The PAC OC has 33 voting members, but only one vote is allowed per institution represented.

## ADCOM ACTIONS

- » A motion passed by AdCom in 2013 established the Ronald J. Jaszczak award. This award was never minuted and will be recorded in the minutes of March 12, 2016. AdCom meetings.
- » A motion from PAST TC to join the Council on Applied Superconductivity failed.
- » A motion from PAST, also supported by PSAC, to technically cosponsor the Advanced Accelerator Concepts Workshop passed unanimously
- » It was moved by RISC, CANPS and TNC, and passed, NPSS allocate \$5000 financial support for tuition and expenses at the 2016 Vietnam instrumentation school.
- » The Constitution and Bylaws committee moved that the Constitution and Bylaws, as presented by the Committee be accepted. The motion passed.

## FINCOM MOTIONS

- » FinCom moves that all undergraduate and graduate students who are members of IEEE may receive their first year of NPSS membership at NPSS's cost, whether they sign up at a conference or on-line. Passed.
- » FinCom moves that it be approved that TNS transition from a bimonthly journal to a monthly journal in 2016. Passed.
- » A motion to establish the Glenn F. Knoll Fellowship was tabled as was a separate motion for funding from NPSS.

*Albe Larsen, can be reached by E-mail at [a.m.larsen@ieee.org](mailto:a.m.larsen@ieee.org).*

# Constitution and Bylaws Committee

## CONSTITUTION AND BYLAWS REVISED

Every five years our Society reviews its Constitution and Bylaws to ensure effectiveness and currency and to propose requisite changes. At the March 2015 AdCom meeting the process was initiated by appointing a committee of five AdCom members plus the President as an ex officio member. Over the next year over 100 changes were proposed, many of them minor grammatical changes or for clarity. Major changes were discussed at three AdCom meetings and those accepted by AdCom are incorporated in the version below. The final version of the 2016 version of the NPSS C&BL was reviewed at the March 2016 AdCom meeting in Santa Fe, NM, and a motion passed unanimously to accept the revised C&BL. The

modifications were then sent to the IEEE Vice President Technical Activities (VP TA) who reviewed the consistency with IEEE governing documents and approved the modifications on April 8<sup>th</sup>, 2016. Both the Constitution & Bylaws are published in this newsletter for review by all NPSS members. Unless 25 Society members object within 60 days of the mailing of this newsletter, the Constitution goes into effect on August 16<sup>th</sup>, 2016, while the Bylaws go into effect automatically on June 15<sup>th</sup>, 2016.

To make the review a bit easier, we list here some of the major modification of the revision:

» Bylaw 8: The list of functional committees and their operation has been updated to reflect the current AdCom practice. A Conference Committee and

a Distinguished Lecturers Committee have been added.

» Bylaw 10: In the event of a tie vote in an AdCom election, the individual selected will be determined by an AdCom vote.

» Bylaw 12: Fiduciary responsibility of each NPSS-sponsored conference shall rest with four discrete individuals. In case of conflict a substitute may be appointed by the President.

» Bylaw 13: Chairs of Standing Technical Committees may designate a Vice Chair at the start of the year who may represent the Committee at AdCom meetings with voting rights.



Stefan Ritt  
NPSS Vice President and  
Constitution and Bylaws Review  
Committee Chair

» Bylaw 14: AdCom may remove any individual from any NPSS position, as specified in detail in this Bylaw.

I want to thank Bill Moses, Albe Larsen, John Verboncoeur and especially Steven Gold from the C&BL review committee for lively discussions and great contributions.

Stefan Ritt can be reached at [stefan.ritt@psi.ch](mailto:stefan.ritt@psi.ch)

# IEEE Nuclear and Plasma Sciences Society Constitution and Bylaws

March 2016

## CONSTITUTION

### Article I – Name and Object

**Section 1.** This organization shall be known as the IEEE Nuclear and Plasma Sciences Society.

**Section 2.** The Society's purpose shall be scientific and educational in character. The Society shall strive for the advancement of the theory and practice of electrical and electronic engineering and of the allied arts and sciences and for the maintenance of high scientific and technical standards among its members, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the Society, as hereinafter defined.

**Section 3.** The Society shall aid in promoting close cooperation and exchange of technical information among its members, affiliates, and interested nonmembers, and, to this end, shall hold meetings for the presentation and discussion of original contributions, shall publish transactions reporting advances within the scope of the Society, and, through its committees, shall study and otherwise provide for the needs of its members and affiliates.

### Article II – Field of Interest

**Section 1.** The fields of interest of the Society are the nuclear and plasma sciences and related emerging technologies. Areas of technical activity include: computer applications in nuclear and plasma sciences; fusion technology; nuclear and medical imaging; radiation instrumentation; radiation effects; particle accelerator science and technology; plasma science and applications; pulsed power science and technology; and nuclear power instrumentation and control systems.

**Section 2.** The Society shall devote itself to publication or other dissemination of original contributions to the theory, simulation, experiments, educational methods and applications of these fields, and to the development of standards. The process for modifying the Field of Interest shall be in accordance with the procedures in the TAB Operations Manual and the procedure defined in Article VIII of this Constitution.

### Article III – Membership

**Section 1.** Membership in the Society shall be available to all members of the IEEE having an interest in the nuclear or plasma sciences.

**Section 2.** Affiliates may participate in the activities of the Society as provided by the IEEE Bylaws and subject to the applicable IEEE rules and regulations and to any additional limitations imposed by the Society Bylaws.

### Article IV – Finances

**Section 1.** The Society shall collect from each member and affiliate an assessment or fee in accordance with IEEE Bylaws and applicable rules and regulations. The amount of the fees shall be established by the NPSS AdCom.

**Section 2.** The Society may charge registration fees at its technical meetings, symposia, conferences, and conventions. The registration fee for nonmembers of the IEEE shall normally be higher than for members.

**Section 3.** The Society may raise revenues by other means such as, but not limited to, advertising, shows, requests for contributions, and charges for sending out notices to non-Society members, and by publishing *Transactions*, Conference Proceedings and other technical documents provided such means are consistent with applicable IEEE rules and regulations.

**Section 4.** The fiscal year of the society shall be the same as that of the IEEE.

### Article V – Administration

**Section 1.** The Society shall be managed by an Administrative Committee (AdCom) consisting of 16 directly elected members, plus certain ex officio members, including the Chairpersons of each Standing Technical Committee, as specified herein and in the Bylaws. The number of directly elected members shall always exceed the number of ex officio members with voting rights.

**Section 2.** The terms of office of the directly elected members shall be four years. Elections of members shall be held annually to fill vacancies for the coming year. The terms of office of the ex officio members shall be specified in the Bylaws.

#### Section 3.

(a) The affairs of the Society shall be managed by the President, as directed by the AdCom, and in accordance with the powers and duties as defined hereunder and in the Bylaws. In the event of the President's prolonged absence or incapacity, the Vice President shall take over the presidential duties until the President is able to resume his responsibilities.

(b) In the event that neither the President nor the Vice President is able to perform the presidential duties, then the most recent Past President shall do so until either the President or the Vice President is able to resume their duties. In the event that neither the President nor Vice President is able to perform their duties, or if both are incapacitated, or if both offices become vacant for a period of greater than 60 days, the AdCom (under the direction of the most recent Past President) shall promptly elect an Acting President from among the eligible elected members to assume the duties of President until either the President or Vice President takes or resumes office, or until the next election.

(c) The President shall appoint a Secretary and a Treasurer for the Society, and persons to fill other roles as called for in the Bylaws or as needed.

#### Section 4.

(a) The President and Vice President shall be elected for coincident two-year terms by the voting members of the AdCom from among the eligible members of the AdCom. These elections of President and Vice President shall be held as defined in the Bylaws.

(b) All directly elected AdCom members are eligible for election as President or Vice President. In addition, the Vice President is eligible for election as President. No individual may be elected to two successive terms as President.

(c) In the event the Vice President is required to complete the term of the President, the Vice President will be eligible to run for President in the next full-term election.

(d) The Vice President will, except under circumstances deemed unusual by a majority of the voting members of AdCom, become the sole nominee for the succeeding Presidential election.

**Section 5.** The AdCom shall utilize the services of IEEE Headquarters as bursar for Society funds as provided by the IEEE Bylaws, rules, and regulations. If any part of the Society funds are received and deposited separately, the terms and conditions shall be in accordance with IEEE policies and subject to the provisions of Society Bylaws and to any special limitations that may be imposed by the AdCom.

**Section 6.** The President shall be an ex officio member of all committees of the Society. As a member of the IEEE Technical Activities Board (TAB), the President shall ensure appropriate representation of the Society at IEEE and TAB meetings by personal attendance, or by the alternate as defined in the TAB Operations Manual.

**Section 7.** The work of the Society shall be conducted through the AdCom and through both standing and ad hoc committees as provided herein and in the Bylaws.

**Section 8.** The President shall appoint the Chairs of the standing Functional Committees provided in the Bylaws. Other special or ad hoc committees may be authorized and appointed by the President.

#### Section 9.

(a) Standing Technical Committees may be administered by either elected or appointed committee officers as specified herein and in the Bylaws.

(b) Each Appointive Standing Technical Committee shall be directed by a Chair who shall be appointed or reappointed annually by the President of the Society as specified in the NPSS Bylaws. Appointive Standing Technical Committees are encouraged to prepare a Constitution and Bylaws, which shall be reviewed and approved by the AdCom upon request.

(c) Each Elective Standing Technical Committee shall consist of at least 15 members and shall be governed according to a written Constitution and Bylaws approved by the committee and by the AdCom which shall include the following:

- (1) Provision for periodic election of officers;
- (2) Provision for amendment of their Constitution and Bylaws subject to the approval of the AdCom;
- (3) A statement of criteria for membership.

**Section 10.** The AdCom may remove any individual from any NPSS position, with or without cause, according to the process specified in the Bylaws.

#### Article VI – Nomination and Election of Administrative Committee Members

**Section 1.** Nominating procedures shall be as prescribed in the Bylaws and shall include provision for nomination by petition of Society members. Those nominated by petition shall be included on the ballot and shall be so identified. To be considered as part of the slate of candidates for any position, a petition must contain the original signatures of a minimum of 2% of the eligible Society members. The number of signatures required on a petition shall depend on the number of eligible society voters as listed in the official IEEE membership records at the end of the year. Signatures can be submitted by signing and mailing a paper petition or electronically through the official IEEE annual election website. The name of each member signing the petition shall be clearly printed or typed. For identification purposes, signatures on paper petitions shall be accompanied by membership numbers or addresses as listed in the

official IEEE membership records. Only signatures submitted electronically through the IEEE annual elections website or original signatures on paper petitions shall be accepted. Facsimiles or other copies of the original signature shall not be accepted.

**Section 2.** The election process of the members of the AdCom shall be as prescribed in the Bylaws.

**Section 3.** In the case of an AdCom vacancy, the President may appoint a replacement to fill the position. That appointee shall serve only until any remaining portion of the incomplete term or new full term can be filled in a regularly scheduled election. The sum of the partial terms served on AdCom as an appointed and elected member does not count towards established term limits.

#### Article VII – AdCom Meetings

**Section 1.** The AdCom shall meet as required to conduct business and in accordance with the Bylaws. Meeting of the AdCom shall generally follow Robert's Rules of Order.

**Section 2.** A majority of the voting members of AdCom or any committee thereof shall constitute a quorum.

**Section 3.** The vote of a majority of the members present and entitled to vote, at the time of a vote, provided a quorum is present, shall be the act of the AdCom, or any committee thereof, except when the Constitution or Bylaws requires a greater majority.

**Section 4.** The AdCom or any committee thereof may meet, vote, and take action by any means of concurrent communication. The normal voting requirements for quorum and majority shall apply when action is taken by any means of communications allowing all the persons participating in the meeting to communicate with each other at the same time.

**Section 5.** The AdCom or any committee thereof may vote or take action using nonconcurrent means of communication (e.g. by email), provided that relevant information is made available to all members and all members have an opportunity to participate. An affirmative vote of a majority of all the voting members of the AdCom or any committee thereof shall be required to approve the action. The results of the vote shall be distributed promptly to all voting AdCom or committee members.

**Section 6.** All votes and actions taken by the AdCom or any committee thereof shall be recorded in the minutes of the appropriate body. Votes and actions taken between meetings shall be recorded with the minutes of the next meeting. The Secretary of the appropriate body shall be responsible for creating and recording these Minutes, and ensuring that they are both archived and available to all NPSS members.

**Section 7.** Proxy voting is not allowed.

**Section 8.** Individuals holding more than one position on the AdCom, or any committee thereof, shall be limited to one vote on each matter being considered by the AdCom or committee.

#### Article VIII – Conferences

The Society may hold meetings, conferences, symposia or conventions either alone, with other IEEE organizational units, or in cooperation with other organizations subject to applicable IEEE rules and regulations.

#### Article IX – Publications

**Section 1.** The Society shall support a program by which *Transactions*, Conference Proceedings, newsletters, and other forms of publication appropriate to the Society's activities and fields of interest are published and distributed. Publications undertaken by the Society shall be subject to IEEE policies and to further guidance and controls

prescribed by the AdCom or its duly appointed committees.

**Section 2.** All publications of the Society shall have unrestricted circulation, subject only to the payment of appropriate fees.

#### Article X – Amendments

**Section 1.** Amendments to the Constitution may be initiated by approval by a two-thirds (2/3) vote of the AdCom at an AdCom meeting provided that notice of the proposed amendment to the Constitution has been sent to each member of the AdCom at least three weeks prior to such meeting. After such approval, the proposed amendment shall be publicized in the Society Newsletter, with notice that it will be submitted to the Technical Activities Board for final approval unless 25 Society members object within 60 days of the date of mailing of the notice. If such objections are received, the AdCom may reconsider its recommendation, or a copy of the proposed amendment shall be distributed with a ballot to all members of the Society at least 45 days before the date set for the return of the ballots; the ballots shall carry a statement of the deadline for their return. Ballots will be distributed and tallied by IEEE Headquarters. When a vote, as prescribed by IEEE procedures, of the entire Society membership is made necessary, approval of the amendment by at least two-thirds (2/3) of the ballots returned shall be necessary for its enactment. If approved by Society members, the proposed amendment will be submitted to the Technical Activities Board for final approval. The amendment shall take effect immediately upon approval by the IEEE Technical Activities Board. If the amendment changes the membership of AdCom, the then current AdCom members will continue to serve until their terms expire.

**Section 2.** Amendments to the Constitution and Bylaws may also be initiated by a petition submitted by twenty-five members of the Society to the President or Secretary of the Society who shall immediately notify the AdCom of the proposed amendments and these shall be considered at the next AdCom meeting held at least three weeks following the notice to the AdCom members. Should the AdCom approve the amendments by at least a two-thirds (2/3) vote, the amendments will be implemented as in Section 1. In the event that the necessary majority is not attained, then the amendments, together with any supporting material from the members proposing the amendments and a summary of the AdCom position prepared by the President or designee, shall be published in the next Society Newsletter. Following publication, a ballot of all Society members shall be held, as described in Section 1, and the subsequent steps outlined there shall be followed.

**Section 3.** Society Bylaws and amendments thereto may be adopted by a two-thirds (2/3) vote of the AdCom, provided that notice of the proposed Bylaw or amendment has been sent to each member of the AdCom at least three weeks prior to the meeting at which the vote is held; or a Society Bylaw, or amendment, may be adopted by a two-thirds written vote of the eligible voting members of the AdCom, provided a two week period is provided for such responses. In either event, the proposed Bylaw or amendment shall be published in the Society Newsletter. The revision to the bylaws will take effect following Society AdCom approval, publication in the Society Newsletter and filing with, and acknowledgement by the Secretary of the Technical Activities Board.

#### Article XI – Periodic Review

**Section 1.** The President shall appoint five members of the AdCom every five years to evaluate the effectiveness and currency of this Constitution and Bylaws, to study the rules and governance required by the activities of the Society at that time, and to define the changes appropriate to the existing and anticipated needs of the Society. The committee will be chaired by the Vice President, and will submit a report on proposed revisions to the Constitution and

Bylaws in time for action by AdCom no later than the last AdCom meeting of the year.

#### Bylaws

**1. Membership:** There shall be two grades of Society membership: Student Members and Higher Grade Members. Student members shall have all the rights and privileges of Society membership with the exception of the right to vote and to hold office. Members of the IEEE in all grades may become members of the Society upon payment of the dues specified in Bylaw 3. Life members' dues are waived as provided in IEEE Bylaws.

**2. Affiliates:** Nonmembers of the IEEE who are members of certain other organizations accredited by the IEEE as provided in IEEE Rules and Regulations may become affiliates of the Society upon payment of the dues and fees specified in Bylaw 4. The rights of Affiliates shall be as specified by IEEE rules, regulations, and policies.

**3. Membership Dues:** The assessment or dues for membership in the Society shall be established by the AdCom. It will include the NPSS Newsletter as well as any other membership benefits endorsed by AdCom.

**4. Affiliate Dues:** Affiliates shall pay the Society and IEEE dues or assessment specified in IEEE rules and regulations.

**5. Administrative Committee:** Article V of the Constitution provides that the AdCom shall consist of 16 directly elected members, plus certain ex officio members. The ex officio members of the AdCom shall be the President, Vice President, most recent Past President, a representative of each of the Standing Technical Committees, a representative of each of Standing Functional Committees, Secretary, Treasurer, Editors-in-Chief of the Society *Transactions*, Editor of the Newsletter, Liaison Representatives for Standards and IEEE-USA, and other liaison representatives appointed by the President. If the term of the Chair of an Elective Standing Technical Committee ends during a calendar year, he or she shall continue to serve as the ex officio representative of the Technical Committee on AdCom until the end of the calendar year, if so designated in the Constitution and Bylaws of the Technical Committee.

**5.1.** The voting members of the AdCom shall be the elected members, President, Vice President, most recent Past-President, and a representative of each of the Standing Technical Committees. However, in the case where the Past Chair of an Elective Technical Committee is permitted to complete a calendar year as its ex officio representative instead of the current chair, that individual shall continue to be a voting member of the AdCom. The presiding officer of the AdCom meeting shall not cast a vote unless (1) the vote is by secret ballot or (2) his or her vote can change the outcome of the vote.

**5.2.** The AdCom shall meet at least three times per year, upon dates proposed by the President and approved by the AdCom, at least three weeks in advance of the meetings. Additional meetings may be called at the discretion of the President or upon request of at least twelve (12) voting members of the AdCom with at least three weeks' notice.

**5.3.** AdCom meetings are open to visitors. Visitors to AdCom meeting may be granted the privilege of the floor at the discretion of the meeting's presiding officer or by action of the AdCom. Visitors can be removed from AdCom meetings at the discretion of the meeting's presiding officer. Should AdCom meet in Executive Session, any visitor present may be asked to leave.

**5.4.** The final regularly scheduled meeting in the calendar year is designated the Annual Meeting. Each standing committee shall provide a written report of its activities at the annual meeting and at additional times as appropriate.

**5.5.** Any directly elected member who misses three successive meetings shall be automatically dropped from AdCom, unless AdCom votes at that third meeting to waive this provision for good cause. At AdCom's discretion, such waiver can also apply to additional missed meetings. The member who is removed shall be so notified by the Secretary.

**6. Nomination and Election of the Administrative Committee:** The Nominating Committee shall be chaired by the most recent Past President and shall nominate candidates for all directly elected positions on the AdCom. In the event of the incapacity or conflict of interest of the Chair, the most recent Past Chair of the Nomination Committee available shall be the Chair of the Nominating Committee. With extenuating circumstances, the President may appoint a different individual to this position. The Chair shall not be eligible to be elected to the AdCom during his term of service.

**6.1.** At least two thirds of the voting members of the Nominating Committee shall be voting members of the AdCom. Apart from the Chair, the Nominating Committee shall consist of the Technical Committee Chairs. A Technical Committee Chair may, in consultation with the relevant Technical Committee and the President, name an alternate to serve on the Nominating Committee. A member of the Nominating Committee may be nominated and run for a position for which the Nominating Committee is responsible on the following conditions: (i) the nomination is not made by a member of the same Nominating Committee and (ii) the member resigns from the Nominating Committee prior to its first meeting of the year in which the nomination shall be made. AdCom shall approve the membership of the Nominating Committee at the first meeting of the year.

**6.2.** The number of vacancies for elected members to the AdCom shall be the difference between the number authorized in Article V, Section 1, of the Constitution and the number with continuing terms. The Transnational Functional Committee will be allocated one directly elected AdCom member. The vacancies shall be allocated into categories corresponding to the Standing Technical Committees with the number of vacancies per category chosen to maintain representation among AdCom membership in proportion to the technical interests of the NPSS membership as determined by periodic surveys to be conducted at least every five years. The Nominating Committee shall submit a slate of at least two names for each vacancy to be filled. Nominations must be submitted to the Chair of the Nominating Committee on a nomination form that includes their membership number, a statement of the willingness and ability of the nominee to serve if elected, the membership status of the nominee in the IEEE and NPSS, a short biography, and a statement of the issues that the candidate wishes to address as an AdCom member.

**6.3.** The Chair of the Nominating Committee shall ensure that, before April 1, a call for nominations is conveyed to the whole membership either through the Newsletter or through a separate notification. Additional nominations for the available category vacancies may be submitted to the Society President between June 1 and July 1, using the same nomination form described in Bylaw 6.2, upon petition signed by a minimum of 2% of the Society members in good standing, as listed in the official IEEE membership records at the end of the prior year, or by five members of the AdCom. Only signatures submitted electronically through the IEEE society annual elections website or original signatures on paper petitions shall be accepted.

**6.4.** The Chair of the Nominating Committee shall ensure that the committee determines the slate of nominees by July 1.

**6.5.** Current elected members of the AdCom who are serving full terms and current Nominating Committee members are ineligible for nomination by the Nominating Committee or by petition.

# Constitution & Bylaws Continued from PAGE 7

Per IEEE requirements, Associates may not be nominated for Society offices, though they may vote in society-wide elections.

**6.6.** All nominees and petition candidates must be members in good standing of the Nuclear and Plasma Sciences Society and the IEEE.

**6.7.** The Chair of the Nominating Committee shall annually arrange for the distribution (through IEEE Headquarters) to the members of the Society, on or about July 31, of a ballot to elect the candidates to fill vacancies on the AdCom. The names on the ballot shall be followed by an indication of the method of nomination, whether by committee nomination or by petition. The names of the nominees shall be labeled by categories corresponding to the Standing Technical Committees. The ballot shall be accompanied by a short biographical sketch and position statement prepared by each nominee or petition candidate.

**6.8.** Six weeks after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes received and report the results to the AdCom. The candidate with the most votes in each category shall be elected.

**6.9.** Election of the President of AdCom: An election for President will be held by written ballot before the final AdCom meeting of the even-numbered years. The ballot for election of the President will indicate two choices: 1) the current Vice President and (2) an indication that an open election is desirable. The ballots shall be distributed by the Chair of the Nominating Committee to all voting members of AdCom for return to the Secretary of AdCom 30 days prior to the final AdCom meeting of the year. The Secretary of AdCom is responsible for counting the ballots and the Chair of the Nominating Committee will independently count the ballots and verify the tally. The Secretary of the AdCom will announce the results of the election. Should the Vice President fail to receive a majority of the votes on the returned ballots, then AdCom will itself determine a slate of candidates for President and vote at the final AdCom meeting.

**6.10.** Nomination and Election of the Vice President of AdCom: The Nominating Committee shall determine a slate of candidates for Vice President according to the guidelines set forth in Article V, Section 4 of the Constitution. In selecting candidates for the NPSS Vice President, the Nominating Committee will ensure that those candidates shall be eligible for and will, barring unforeseen circumstances, be willing to serve for the full terms of all succeeding positions (two years as Vice President, two years as President, and two years as the most recent Past President). The slate of candidates for Vice President will appear on the same ballot as the election for President (specified in Bylaw 6.9) and will be subject to the same election schedule. In the event that there are more than two candidates for Vice President, the election shall be carried out using an instant runoff voting procedure, in which each voter shall rank the candidates numerically on the ballot, beginning with the number one for the first choice, and runoff counts of the candidates shall be conducted in rounds. If, in any round, no candidate receives a majority of the votes cast, the candidate (or candidates, if there is a tie) with the fewest number of votes shall be eliminated and the remaining candidates shall advance to the next round. In each round, a voter shall be considered to have cast one vote for the candidate the voter ranked highest on the ballot who has not been eliminated in a previous round. In the event that this procedure does not produce a clear majority for any candidate, AdCom will choose the winner by a majority vote at the AdCom meeting.

**6.11.** Executive Committee (ExCom): An executive committee consisting of the President, Vice President, Past President, Secretary, Treasurer and any other current members of AdCom, whether

voting members or not, who have held the position of President, shall form the ExCom.

**6.12.** The ExCom shall advise the President on issues that the President or other members of the ExCom choose to raise between meetings of the AdCom. Business shall generally be conducted by telephone, e-mail, or similar means of communication. In exceptional circumstances, the President can call a meeting of the ExCom. ExCom meetings are closed to visitors and communications of the ExCom are privileged.

**7.** Standing Technical Committees: The Standing Technical Committees of the Society shall be:

**The Computer Applications in Nuclear and Plasma Sciences Committee**

**The Fusion Technology Committee**

**The Nuclear Medical and Imaging Sciences Committee**

**The Particle Accelerator Science and Technology Committee**

**The Plasma Sciences and Applications Committee**

**The Pulsed Power Science and Technology Committee**

**The Radiation Effects Committee**

**The Radiation Instrumentation Technical Committee**

**7.1.** Standing Technical Committees may be of either of two forms, elective or appointive, in accordance with Article V, Section 9, of the Constitution of the Society.

**7.2.** The Chair and Vice Chair of Standing Technical Committees shall be members in good standing of the Nuclear and Plasma Sciences Society and the IEEE.

**7.3.** The terms of office of the Chair and Vice Chair of elective Standing Technical Committees shall be in accordance with the rules of each committee except that no Chair shall serve consecutively for more than three years or for two conferences when the technical committee has conferences every two years.

**7.4.** The President of the Society shall, in consultation with the Technical Committee, appoint the Chair and Vice Chair of the appointive Standing Technical Committees for a term of one year. In addition, the President shall, in consultation with the Transnational Committee, appoint a Vice Chair for this Committee. A Chair may not serve consecutively for more than three years except in the case where a conference is held less frequently than annually and the appointive Standing Technical Committee requests to have their Chair serve for two of the conferences. In such cases, a fourth year is permissible.

**7.5.** The Chairs and the Vice Chairs of elective Standing Technical Committees shall be elected by the respective committees. The name of the Chair and the Vice Chair so elected shall be transmitted along with a notification of the length of term of office to the Secretary of the AdCom by the outgoing Chair of each elective Technical Committee as soon as is expedient after election.

**7.6.** Appointive Standing Technical Committee shall gain elective status by presenting a petition requesting such status signed by at least 15 members of the Committee, which shall demonstrate that the requirements of Article V, Section 9 of the Constitution have been met. Approval of the elective status of a Standing

Technical Committee shall be processed as an amendment to the Bylaws in accordance with Article VIII of the Constitution.

**7.7.** Standing Technical Committees may be created or changed by amending the Bylaws in accordance with Article VIII of the Constitution.

**7.8.** The Standing Technical Committee shall take the initiative in their respective fields of interest on behalf of the Society.

**7.9.** Each of the Standing Technical Committees shall as a minimum submit a written report of its activities to the AdCom prior to the final meeting of each year. The committee membership and activities of the Standing Technical Committees will be publicized to the membership of the Society via the Newsletter, *Transactions* or on the Society website, and suggestions for committee membership will be invited from Society members and chapters.

**7.10.** Status and Fields of Interest of Standing Technical Committees:

**7.10.1.** The field of interest of the Appointive Computer Applications in Nuclear and Plasma Sciences Committee shall include real-time and off-line computer systems, including hardware and software aspects of data acquisition, data analysis, data storage, and control, in any and all of the technical disciplines covered by the Society.

**7.10.2.** The field of interest of the Appointive Fusion Technology Committee shall include the engineering aspects of controlled fusion research and fusion reactor technology.

**7.10.3.** The field of interest of the Elective Nuclear Medical and Imaging Sciences Committee shall include radiation sources and detectors, radiation standards and monitoring, scanning and imaging systems, including image reconstruction and analysis.

**7.10.4.** The field of interest of the Elective Particle Accelerator Science and Technology Committee shall include the theory, design, construction and operation of nuclear particle accelerators, their beam diagnostics, and their applications in high energy particle physics, low-energy nuclear physics, radiation sources and general technology.

**7.10.5.** The field of interest of the Elective Plasma Science and Applications Committee shall include plasma science and engineering, including: magnetofluid dynamics and thermionics; plasma dynamics; gaseous electronics and arc technology; controlled thermonuclear fusion; electron, ion, and plasma sources; space plasmas; high current relativistic electron beams; laser-plasma interactions; diagnostics; plasma chemistry, plasma processing and colloidal and solid state plasmas.

**7.10.6.** The field of interest of the Elective Pulsed Power Science and Technology Committee shall include the understanding, development and applications of pulsed power to plasma physics, nuclear science and related fields.

**7.10.7.** The field of interest of the Elective Radiation Effects Committee shall include the effects of radiation on materials, components and systems.

**7.10.8.** The fields of interest of the Elective Radiation Instrumentation Technical Committee shall include sensors, electronic instrumentation, and systems for the measurement of ionizing radiation and high-energy particles with the emphasis on the tools, not the results of experiments using these tools.

**8.** Functional Committees: The President of the Society shall appoint the Chairs of the following Standing Functional Committees:

**Awards Committee**

**Chapters and Local Activities Committee**

**Communications Committee**

**Conferences Committee**

**Distinguished Lecturers Committee**

**Fellow Candidate Evaluation Committee**

**Finance Committee**

**Membership Committee**

**Publications Committee**

**Young Professionals (YP) Committee**

The remaining Functional Committees have their Chairs selection defined elsewhere in the Constitution or Bylaws:

**Nominating Committee**

**Transnational Committee**

**8.1.** Except where otherwise specified in the Bylaws, each committee Chair shall appoint the members of the committee.

**8.2.** The terms of office of Chairs of Standing Functional Committees shall be one year. Chairs may be reappointed at the discretion of the President.

**8.3.** The Chairs of Standing Functional Committees shall be members in good standing of the Nuclear and Plasma Sciences Society and the IEEE.

**8.4.** Awards Committee: Solicits nominations for the various awards made by the Society, evaluates the nominees and selects those to whom the awards will be made. The Chair of the Awards Committee serves as the NPSS liaison to the TAB Awards and Recognition Committee.

**8.5.** Chapters and Local Activities Committee: Provides organizational and program assistance, especially with respect to conferences and educational activities, to support and motivate NPSS Chapters and Student Chapters. Promotes and assists in the creation of new Chapters and Student Chapters.

**8.6.** Communications Committee: Prepares and maintains promotional material for membership recruitment and other purposes as required. The Communications Committee is responsible for the maintenance of the web site for both membership promotion and to publicize NPSS activities either directly or through links to conference, publication, and other web sites.

**8.7.** Conferences Committee: Responsible for recommending policies and procedures to AdCom for all conferences and symposia for which the NPSS takes either full or partial responsibility and for ensuring compliance with IEEE conference policies. In addition, provides assistance in the planning, operation and closeout of sponsored or technically cosponsored conferences as needed, and serves as a liaison between conference organizers and IEEE Meetings, Conferences and Events.

**8.8.** Distinguished Lecturers Committee: Responsible for the administration of the NPSS Distinguished Lecturers program, whose goal is provide Society lecturers to support NPSS chapters and to provide technical outreach to other IEEE and non-IEEE groups.

**8.9.** Fellow Candidate Evaluation Committee: Evaluates the credentials of and ranks the IEEE Fellow Candidates referred to the NPSS for evaluation. The committee shall follow the procedures and guidelines established by the IEEE Fellow Committee.

**8.10.** Finance Committee: Monitors the financial status of the Society and reports any developing trends along with recommended actions, conducts financial studies and analyses on any Society or IEEE issues having financial implications for the Society,

and reports on these matters regularly at AdCom meetings.

**8.11. Membership Committee:** Responsible for encouraging and recruiting new Society members and Society affiliation by inviting IEEE members who have an interest in NPSS activities, by generating interest among non-IEEE members, and by making application forms available and soliciting memberships at appropriate meetings and symposia.

**8.12. Nominating Committee:** Formed and administered according to the Bylaws pertaining to nominations, the Nominating Committee develops a slate of nominees for the directly elected member positions on the AdCom that become vacant each year and recommends candidates for Vice President of the Nuclear and Plasma Sciences Society.

**8.13. Publications Committee:** Reports to AdCom on all publications activities sponsored by the NPSS. In particular, proposes an annual budget for each publication and brings to AdCom's attention any proposed new initiatives for discussion and possible approval. Also keeps AdCom apprised of IEEE publications policies and procedures and is responsible for ensuring that NPSS publications follow these policies and procedures. The Publications Committee shall be chaired by the Publications Chair, and include the Editor-in-Chief of the *Transactions on Nuclear Science*, the Editor-in-Chief of the *Transactions on Plasma Science*, the Editor-in-Chief of the *Transactions on Radiation and Plasma Medical Sciences*, the Editor of the Newsletter, and the Treasurer of the Society. The Publications Chair is responsible for the publication program and assuring the financial soundness and maintenance of schedules and format standards. The responsibility for the technical content of any *Transactions* shall be controlled by that *Transactions'* Editor-in-Chief, who shall be nominated by the Publication Committee Chair or by the Society President and approved by the AdCom.

**8.14. Transnational Committee:** The committee

fosters the involvement in NPSS activities of people from countries other than the United States and Canada. The directly elected member representing the Transnational Committee is the Chair of this committee. Candidates for this position must be members whose primary residence is outside of the United States and Canada.

**8.15. Young Professionals (YP) Committee:** The purpose of the YP committee shall be to advocate for the needs, interests and professional development of members who have entered the profession within the first 15 years of receiving their first degree. There is an option to participate beyond the fifteen year time span according to the respective criteria defined by IEEE. The main goal is to help YP members to evaluate their career goals, polish their professional image, and create the building blocks of a lifelong and diverse professional network.

**9. Disbursements:** Disbursement from Society funds shall be on the authority of the treasurer as directed by the AdCom, and in accordance with established procedures and policies of the IEEE. The President and AdCom may authorize the Treasurer to disburse funds to defray legitimate expenses incurred by the Chairs and members of the Standing Technical and Functional Committees and others in connection with required attendance at official Society, IEEE or other meetings and the costs of publications. Such expenditures must be approved by the President before being incurred.

**10. Ballots:** All ballots, for purposes of election of members of AdCom or changes in the Constitution, shall be issued to all voting members of the NPSS on instructions of the Chair of the Nominating Committee pursuant to action by the AdCom. Ballots for directly elected AdCom members will direct Society members to only vote for candidates of Standing Technical Committees of which they are active members or that cover topics in which they are active. No ballot shall be counted unless unambiguously marked by a qualified voter to indicate a choice and received on or before the specified deadline date. This specified deadline date

shall be at least six weeks subsequent to the date of distribution of the ballots. The counting of the ballots shall be entrusted to IEEE Headquarters. The Chair of the Nominating Committee shall report the results to the AdCom. In the event of a tie vote in an AdCom election, the individual selected will be determined by a majority vote of all the voting members of AdCom. The vote shall be carried out by electronic means and conducted by the Secretary.

**11. Beginning of Terms of Office:** All terms of office of elected members of the AdCom shall begin January 1 of the year immediately following their election, except in the case where an elected member of AdCom does not complete a term of office. In this special case, the term of office of the replacement will begin immediately after the results of the election are known.

**12. Meetings:** The Society may not organize or sponsor a meeting, conference, symposium, or session thereof without consulting the Chair of the Conferences Committee. Fiduciary responsibility for each NPSS-sponsored conference shall rest with four discrete individuals: The Conference Chair, the Conference Treasurer, the Chair of the Technical Committee with oversight over the conference, and the NPSS Treasurer. If a conflict of interest or another circumstance requires it, the President, in consultation with the Chair of the Technical Committee or with the NPSS Treasurer, may appoint a substitute to exercise the oversight responsibilities of either of the latter two positions. All of these positions must be filled by members in good standing of the IEEE as well as NPSS (and/or a cosponsoring IEEE Society), with the exception of the Conference Treasurer, who, with the NPSS Treasurer's approval, may have the NPSS membership requirement (but not IEEE membership) waived.

**13. Vice Chairs:** The Chair of a Standing Technical Committee, and the Chair of the Transnational Committee, may designate the Vice Chair of the Committee to represent the Committee at an AdCom meeting, provided that the Vice Chair of the

Committee has been identified to the Secretary at the start of the calendar year. This representative shall have the privilege of the floor and may vote on all matters coming before AdCom.

**14. Removal from Office**

**14.1. Appointed AdCom Members:** All Presidential appointees, including the Chairs of Appointive Technical Committees, serve at the pleasure of the President, and as such can be removed from office by the President. An appointed member of AdCom can also be removed using the process described in Bylaw 14.2.

**14.2 All NPSS Positions:** While NPSS conferences and Technical Committees may have their own removal processes, the AdCom may remove any individual from any NPSS position with or without cause. This prerogative of AdCom should be exercised after due circumspection and only in extreme cases and always with great caution. A petition signed by a minimum of three voting AdCom members is necessary to initiate the removal process and the petition must include the name of the member to be removed, the position in question, and a description of the grounds for removal. The petition shall be submitted to the Society Secretary who will, upon receipt, notify all voting AdCom members that such a petition has been received, notify the member in question, and give that member 30 days to provide a written response. After this period, the Secretary will send a ballot that includes the statement of the grounds for removal and its rebuttal to each voting AdCom member. The ballots will be returned to the Secretary who will tally the votes 30 days after the ballots were sent. Should a minimum of two thirds (2/3) of the eligible voting AdCom members vote in favor of removal, then the member in question will be removed from office immediately. In the event that the Secretary is the member in question, the President will designate an alternate AdCom member to perform the duties assigned to the Secretary in this Section.

## Technical Committees

### FUSION TECHNOLOGY COMMITTEE

As of January 1, 2016 the role of FTC Chair passed from Jean-Paul Allain (University of Illinois at Urbana-Champaign) to Charles Neumeyer (PPPL). Thanks to J.P. for his excellent service 2012-2015 and his continuing service as a member of the FTC. During his tenure, two very successful SOFE conferences were convened (San Francisco 2013 and Austin 2015) and for one of them, J.P. served as General Chair. That level of commitment (simultaneous FTC Chair and SOFE General Chair) was truly exceptional.

The first order of business was to update the FTC roster and miscellaneous other committee positions. Please note that the NPSS web site (<http://ieee-npss.org/technical-committees/fusion-technology/>) has now been updated to reflect the various personnel changes.

Due to the transition in personnel serving as FTC Chair and FTC Awards Chair, we were not able to initiate the annual Fusion Technology Award nomination period on January 1<sup>st</sup> as it normally would be. Instead we will open it via an e-mail announcement from our new FTC Awards Chair (Martin Nieto-Perez (Instituto Politecnico Nacional, Mexico, [m.nieto@ieee.org](mailto:m.nieto@ieee.org)) on April 15<sup>th</sup>. The nomination period will end on June 15<sup>th</sup> and announcement of the 2016 FTC Award recipient will be made before the end of July. Nominations of candidates who do not receive the 2016 award will be rolled over into the 2017 pool of candidates, and the 2017 selection will proceed per the normal schedule. Awards for 2016 and 2017 will be presented at the next SOFE.



Charles Neumeyer  
Chair, Fusion TC

Preparations are well underway for the 27<sup>th</sup> SOFE, June 4<sup>th</sup> -7<sup>th</sup>, 2017, being chaired by Hutch Neilson. The venue will be the Marriott Shanghai City Center, Shanghai, China. This will be the first SOFE convened outside the U.S. and we are very excited about it. The location in China reflects the presence there of a robust fusion community including labs, universities, and industry. The Chinese program is diverse and growing as evidenced by its partnership in the ITER project, and the world-class experiments underway in its national laboratories. The SOFE will benefit from the key roles being played by the Institute of Plasma Physics, Chinese Academy of Sciences (ASIPP), Hefei, an enthusiastic partner in organizing and running the conference. The venue is located in an area of the city that is very accessible and cosmopolitan, manageable by non-Chinese speakers, and rich in opportunities to experience the culture of China. You are encouraged to visit the web site (<https://sofe2017.princeton.edu/>) and begin to make plans. Registration and abstract submission opens 14<sup>th</sup> November 2016.

Charles Neumeyer, Chair of the Fusion Technology Committee, can be reached by E-mail at [Neumeyer@pppl.gov](mailto:Neumeyer@pppl.gov).

### NUCLEAR MEDICAL AND IMAGING SCIENCES COMMITTEE

As you read this newsletter the composition of the program for this year's 2016 IEEE NSS/MIC meeting at the Strasbourg Convention Center, Strasbourg, France is well underway. The meeting will take place from the 29<sup>th</sup> October to the 6<sup>th</sup> November. Maxim Titov (General Chair) along with Dimitris Visvikis and Suleman Surti (MIC Program Chair and Deputy Program Chair respectively) will be working on the abstract review with the aim of producing an exciting program for this latest edition of the meeting. Further details can be found on the conference website - <http://2016.nss-mic.org>.

It is also at this time of the year when we are searching to replace five NMISC committee members by motivated volunteers to serve a three-year term starting from 01 January 2017. Self-nominations are encouraged. If you are interested in serving on the NMISC please contact the NMISC Secretary Andrew Goertzen ([Andrew.Goertzen@med.umanitoba.ca](mailto:Andrew.Goertzen@med.umanitoba.ca)).



Paul Marsden  
Chair, Nuclear Medical and Imaging Technical Committee

Nominations are now being solicited for this year's NMISC awards. The Edward J. Hoffman Medical Imaging Scientist Award is given annually to an individual in recognition of outstanding contributions

to the field of medical imaging science. The Bruce Hasegawa Young Investigator Medical Imaging Science Award is also awarded annually to a young investigator in recognition of significant and/or innovative technical contributions made early in their career. To be eligible for the Hasegawa award the individual must have been awarded their highest degree no more than six years prior to the date of nomination. I would like to take this opportunity to encourage all of you to nominate worthy colleagues for both these awards by the 15<sup>th</sup> of July deadline. All relevant information including the nomination form may be found on the NMISC website - <http://ieee-npss.org/technical-committees/nuclear-medical-and-imaging-sciences/>. Please send your nominations to the NMISC Awards subcommittee chair, Glenn Wells ([gwells@ottawaheart.ca](mailto:gwells@ottawaheart.ca)) using the nomination form on the website.

Paul Marsden, Chair of NMISC, can be reached by E-mail at [paul.marsden@kc1.ac.uk](mailto:paul.marsden@kc1.ac.uk).

### PARTICLE ACCELERATOR SCIENCE AND TECHNOLOGY

We want to make note that the April 2016 special issue of the IEEE *Transactions on Nuclear Science* (TNS) is dedicated to the celebration of 50 years since the first IEEE-sponsored particle accelerator conference. It includes 28 comprehensive articles by our extensive international community.

We chose the launch of this special issue to coincide with the 2015 International Particle Accelerator Conference held May 3<sup>rd</sup> - 8<sup>th</sup>, 2015 in Richmond, VA, USA. This IPAC meeting was cosponsored by the IEEE Nuclear and Plasma Sciences Society. The year 2015 was significant in that it was also 50 years since the first IEEE NPSS sponsored PAC conference.

## Technical Committees Continued from PAGE 9



**Steve Gourlay**  
article Accelerator Science and  
Technology Committee Chair

Sandra Biedron (Colorado State University, Fort Collins, CO, USA and the University of Ljubljana, Ljubljana, Slovenia) served as the Senior Guest Editor and Yong Ho Chin (KEK - High Energy Accelerator Research Organization, Ibaraki, Japan), Paolo Craievich (Paul Scherrer Institute, Villigen, Switzerland), Alessandro Fabris (Elettra Sincrotrone Trieste, Basovizza, Italy) and Robert Zwaska (Fermi National Accelerator Laboratory, Batavia, IL, USA) served as Guest Editors.

The Guest Editors of this special issue wish to thank Paul Dressendorfer (Editor-in-Chief of IEEE TNS) for his mentorship and support for this special issue.

Please remember to continue to submit your particle accelerator and technology articles to IEEE TNS.

*Steve Gourlay, PAST Chair, can be reached by E-mail at [sagourlay@lbl.gov](mailto:sagourlay@lbl.gov).*

### PULSED POWER SCIENCE AND TECHNOLOGY COMMITTEE

#### Inaugural PPST Elections – Professional Awards

2016 is the year when the Pulsed Power Science and Technology (PPST) technical committee is implementing the transition to an elected committee. At the time this newsletter reaches the readership, we will be in the transition period between closing the nominations on June 1<sup>st</sup>, and opening the ballots for voting on July 31<sup>st</sup>. It is important for the future of pulsed power that we have a very solid voting turn-out. So please, look out for the ballot and cast an educated vote. We have excellent candidates who are ready to volunteer their time such that we may be able to shape the future of the PPST

technical committee in the upcoming years. This includes addressing important issues as they pertain to our Pulsed Power Conference, together with our technically cosponsored conferences.

Ballots shall be distributed to the members of the Voting Community on July 31<sup>st</sup>, 2016 to fill the four member-at-large vacancies. The Voting Community consists of persons who are IEEE NPSS members at the time of ballot distribution and who have a vested interest in Pulsed Power Science & Technology as witnessed, for instance, by past participation in the IEEE International Pulsed Power Conferences. Individuals will be selected by majority vote. The four-year terms of office of elected members-at-large shall begin January 1<sup>st</sup>, 2017. In general, the PPST Committee represents the interests of the pulsed-power community in the understanding, development and application of pulsed power to a variety of fields including but not limited to plasma physics, nuclear science, high-power RF, and life sciences. The constitution and bylaws for PPST may be found at the following link: [http://ieee-npss.org/wp-content/uploads/2014/03/PPST\\_Constitution\\_July-19-2014.pdf](http://ieee-npss.org/wp-content/uploads/2014/03/PPST_Constitution_July-19-2014.pdf).



**Andreas Neuber**  
Chair, Pulsed Power Science and  
Technology Committee

Please note that we have two upcoming conferences this year that are of interest to our community. Both of them are technically cosponsored by NPSS. The first meeting is the IEEE International Power Modulator and High Voltage Conference (IPMHVC) which will be held in San Francisco, CA, from July 5<sup>th</sup> -9<sup>th</sup>, 2016 at the Palace Hotel. Then later this year the 6<sup>th</sup> Euro-Asian Pulsed Power Conference (EAPPC) will convene in Estoril, Lisbon, Portugal from September 18<sup>th</sup> – 22<sup>nd</sup>, 2016 at the Estoril Congress Center. These conferences will be followed in the summer of 2017 by our IEEE

International Pulsed Power Conference, in Brighton, UK: see [www.ppc2017.org](http://www.ppc2017.org).

The professional awards and the 2017 student award nominations are open and should be submitted to the awards chair, Dr. Bryan Oliver, [b.v.oliver@ieee.org](mailto:b.v.oliver@ieee.org), on or before Dec. 1<sup>st</sup>, 2016. Following the tradition of the Pulsed Power Conference, we will have the Erwin Marx Award recognizing outstanding contributions to pulsed-power technology by an individual over an extended period of time, the Peter Haas Award recognizing individuals whose efforts, over an extended period, have greatly benefited the pulsed-power field through the development of important applications or areas of activity including research, education, and information exchange. Finally, the 2017 Arthur H. Guenther Pulsed Power Student Award, Award will recognize outstanding contributions as a student in pulsed-power engineering, science or technology. The 2016 Arthur H. Guenther Pulsed Power Student Award is closed and the winner will be announced in the near future.

*Andreas Neuber, Chair of the PPST, can be reached by E-mail at [andreas.neuber@ttu.edu](mailto:andreas.neuber@ttu.edu).*

### RADIATION EFFECTS COMMITTEE

The Radiation Effects Committee features an annual conference – the Nuclear and Space Radiation Effects Conference (NSREC) – that is held each year in July. The details of this year's conference are highlighted at the beginning of this Newsletter.

The NSREC differs from many conferences in that it does not publish a conference record. Authors submit comprehensive summaries of their work to a review committee, which typically selects about 2/3 of the papers for presentation at the conference. Final written papers are submitted before the meeting, and subjected to an additional review before publication in a special issue of the IEEE *Transactions on Nuclear Science* (TNS). That issue is published in December of the year that the conference is held. Approximately 85% of the submitted papers are accepted for the special issue. The net result is that only about 60% of the papers that are initially considered for the conference are published.

The Radiation Effects Committee has been tracking the number of papers that reach final publication

for several years (it is a useful metric for the overall quality of the technical program). One of our concerns is that because the papers are not published until December, the impact factor is lower than it would be if the papers were published earlier in a specific calendar year. In response to this, AdCom approved changing the publication cycle for the IEEE *Transactions on Nuclear Science* from bimonthly to monthly. Once this occurs, we will change the publication date of papers submitted at our conference from December of the year of the meeting to January of the following year. In practice, this will only delay publication of the papers by a few weeks, but we anticipate a significant increase in the impact factor because of the way that the impact factor is calculated. We expect that this change will begin for papers presented at the 2017 Conference.



**Allan Johnston**  
Chair, Radiation Effects TC

Future NSREC conferences are as follows:

Portland, OR, July 11<sup>th</sup> -15<sup>th</sup>, 2016, chaired by Robert Reed, Vanderbilt University

New Orleans, LA, July 17<sup>th</sup> -21<sup>st</sup>, 2017, chaired by Veronique Ferlet-Cavrois (ESA)

Kona, Hawaii, July 15<sup>th</sup> -19<sup>th</sup>, 2018, chaired by Ron LaCoe (The Aerospace Corporation)

San Antonio, TX, July 8<sup>th</sup> -12<sup>th</sup>, 2019, chaired by John Stone (Southwest Research Institute).

The Radiation Effects Committee technically cosponsors the RADECS Conference, which is held in Europe during September. Unlike the NSREC, the RADECS Conference publishes a conference record in IEEE Xplore. The next RADECS Conference will be held in Bremen, Germany, September 19<sup>th</sup> – 23<sup>rd</sup>, 2016. The Conference Chair is Sven Rakers (Airbus Defence and Space).

*Allan Johnston, Radiation Effects Chair, can be reached by E-mail at [johnstonah25@gmail.com](mailto:johnstonah25@gmail.com).*

## Functional Committees



**Craig Woody**  
Awards Committee Chair

*Each year the Awards Committee is tasked with selecting the recipients of our Society awards. There are for individuals who have shown outstanding dedication to the Society and who have made significant contributions to one or more of our fields. The younger award recipients show strong early contributions in their technical areas or great promise in making contributions along their career paths.*

*Our congratulations to all!*

### DOWN TO EARTH

Be not too hasty to trust or to admire the teachers of morality: They discourse like angels but they live like man.

*Samuel Johnson*

### AWARDS

#### IEEE NPSS Society Awards

#### MERIT AWARD

##### Meyya Meyyappan

Meyya Meyyappan is Chief Scientist for Exploration Technology at NASA Ames Research Center in Moffett Field, CA. His current research interests include carbon nanotubes, graphene, and inorganic nanowires, plasma processing of nanomaterials and application development in chemical and biosensors, instrumentation, electronics and optoelectronics. He has worked extensively on modeling and characterization of low-temperature processing plasmas and their applications in semiconductor device fabrication and nanotechnology. He has authored over 320 articles in peer-reviewed journals and given over 250 Invited/Keynote/Plenary Talks and over 200 seminars at universities

Dr. Meyyappan is a Fellow of IEEE, ECS, AVS, MRS, Institute of Physics, ASME, AIChE, and National Academy of Inventors. He has received numerous awards for his technical contributions: Presidential Meritorious Award; NASA's Outstanding



**Meyya Meyyappan**  
Merit Award Recipient

Leadership Medal; IEEE Judith Resnick Award; IEEE-USA Harry Diamond Award; IEEE-USA Professional Achievement Award; Pioneer Award in Nanotechnology by the IEEE-NTC; Distinguished Engineering Achievement Award by the Engineers' Council; Sir Monty Finiston Award by the Institution of Engineering and Technology (UK). He was inducted into the Silicon Valley Engineering Council Hall of Fame in 2009. He received an Honorary Doctorate in 2015 from the University of Witwatersrand, Johannesburg, South Africa.

Meyya served as the President of the IEEE Nanotechnology Council in 2005-06. He has served on the IEEE Fellow Committee (2008-10) and in 1995, 1999 and 2003 as Guest Editor of *IEEE Transactions on Plasma Science*.

*Citation: For contributions to modeling, simulation, and development of low-temperature process plasmas in microelectronics and plasma applications in nanotechnology.*

### SHEA AWARD

##### Richard Kouzes

Richard Kouzes is a Laboratory Fellow at the U.S. Department of Energy's Pacific Northwest National Laboratory working in the areas of neutrino science, neutron and gamma-ray detection, homeland security, safeguards, and nonproliferation. His work on homeland security has been in the development and deployment of radioactive material interdiction equipment at U.S. borders, and he was the Principal Investigator and Technical Lead for the U.S. Customs and Border Protection's Radiation Portal



**Richard Kouzes**  
Shea Award Recipient

Monitor Project, the largest single project at PNNL. He has been very active in the development and testing of alternative neutron-detector technology in the wake of the <sup>3</sup>He shortage.

Dr. Kouzes spent most of his career in academia as faculty and research staff at Princeton University, followed by a tenured position at West Virginia University.

He is very active in the Institute of Electrical and Electronics Engineers, Nuclear and Plasma Sciences Society, currently as the Society's Webmaster. Previously, he helped found the CANPS Technical Committee, chairing the committee for several years, and was an elected representative of RITC and CANPS on AdCom.

He is a Fellow of the IEEE, and a Fellow of the American Association for the Advancement of Science (AAAS). He is an adjunct Professor of Physics at Washington State University. He was part of the team of physicists awarded the 2015 Breakthrough Prize in Fundamental Physics for his work on the Sudbury Solar Neutrino Observatory (SNO) Experiment.

Dr. Kouzes earned his Ph.D. in physics from Princeton University in 1974. He is an author of over 150 peer-reviewed papers and over 450 reports and conference proceedings.

**Citation:** For his long-standing volunteer service to the IEEE Nuclear and Plasma Sciences Society and his extensive technical contributions to furthering the fundamental understanding and applied use of nuclear and plasma sciences.

### EARLY ACHIEVEMENT AWARD

#### Allen L. Garner

Allen L. Garner (S'02-M'07-SM'13) received the B.S. degree (with high honors) in nuclear engineering from the University of Illinois, Urbana-Champaign, in 1996. He received an M.S.E. in nuclear engineering from the University of Michigan, Ann Arbor, in



Allen L. Garner  
Early Achievement Award Recipient

1997, an M.S. in electrical engineering from Old Dominion University, Norfolk, VA, in 2003, and a Ph.D. in nuclear engineering from the University of Michigan, Ann Arbor, in 2006. He was an active duty Naval officer from December 1997 to December 2003, serving onboard the USS Pasadena (SSN 752) and as an instructor of the Prospective Nuclear Engineering Officer course at Submarine Training Facility, Norfolk VA. He is currently a Commander in the United States Navy Reserves and serves as Commanding Officer of SurgeMain Region Gulf in Orlando, FL, where he leads seven units with over 170 sailors who provide journeyman-level support to Navy shipyards. From 2006 to 2012, he was an electromagnetic physicist at GE Global Research Center, Niskayuna, NY. Since August 2012, he has been an Assistant Professor and Paul C. Zmola Scholar of Nuclear Engineering at Purdue University, West Lafayette, IN. His research interests include biomedical applications of pulsed power and plasmas, plasma physics, high-power microwaves, and multiphysics modeling. Prof. Garner received a University of Michigan Regents' Fellowship and a National Defense Science and Engineering Graduate Fellowship. He is a licensed Professional Engineer in Michigan. He is also the Technical Chair for the 2016 IEEE International Power Modulator and High Voltage Conference.

**Citation:** For contributions to theoretical and experimental studies of the biological effects of electric pulses and plasmas and to nuclear training, education, and maintenance.

### BIRDSALL AWARD

#### John R. Cary

John R. Cary is a Professor of Physics at the University of Colorado and CEO of Tech-X Corporation, which he co-founded in 1994. He received his Ph.D. from the University of California, Berkeley in 1979. From 1978 to 1980 he worked



John R. Cary  
Birdsall Award Recipient

at the Los Alamos National Lab, then the Institute for Fusion Studies at the University of Texas until 1984, when he moved to the University of Colorado, Boulder where he remains as a Professor of Physics. Professor Cary's research includes work on laser-plasma acceleration, beam dynamics, algorithms for plasmas and electromagnetic structures, nonlinear dynamics (separatrix crossing, chaos reduction, Lie transform perturbation theory, symplectic integration and maps) and large-scale plasma computation. He is the originator of the highly cited Vorpil computational application (part of the VSim package), recognized by the 2014 Innovation Excellence Award. Professor Cary has a strong interest in education, having supervised both Ph.D. and Master's degree students and having taught at all college and graduate levels. He has an extensive record of professional service. He has served as associate editor for research journals, most recently *Reviews of Modern Physics*, on the organizing and program committees for many conferences, such as the Particle Accelerator Conference, and will serve as ICOPS local treasurer for 2018. Recently he was elected to lead the Division of Plasma Physics of the American Physical Society. Prof. Cary is a Senior Member of the IEEE, a Fellow of the American Physical Society, a Dawson Prize recipient, and has over 170 refereed publications.

**Citation:** For contributions to scientific discovery using computational methods across plasma physics, the development of computational algorithms and methods, and leadership of computational teams

### GRADUATE SCHOLARSHIP AWARDS

#### Jin Chen

Jin Chen was born in Zhejiang, China, and received her Bachelor's degree from Zhejiang University. She obtained the M. S. Degree in Electrical Engineering



Jin Chen  
Graduate Scholarship Award Recipient

at Vanderbilt University in 2013, and expects to complete her Ph.D. in August 2016. Her research focuses on the radiation effects and reliability of GaN-based power devices, especially GaN/AlGaN HEMTs. She has performed DC and RF

parametric characterization studies of these devices, as well as low-frequency noise measurements, to obtain insights into the defects that can limit the performance, reliability, and radiation response of these devices in space environments. Jin has authored or co-authored 12 peer-reviewed journal articles. She authored the best student paper and received a Paul Phelps Continuing Education Grant at the 2015 IEEE Nuclear and Space Radiation Effects Conference in Boston, MA. She was nominated by her professor, Dr. Dan Fleetwood.

#### Zachary Fleetwood

Zachary Fleetwood has been honored with the 2016 IEEE Nuclear & Plasma Sciences Society (NPSS) Graduate Scholarship Award.



Zachary Fleetwood  
Graduate Scholarship Award Recipient

Fleetwood is a Ph.D. student in the Georgia Institute of Technology's Electrical and Computer Engineering department, where he is advised by Dr. John Cressler, Schlumberger Chair Professor in Electronics.

Fleetwood received this award for his research contributions in the field of radiation effects in silicon-germanium (SiGe) microelectronic technologies. His Ph.D. research focuses on correlating fundamental damage mechanisms between highly-energetic particles (i.e. space radiation) and state-of-the-art laser systems which provide spatial resolution that is impossible to achieve with traditional particle accelerators. His work incorporates advanced modeling techniques that help researchers and scientists to better develop radiation-hardening methods to aid future space missions.

Fleetwood's research is supported by the Defense Threat Reduction Agency (DTRA) and collaborators at the Naval Research Laboratory (NRL).

#### Guen Bae Ko

Guen Bae Ko received his B.S. degree in Electrical Engineering from Seoul National University, Seoul, South Korea, in 2010, where he is currently pursuing a Ph.D. degree in Biomedical Sciences



Guen Bae Ko  
Graduate Scholarship Award Recipient

under the supervision of Professor Jae Sung Lee. His research interests include fundamental physics studies on photon counting photo-sensors and the development of electronics for radiation detectors, with the focus on the performance improvement of PET and PET/MRI systems. His major contributions include the development of a silicon-photomultiplier-based MRI-compatible PET insert for simultaneous PET/MR imaging.

Guen Bae Ko is a recipient of the Award for Best Student Oral Presentations (First Prize) at the 2015 PSMR conference and the Computer and Instrumentation Young Investigators Award (Honorable Mention) at the 2013 SNM meeting. He was also awarded a Paul Phelps Continuing Education Grant to attend the 2015 NSS/MIC. He is the first author of six peer-reviewed journal papers.

#### Shijun Liang

Shijun Liang is a Ph.D. candidate in Engineering Product Design (EPD) at the Singapore University of Technology and Design (SUTD), which is established in collaboration with MIT. He joined Prof. L. K. (Ricky)



Shijun Liang  
Graduate Scholarship Award Recipient

Ang's group in February 2012 as a researcher after completing his master's degree in theoretical physics at Guangzhou University. On September 2013, he was admitted to the Ph.D. program with the support of an SUTD President's Graduate Fellowship. His research mainly focuses on modeling electron emission mechanisms from graphene and its applications in electronics, optoelectronics and thermal energy conversion into electricity. His major contributions include discovery of a new thermionic emission law for single-layer graphene published in *Phys. Rev. Applied* **3**, 014002 (2015).

Shijun was an invited keynote speaker at IVEC 2013 held at Paris, the recipient of the Shoulders-Gray-Spindt (SGS) Award (also known as Young Scientist Award) at IVNC 2015 held at Guangzhou, 3<sup>rd</sup> prize of Science and Technology Award, Guangdong Provincial Government China 2015, Outstanding Graduate Student Award and First-class Scholarship at Guangzhou University. He has authored or coauthored 17 peer-reviewed journal publications with a total of 277 citations and more than ten conference oral presentations.

### CHAPTERS

#### Alexandria Student Branch Chapter

Recently the chapter has successfully elected its new board to run the chapter for the third year after its establishment. The current board members are: Bakr Mohammed (chapter's chair), Mahmoud El-Tawila (chapter's vice-chair), Ahmed Parsi (treasurer) and Haidy Muhammad (secretary).



Haidy Muhammad  
Student Branch Chapter

The new board has started some new tracks of activities; our first new track is webinars. Knowing that not all the speakers can manage giving in-class sessions because they aren't in Egypt at the time of the session, the online webinars was the best fit.

Our first webinar was of a great success. We managed to arrange with Dr. Bassem el-Shahat to give us a session on medical physics; a subject that we did not address before. Dr. Bassem graduated from the nuclear engineering department at Alexandria University and he is now the Medical Physicist leader in Vancouver Island Health Authority, Canada. The webinar included: a brief explanation of medical physics as a science, qualifications of medical physicists, and some technical points such as the characteristics of two different types of thin-film radiation detectors. The audience interaction level was high and their feedback was promising which motivated us to plan more webinars for the coming period.

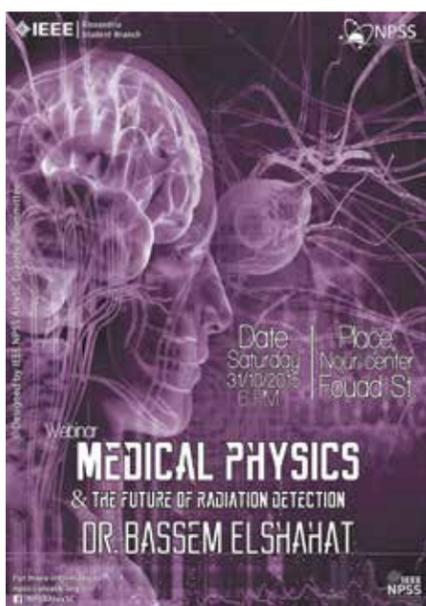
# Functional Committees Continued from PAGE 11



"Your Way to Summer Research" Alexandria Student Branch Chapter seminar poster.



Alexandria Student Branch Chapter Officers.



The second new track is the online awareness campaigns since we believe that it is our duty to inform those who were misled by the rumors on the nuclear field, and it is certainly our duty to fill the gaps in the nuclear knowledge in general. That's why we arranged for an awareness campaign for seven straight days in the form of an online Facebook event. We believe that there is no better way to reach the public than using the social media. The entire chapter worked on this campaign to gather the correct information and present them in an appealing way to the public. We also recorded some videos with several students to increase the interaction level.

We are also trying to give our volunteers a way to share their experiences. We arranged for a seminar titled "Your way to summer research" by one of the NPSS volunteers; Eng. Ibrahim Hany, who previously served as the chairman of the chapter. Eng. Ibrahim is a senior year student in the Nuclear and Radiation Engineering department. He participated in the Joint Institute of Nuclear Research; JINR; Summer Student program in Dubna, Russia. The seminar was about the summer research programs generally and the JINR program specifically.

*Haidy Muhammad, Alexandria Student Branch Chapter secretary, can be reached by E-mail at [haidymohammed94@gmail.com](mailto:haidymohammed94@gmail.com).*

## DISTINGUISHED LECTURERS

Bucar Novak, Distinguished Lecturer, presented the lecture Fast Transient Sensors in Wuhan, China. He is shown above, right, with some of the student attendees.

*Dan Fleetwood, Chair of the Distinguished Lecturers Committee, can be reached by E-mail at [dan.fleetwood@vanderbilt.edu](mailto:dan.fleetwood@vanderbilt.edu).*

## FINANCE COMMITTEE

As your NPSS Finance Committee Chair, my responsibility is to address strategic planning for NPSS and our future financial health. NPSS is a very successful technical society, both financially



Dr. Bucur Novak with Students in Wuhan, China, where he presented a distinguished lecture at Huazhong University of Science and Technology, January 2016.

and technically, and our success allows us to support both our NPSS members and our technical communities who attend our conferences, publish in TNS and TPS and our new medical imaging journal, and who benefit from their relationship with the Nuclear and Plasma Sciences Society and its members.

I'm writing this on an issue I consider critical to the future ability of NPSS to conduct its work as it has in the past. In this article, I'll discuss the pros and cons of the changes proposed for the organizational structure of IEEE. I will first state my conclusions, although I do think you should read the rest of the article to better understand my conclusions.

**My conclusion is that it is critically important to the future financial health of NPSS that we get out the vote to DISAPPROVE the Constitutional Change Amendment that we will vote for/against in the Annual Ballot coming out this summer. In IEEE, on average perhaps 12% of IEEE members vote on the Annual Ballot. The Constitutional Change amendment requires 2/3 of the IEEE members voting to approve it. That means that almost 32,000 of the expected 48,000 voters will need to approve the amendment for it to pass. If we can get most of our 3000 NPSS members (and other IEEE members we know) to vote against this Constitutional Change amendment, we will have a powerful voice in the future. If this amendment passes I believe the role of our society and the other technical societies in IEEE will be substantially diminished.**

I'll now provide you with the "pros" and "cons" of this amendment and the changes it supports. The "pros" were generated by some members of the Board of Directors that support the change. The "cons" come from me, however a very large group of senior IEEE leaders including more than one past IEEE President, many past members of the Board of Directors, and many current and past Society Presidents also support my perspective to disapprove of this Constitutional Change Amendment.

There have been articles in past NPSS newsletters talking about the potential changes we think will be forthcoming to the structure of IEEE. It is important to note that the Constitutional Change Amendment is being brought to a vote BEFORE we even see the final design of this new structure, and by approving it we give free hand to the Board of Directors to implement any changes they wish WITHOUT going out to the members of IEEE to approve further changes. Today, the massive changes in the IEEE structure as are being discussed would require a vote by the IEEE membership to implement. I'll reiterate that if this Constitutional Change Amendment passes, the membership will be bypassed, and the Board of Directors alone will be enabled to make any further changes they wish to the structure of IEEE.

IEEE is today a \$450M nonprofit corporation, and we in the technical societies have been critical to that success through the work of our VOLUNTEER leaders, and through the work of our technical societies such as NPSS. Today 75-80% of the

total revenue of IEEE is generated by our societies through our publications, our conferences, and some through our society membership fees. We use this revenue in support of our conferences, our publications our members, and our technical communities many of whom are not IEEE members. I believe that if this amendment passes and these structural changes are implemented, 3 to 5 years out there will be:

- » increasing taxes on our society revenue streams to support increased IEEE infrastructure and to support the parts of IEEE without self-made revenue streams (less money for funding society activities and initiatives)
- » that our societies will not be given the freedom to undertake as many of the activities as we do today (for example my bet is that all initiative funding will be approved by one body who will control what gets spent on which initiatives and by whom)
- » that all societies will be given direction for what they can do and can't do thus limiting our ability to support our members as we have been doing
- » there will be direction to increase the revenue generated by our conferences to increase the revenues to which IEEE will have access

As your NPSS Finance Committee Chair, I believe it is my responsibility to tell you, our members, what I think will be the negative results of these proposed changes on the future financial health of NPSS and the other technical societies.

So here are the changes this amendment would make as written and approved by the Board of Directors (BoD) and my comments on each. We have to remember that this amendment is intended to provide the changes to the IEEE Constitution that the IEEE structure currently being discussed will need, so my "con" comments will reference this as well.



Harold Flescher  
IEEE NPSS Finance Committee Chair

## FIRST THE MOST IMPORTANT POINT OF ALL-

**Pro** – It will "better define the roles of the IEEE Assembly and its delegates, which are separate from the roles of IEEE directors, as detailed in the bylaws"

**Con** – This statement hides the truth (that's as kind as I can be). What it does is to permit the role of a Delegate and a Director to be separated. Today we elect Delegate/Directors with one person having both roles. By today's rules, the societies elect ten Delegate/Directors and a VP of Technical Activities

(for all the societies). This means that there are at least 11 TAB/Society Directors on a 32-person Board of Directors (MGA does much the same for ten MGA Regional Directors and an Assembly-elected VP-MGA). These with the few others from the societies today elected into leadership roles (uch as Treasurer) who also serve as Directors, the societies/TAB have at least a plurality of Directors on the BoD. This structure essentially permits the societies to have the power to prevent changes that will severely impact our operations and the finances of our societies. **Under the new structure, we will be electing Delegates only, who have limited powers,** primarily serving on the Assembly and electing several Director leaders (like Treasurer) to the BoD. **The societies within TAB such as NPSS, will have no specified representation on the IEEE Board of Directors!** Indeed on the Enterprise Board (EB), which will become responsible for the budget process and all of the business products (like our publications and our conferences), the societies will have only one representative, as will all the other OUs. Today TAB and MGA each have 11 members on the BoD. That is 22 of 32 members of the BoD. **The new structure is postulated to have 12 members on the EB from the various organizational units of which the societies will have only one vote.** The societies will have a severely diminished ability to control their own destiny!

**AND THE SECOND MOST IMPORTANT CHANGE –**

**Pro** – “Separates the requirement that corporate officers must also be directors. This will allow corporate officers as currently defined to serve in important leadership positions other than on the Board of Directors.”

**Con** – Today of the 32 members of the Board of Directors, 22 are Technical Activities (societies) and MGA Directors. The rest of the Board are the 3-Ps (past, current and next IEEE Presidents) and seven corporate officers such as the Treasurer, VP EAB, etc), many of whom come from the societies. This removal of corporate officers from the BoD will further strangle opportunities to have experienced society people on the Board of Directors.

**AND THE THIRD, MOST IMPORTANT, CHANGE –**

**Pro** – It will “eliminate operational procedures that are currently well defined in, or more appropriate for, the IEEE bylaws or other lower-level governing documents.”

**Con** – Yes indeed, the sponsors of this Constitutional Change amendment have a very different picture than I of what is right for IEEE! What this change means is that the members of IEEE will lose the right to vote on changes to what is today contained in the IEEE Constitution. These rules will be put into the bylaws, which the Board of Directors will control. A Board of Directors, as discussed above, that will have **NO DEFINED SOCIETY REPRESENTATION!** So all the IEEE members lose their ability to vote on large changes to our current structure, and the societies lose their current ability to fight within that structure for what benefits the societies and their members.

**FOURTH –**

**Pro** – “Provides members with an increased role in selecting the Board of Directors by allowing the Board to be elected by the full eligible voting membership of IEEE.”

**Con** – Although this sounds good, having the few remaining Directors elected by all the membership, I believe it will put most of the electing power in the hands of the half of the membership that doesn't belong to societies, and will make it less probable to have members of our technical societies elected by the general membership. This might be changed in the new bylaws, but we haven't seen them yet and will probably have to vote on the Constitutional Amendment without knowing what the complete set of bylaws will look like. My stated perspective is that the BoD should push this Constitutional Amendment into 2017 when we should know what the bylaws would say. Perhaps



Steve Gitomer  
Editor-in-Chief, *Transactions on Plasma Science*

it is the cynic in me that says the powers that be don't want everything to be clear before putting this Constitutional Amendment forward, but I think it is less my cynic than my perspective that comes from the experience I've gained through almost 20 years of involvement with the IEEE BoD, as Director/Delegate, as the Vice-President of Technical Activities and as IEEE Treasurer. I've seen how the nonsociety folks behave, and how they and staff believe the society revenue streams should be used for “the benefit of IEEE.” I believe that the societies, through their conferences, publications and initiatives know best what is beneficial to IEEE and its technical communities, after all that is the reason the societies bring in 75-80% of all of IEEE revenues. Today, with the BoD structure we have, the Board has little power to influence the societies and MGA sections other than financially. The IEEE corporation exists as a service organization to the IEEE communities, be they technical, regional, educational or standards. The changes being discussed put the societies into a secondary relationship to the BoD with no guaranteed society membership on the new BoD.

**Pro** – “Adds the executive director, who is the most senior IEEE staff executive, as a nonvoting member of the Board of Directors to participate in setting the strategic direction of IEEE.”

**Con** – What we know of the future bylaws indicates a much smaller BoD than today. Say we make the BoD 12 people. Then the three Ps (past, current and future IEEE Presidents) will leave only nine volunteer Directors, and the staff director. Smaller Boards are known to be more staff driven, and we certainly don't need staff on the BoD of a volunteer driven society.

**Pro** – “Establishes a new role for IEEE delegates, who are members of the IEEE Assembly, to advise the Board of Directors on revisions to IEEE bylaws.”

**Con** – Hogwash. The Delegate part of today's Director/Delegates already has the power to do this. Besides, the write-ups of the bylaws seen to date specifically say that the BoD does not have to follow the direction of the Assembly, the Assembly only “advises.” That's no real role and actually no more of a role than exists today.

**Pro** – “Adds language to the IEEE Constitution that explicitly ensures a richly diverse Board of Directors.”

**Con** – **NO IT ABSOLUTELY DOES NOT.** What is says is “taking into consideration various diversity factors including, but not limited to, geographic and technical

Diversity.” This wording does not ensure anything, it just permits doing so. How do we know how this will be done? We will not know until a set of intended bylaws is passed by the BoD!

What has been ignored is that this change will “change the voting requirement for amending the constitution to at least two-thirds of those voting in an annual election, removing the current requirement of achieving a 10 percent return rate of ballots”

This sounds like a good thing as our annual election ballot returns frequently hover just above the 10% of the constitution voting membership requirement for change. Without 10% voting, no change to the Constitution would be possible. Unfortunately, if the current Constitutional Change Amendment goes through, there will be nothing substantial left in the Constitution that will require IEEE members to

**IEEE TRANSACTIONS ON PLASMA SCIENCE UPCOMING SPECIAL ISSUES**

- » June 2016 Special Issue of *Selected Papers from SOFE '15* — Guest Editors: Jean Paul Allain (University of Illinois, Urbana IL USA), David Ruzic (University of Illinois, Urbana IL USA), Martin Nieto (CICATA Queretaro, Instituto Politecnico Nacional, Queretaro, Mexico), Larry Baylor (Oak Ridge National Laboratory, Oak Ridge TN USA) — Status: Submission due date passed, to be published June 2016
- » August 2016 Special Issue on *High Power Microwave Generation* — Guest Editors: Rebecca Seviour (Huddersfield University, UK), Lay-Ke “Ricky” Ang (Singapore University of Technology and Design, Singapore), Sameer Hemmady (University of New Mexico, Albuquerque NM USA), Theodore Grabowski (Air Force Research Laboratory, Directed Energy Directorate, Kirtland AFB, NM, USA), and John Jelonnek (Karlsruhe Institute of Technology, Institute for Pulsed Power and Microwave Technology (IHM), Karlsruhe, Germany) — Status: Submission due date passed, to be published August 2016
- » October 2016 Special Issue on *Pulsed Power Science and Technology* — Guest Editors: David Wetz (University of Texas – Arlington, Arlington, TX USA), Stephen Bayne (Texas Tech University, Lubbock, TX USA), Jose Rossi (National Institute for Space Research – INPE, Sao Jose dos Campos, SP Brazil) & Haiyun Luo (Tsinghua University, Beijing, China) — Status: Submission due date passed, to be published October 2016
- » November 2016 Special Issue on *Atmospheric Pressure Plasmas and their Applications* — Guest Editors: Tao Shao (Institute of Electrical Engineering, Beijing, P. R. China), Jie Zhuang (Leibniz-Institute for Plasma Science and Technology, Greifswald, Germany), Timo Gans (University of York, York, UK) and Sarita Prasad (University of New Mexico, Albuquerque, NM, USA) — Status: Submission due date passed, to be published November 2016
- » December 2016 Special Issue of *The 9th Asia-Pacific International Symposium on the Basics and Applications of Plasma Technology (APSPT-9), and The 28th Symposium on Plasma Science for Materials (SPSM-28)* — Guest Editors: Hiroshi Akatsuka (Tokyo Institute of Technology, Tokyo, Japan), Kungen Teii (Kyushu University, Fukuoka, Japan), Jong-Shinn Wu (National Chiao Tung University, Hsinchu, Taiwan), and Koichi Takaki (Iwate University, Morioka, Japan) – Status: Submission due date passed, to be published December 2016
- » December 2016 Special Issue on *Plasma Assisted Technologies* – Guest Editors: Igor Matveev (Applied Plasma Technologies, Falls Church VA USA) & Tim Ombrello (Air Force Research Laboratory, Wright Patterson AFB OH USA) — Status: Submission due date passed, to be published December 2016
- » April 2017 Special Issue - *Spacecraft Charging Technology* - Acting Senior Editor: David J. Rogers (ESA/ESTEC, The Netherlands), Guest Editors: TBD; Submission due date: 31 July 2016
- » April 2017 Special Issue on *Plenary, Invited & Tutorial papers from ICOPS-2016* – Co-Guest Editors: TBD [derived from the 43rd International Conference on Plasma Science - 2016, Banff, Alberta, Canada, 2016, contact is Andre Smolyakov, web page: <http://icops2016.ece.ualberta.ca>]; Submission due date: 31 August 2016
- » May 2017 Special Issue on *Electromagnetic Launchers* – Lead Guest Editor: Harry Fair (University of Texas, Austin TX USA), Guest Editor: Melody Hummel. ([www.emlsymposium.com](http://www.emlsymposium.com) – 18th Electromagnetic Launch Technology Symposium, October 24-28, 2016, Wuhan University, Electrical Engineering Institute, Wuhan, China); Submission due date: TBD
- » October 2017 Special Issue - *Selected Papers from EAPPC/BEAMS/MEGAGAUSS 2016* - Guest Editors: Joshua Leckbee (Sandia National Laboratories, Albuquerque, NM, USA), Fernando Silva (Instituto Superior Tecnico Universidade de Lisboa, Lisbon, Portugal), Hamid Hosseini (Kumamoto University, Kumamoto, Japan) & Hong-Je Ryoo (Korea Electrotechnology Research Institute, Changwon, South Korea) - EAPPC/Beams/Megagauss (Euro-Asian Pulsed Power Conference) 2016 will be held in Estoril, Lisbon, Portugal in September 2016, with website: <http://eappc-beams2016.org/>; Submission due date: 12/31/2016.

Steve Gitomer, Editor-in-Chief of the IEEE Transactions on Plasma Science can be reached by E-mail at [steve@lanl.gov](mailto:steve@lanl.gov).

vote on. This change takes much of the power for changing IEEE from IEEE members and gives this power of change to the BoD.

My summary – I believe these changes will be very detrimental to the ability of IEEE's technical societies, such as NPSS, to continue to conduct business in support of their products and their members as we have in the past. I urge you to vote in the upcoming IEEE election, I urge you to vote against the Constitutional Change amendment, and I urge you to get any IEEE members you know to do so as well.

Hal Flescher, IEEE NPSS Finance Committee Chair, can be reached by E-mail at [halflescher@icloud.com](mailto:halflescher@icloud.com).

**NOMINATIONS**

The NPSS will be holding several elections later this summer in which you may be eligible to vote. These will be for elected AdCom positions for four of our Technical Committees replacing seats to be vacated by representatives from the Nuclear Medical and Imaging Sciences Committee, the Plasma Sciences and Applications Committee, the Transnational

Committee, and the Fusion Technology Standing Committee. You should have already received an E-mail notification about these elections with information about how to nominate candidates for these positions, so by the time you receive this Newsletter, there should already be a list of qualified



Gerald Cooperstein  
Nominations Committee Chair

candidates who have agreed to run. The election will be held towards the end of the summer and will be conducted by electronic ballot (except in those cases where a paper ballot is specifically requested).

## Functional Committees Continued from PAGE 13

In addition, the Radiation Instrumentation Technical Committee, the Nuclear Medical and Imaging Sciences Committee, the Plasma Sciences and Applications Committee, the Particle Accelerator Science and Technology Committee and, for the first time, the Pulsed Power Science and Technology Committee will also be holding their annual elections. These are separate elections for their own committee members, but they will be included on the same ballot as the AdCom election. Please remember that when you receive this ballot, you are only eligible to vote in the election of the TCs of which you are currently a member.

So please be on the lookout for the electronic ballot later this summer and be sure to vote in the elections of your Technical Committee. It's your chance to make a difference in helping the NPSS to better serve you.

[Gerald Cooperstein can be reached by E-mail at gerald.cooperstein.ctr@nrl.navy.mil.](mailto:gerald.cooperstein.ctr@nrl.navy.mil)

### PUBLICATIONS

TNS Special Issue – Celebrating 50 Years since the First IEEE Particle Accelerator Conference

The April 2016 special issue of the *IEEE Transactions on Nuclear Science* (TNS) is dedicated to the celebration of 50 years since the first IEEE-sponsored particle accelerator conference. It contains 28 selected articles prepared by our extensive

international community, and covers historical developments along with current state-of-the-art advances.

Sandra Biedron (Colorado State University, Fort Collins, CO, USA and the University of Ljubljana, Ljubljana, Slovenia) served as the Senior Guest Editor and Yong Ho Chin (KEK - High Energy Accelerator Research Organization, Ibaraki, Japan), Paolo Craievich (Paul Scherrer Institute, Villigen, Switzerland), Alessandro Fabris (Elettra Sincrotrone Trieste, Basovizza, Italy) and Robert Zwaska (Fermi National Accelerator Laboratory, Batavia, IL, USA) served as Guest Editors.

### TNS Moving to Monthly Publication:

Beginning in January 2017, the *IEEE Transactions on Nuclear Science* (TNS) will be published in 12 monthly issues, instead of its current six issues which are on a bimonthly schedule. The primary motivations for this change are the following:

- » This will reduce the average time from submission to print publication for manuscripts by a month, providing more timely accessibility for our readers of print content.
- » It has been getting more difficult to complete the review process for all the papers from the Nuclear and Space Radiation Effects Conference (NSREC) in time for publication in the December special issue which is dedicated to papers originating

**Paul Dressendorfer**  
NPSS Publications Committee Chair



from that conference. This change will allow that special issue to be moved to January, providing additional time to make the NSREC special issue comprehensive while still enabling papers from the previous year's NSREC special issue of the TNS to appear before the next year's NSREC summary deadline.

- » It will permit a more timely publication of some of our special issues
- » It will allow better spacing of our special issues, perhaps avoiding having multiple special issues in a given month
- » It will provide a longer period for the highly cited work from the NSREC to be evaluated by the bibliometric indexing services, which is likely to increase the impact factor as calculated by those services

### IEEE DATAPORT™

IEEE realizes that data generation and data analytics are increasingly critical in many aspects of research

and industry. Data retention is also extremely important and there is growing demand for Big Data datasets. IEEE is developing a Big Data repository that can be a "one-stop shop" serving the growing technical community focused on Big Data and data analytics; the repository is called IEEE DataPort™.

IEEE DataPort™ serves as a valuable and easily accessible repository of datasets and data analysis tools. The repository is designed to accept all types of datasets, including Big Data datasets up to 2TB, and it provides both downloading capabilities and access to Cloud services to enable data analysis in the Cloud. IEEE DataPort™ is a universally accessible web-based portal that serves four primary purposes:

- » enable individuals and institutions to make datasets easily accessible to a broad set of researchers, engineers and industry;
- » enable researchers, engineers and industry to gain access to datasets that can be analyzed to advance technology;
- » make data analysis tools and capabilities available to enable analysis of datasets;
- » retain referenceable data for reproducible research.

*For more information or if you wish to submit a dataset to IEEE DataPort, please contact Melissa Handa - Senior Program Manager IEEE DataPort at [melissa.handa@ieee.org](mailto:melissa.handa@ieee.org).*

*Paul Dressendorfer, IEEE NPSS Publications Committee Chair, can be reached by E-mail at [p.dressendorfer@ieee.org](mailto:p.dressendorfer@ieee.org).*

## Liaison Reports

### Educational Activities Board: Education Liaison



**Edl Schamiloglu**  
EAB Liaison

### EDUCATIONAL ACTIVITIES – OVERVIEW OF RECENT ACTIVITIES

The IEEE EAB has been focusing on themes ranging from Pre-University Education, to University Education, and Continuing Education. EAB serves a broad range of constituents from students, educators, practitioners, and the public. EPICS in IEEE (Engineering Projects in Community Service) is maturing as an IEEE Foundation Signature program. Along with EAB's highly successful Teacher In-Service Program and the TryEngineering.org, TryComputing.org, and IEEE Spark online resources for Pre-University Education, EAB has several exciting opportunities that are focused on Young Learners and Exhibits. The latter, in particular, aligns well with IEEE's Public Visibility efforts to promote informal education through science centers and museums worldwide. EAB has always had a strong focus on accreditation when it comes to University Education, but it has diversified significantly in recent years with a portfolio of programs, products, and services to serve the needs of students and faculty in IEEE's fields of interest in Engineering, Computing, and Technology (ECT). Two such programs are IEEE Academic, and the Early Career Faculty Development (ECFD) Program. IEEE Academic is a program started by students to provide other students with

online video resources on how to handle difficult-to-understand subject matter. The ECFD program is designed to provide early career faculty (ECF) with resources to help them become more effective teachers and researchers. Today, EAB has almost 1900 ECF in its online community and EAB has conducted six virtual workshops.

On the Continuing Education front, EAB plans to produce up to 75 new tutorials for the IEEE eLearning Library. Newly developed tutorials are reviewed and approved by subject-matter expert volunteers and societies to ensure they meet quality standards. Topics of the tutorials planned for 2016 include: Cybersecurity, Smart Grid, National Electric Safety Code (NESC), Software Defined Networks, Ethical Hacking, Project Management, Internet of Things, Big Data, Green ICT, Biometrics, and Smart Cities. EAB also plans to develop more than 30 new Massive Open Online Courses (MOOCs) and continues to work on the Certificates Program and other educational content aimed at the practicing engineer.

### PRE-UNIVERSITY EDUCATION AND OUTREACH: A GLOBAL CATALYST FOR THE PUBLIC

The goal of raising the level of public understanding and appreciation for technology is at the heart of the mission of EAB's Pre-University Education and Outreach programs. The mission to (1) promote and enhance the level of technological literacy of pre-university educators and students, and (2) be a trusted source of resources, curricula, and pedagogical practices for pre-university educators is realized through the outcome of the formal and informal education programs and products. The mission is focused on encouraging students to aspire to IEEE-related careers and demonstrate to

the community at large the impact of engineering, computing, and technology on humanity.

Overall, IEEE's Pre-University Education outreach activities, including IEEE's Teacher In-Service Program (TISP), EPICS in IEEE, ECT Portals and museum exhibits, impact more than one and a half million students, parents, teachers, volunteers, student members, and community residents in dozens of countries each year.

With support from the New Initiatives Committee, a project "Bringing 2030 Engineering and Technology Careers into Today's Classroom" will create videos of IEEE in their workplace where innovative and leading edge work is taking place. These talks will demonstrate how their work can influence industry/society and make predictions about how their work will change the jobs of the future. The videos will provide a unique and engaging experience to raise students' awareness of the engineering and technology career opportunities that will be available in 2030.

This project will also demonstrate IEEE's impact on research achievements in the engineering and technology fields in ways the general public (including pre-university students) can easily comprehend, and will provide a unique resource that motivates students to aspire to be the engineers of 2030.

Discovering a scarcity of high-quality engineering game apps, EA Business Development and Pre-University teams are working together to create a Virtual Circuits game application. The project is creating an app that mimics real-life breadboards/snap circuits which would let students explore the basic principles of electrical circuits through a fun interactive experience. On target to launch in 2016, this app will be available on TryEngineering.org.

EPICS in IEEE will expand its focus and improve several program elements during 2016. The educational components of the program as well as the continued development of the narrative for the EPICS in IEEE story will be primary focuses of the program. EPICS in IEEE will have an expanded portfolio of promotional and marketing materials, a

web presence, and an interactive virtual community to build the community of interest engaged in the mission of impacting communities.

Efforts will continue in 2016 to support two new initiatives that are in pilot phases:

- » Efforts will continue into 2016 to secure partners and financial support for the "I Can Engineer: Development of Resources for Young Learners" Pilot, which is a project to develop engineering, computing, and technology resources for young learners, ages 4-7.
- » As a follow-on to the IEEE Exhibits Program Strategic Summit held in 2015, a report on the recommendations for the strategic direction will be distributed and guidance on the best path forward will be sought from key stakeholders. In 2016, the expanded collection of programs and products for the pre-university community will reach and impact many around the world, raising the level of appreciation and understanding of technology and of IEEE.

### CONSOLIDATING EA GLOBAL ACCREDITED PROGRAM DATABASES

IEEE Educational Activities has developed and maintains an extensive and growing database of accredited engineering, computing, and technology (ECT) programs around the world. This resource feeds the "Find a University" search that is featured on several EA portals, including Accreditation.org, TryEngineering.org, and TryComputing.org. Aligned to the goals of these portals, the database allows site visitors to search for programs by country or degree area. Initially developed as part of TryEngineering.org, the feature helped lay a foundation for the broader global accreditation resources now available at Accreditation.org.

Over the years, as engineering, computing, and technology program accreditation has spread around the globe, there has been a continual expansion of the number of responsible accrediting bodies, universities, and degree programs they track. EAB's

database currently represents 77 countries, 3,598 universities, and about 19,000 programs.

These are each confirmed on an annual basis to maintain accuracy, and EAB continually conducts research to make sure the EA database is the most comprehensive possible. This includes adding accrediting bodies in additional countries which are venturing into program accreditation, and confirming whether programs have maintained accreditation status over time. There currently exists no similar source for global accreditation anywhere, so it remains a valuable asset of IEEE Educational Activities.

Initially, separate databases fed each of the three portals, but in 2015 EAB successfully instituted a system that consolidated the number of databases required to feed the portals to just one.

As we are into 2016, EAB will be looking to further boost the comprehensiveness of the global listings,

and of course reaching out to members of the Committee on Global Accreditation Activities (CGAA) for any clarification or guidance. Please visit <http://accreditation.org/university> to explore the current resources.

Upcoming IEEE.org course: Innovation & Competition: Succeeding through Global Standards

Coming in March 2016, the 6-week MOOC, entitled "Innovation & Competition: Succeeding through Global Standards," offers a practitioners' view of standards and is geared to graduate students and emerging professionals in the fields of engineering, technology, computing, business, economics, and law – particularly those working, or planning to work, in all facets of product planning, development, introduction, and support. The course will enable participants to better contribute to their organizations and to advance their careers. Faculty in related areas will also benefit from taking the course and be able to add value to

students through their teaching. By completing this MOOC, people can expect to come away with an understanding of the different types of standards, how they impact trade and innovation, how they evolve, why companies participate in standards development, how standards are changing to meet emerging needs, how related activities can be integrated with other organizational functions, strategic implications, and how standards can be applied to product design and planning. Consideration will also be given to related conformity assessment, regulation, and intellectual property management.

This joint project of Educational Activities and the IEEE Standards Association was funded through an IEEE Foundation grant. The MOOC is part of the overall new IEEE Standards University.

*Edl Schamiloglu, IEEE NPSS liaison to the IEEE Educational Activities Board, can be reached by E-mail at [edls@unm.edu](mailto:edls@unm.edu).*

**I'M IN THE SECOND GROUP!**

It is the glory and merit of some men to write well, and of others to not write at all.

*La Bruyère*

**NEVER MIND**

What I do is all that concerns me, not what people think.

*Ralph Waldo Emerson*

**TOUGH REQUIREMENT**

All you have to do on television is to be yourself, provided, that is, you have a self to be.

*Clive James*

**AND REMEMBER TOO**

Sobriety's a real turn-on for me. You can see what you are doing.

*Peter O'Toole*

# IEEE Smart Village (ISV) Breaking New Ground in 2016

Village Owned and Operated Businesses and Global Classroom Education Enterprises are now under development in 19 countries: Benin, Burkina Faso, Cambodia, Cameroon, DR Congo, Ecuador, Haiti, India, Kenya, Malawi, Namibia, Nepal, Nigeria, Papua New Guinea, Philippines, Rwanda, South Sudan, Uganda and Zambia.

**ELECTRICITY AND EDUCATION**

Our original venture into the brave world of Sustainable Development for people in extreme poverty, earning less than about \$1 per day, was the SunBlazer electricity business which had a successful debut in Haiti in 2011-2012. Since that time we have designed no less than three new versions of SunBlazers: The more portable SunBlazer II in kit form (2014); the half-size SunBlazer Lite; and the larger solar array SunBlazer III to be rolled out in May at the Power and Energy Society Transmission and Distribution show, a biennial event that this year has only 900 exhibitors. We are a flea on the Big Dog in the power industry, but the game is changing rapidly.

One of our key requirements to become a Signature Project of IEEE Foundation was to build up the education program that was already underway and give it equal billing with electricity. This program has now fielded its first major prototype, a Master's Degree program in Development Practice called MDP, a course which in fact exists at several elite universities. However "our" Master's degree comes with a unique requirement that it be deliverable and affordable in the poorest countries of the world. This same MDP course costs \$150-200K at the elite schools in the U.S. that offer it. Through the Smart Village program designed at Regis University in Denver the fees are scaled to deliver at a much lower cost, first in the U.S. at almost a tenth the cost, and then at a tenth of that cost in the developing country. Regis is totally committed to making education available globally and is part of a system of over 150 sister schools worldwide. The brainchild of Professor Daniel Wessner, who is on the Smart Village Steering Committee, this is truly revolutionary and with the highly successful first year pilot class completing on April 25<sup>th</sup> the doors for the full three-year class at Regis, delivered via the Posner IEEE Global Classroom in Denver, will open in late August. People in developing countries are charged a tenth the U.S. cost which itself is very modest. With wireless communications people can earn this degree without ever having to leave their home village to live in a big city slum.



Ray Larsen  
Chair, IEEE Smart Village and NPSS liaison

As word spreads among Smart Village partners interest is peaking fast, because the MDP is just the forerunner to classes that will reach from K-12 to adult education to vocational jobs training and into academe. Our Education Committee is already making plans for adding these dimensions as rapidly as the village partners can be co-opted to help design the curricula of most importance to their needs. Proposals are in development in Kolkata India, Quito and Galapagos, Ecuador and Papua New Guinea, but clearly these few are the tip of an iceberg.

Why start with the MDP? It is because many organizations trying to help eliminate global poverty are unwittingly a part of the problem and need immersion in a class that brings them up to date with people who have spent their lives grappling with the difficulties, which many believe are insurmountable. But Smart Village is aligning with those at the leading edge who believe global poverty is economically and socially solvable with no negative impact; in fact with a hugely positive impact on the developed world. The social, cultural and extreme poverty conditions of typical village partners, and especially their lack of basic necessities, jobs and education, requires special training for anyone aspiring to empower villages or ultimately transform whole countries working through the "humanitarian workspace." A lighter version of the program is under development to be offered IEEE-wide by the IEEE Humanitarian Activities Committee (HAC). For complete MDP class details dial up the [regis.edu](http://regis.edu) website or contact Ellen at [elundwall@regis.edu](mailto:elundwall@regis.edu)



**Our Mission**

IEEE Smart Village *empowers* off-grid communities through education and the creation of sustainable, affordable, locally owned entrepreneurial energy businesses.

**Our Vision**

To bring basic electrical and educational services to more than 50 million people by 2025.



Figure 1: Home Room of IEEE Global Classroom, Posner Center for International Development, Denver CO, E. Lundwall Photo



Figure 2: "Front Row" of Global Classroom, Online students and Presenters - E. Lundwall Photo

**ELECTRICITY PARTNERSHIPS**

IEEE Smart Village now with partners either operational or in the proposal stage in 18 countries and in collaboration with IEEE Societies, IEEE Foundation, Posner Center and Regis University, is making strides to expand pilot programs globally for both community-owned-and-operated electricity and community-based education, both of which must hew to a market-based sustainable business

model. The formation of partnerships takes time and careful development of trust relationships, good communications and shared metrics. All these are difficult and require dedication of time, organization and hard work, like any new startup company. Our special challenge is to accomplish the core functions of Smart Village with a minimum of paid help, and at the same time run a tight ship that can attract

# Smart Village Continued from PAGE 15

the funding it needs to achieve its ambitious plan of ten new startups per year for the next decade, each of which are challenged to bring electricity to a million people in five years after startup. Some of the partnership relationships for electricity and education are captured in Figures 3 & 4 on page 16.

## PRODUCT SCOPE DRIVEN BY FIELD REQUIREMENTS

The Electricity program has significantly expanded in scope by initiatives of on-the-ground partners to develop a wider range of solutions to address not just home lighting but the total scope of community needs that can be efficiently addressed with solar energy, such as:

- » More power to homes for appliances, TV
- » Pumps for clean water and irrigation
- » Small businesses
- » Light machine tools
- » Schools with computers, projectors, Internet or intranet connectivity to share education experiences within a global classroom concept similar to IEEE Global Classroom at Posner.

The largest solar arrays currently built by GVE Projects in Nigeria are 37 kW but potentially could reach 100 kW or more. Cameroon is introducing Solar Home Systems and Microgrids. The ISV product line now includes:

- » Several sizes of SunBlazer generators with portable battery packs
- » SunBlazers running a Microgrid at 230 VAC or DC to power homes and businesses
- » Solar Home Systems which have self-contained panels and batteries and may also have a Microgrid connection

» Large arrays up to 25 kW or more to drive 1-2 km Microgrids in denser villages serve interspersed businesses, schools and clean water filtration systems. These are depicted below.

## ORGANIZATION

IEEE Smart Village has produced a new Governance document to bring it more in line with IEEE practice. A Steering Committee (SC) of six people manages the high-level operation and includes a Chair and Vice Chair rather than Co-Chairs. The elected Chair is Ray Larsen of IEEE NPSS and PES and Vice Chair is Robin Podmore; each will serve a three-year term which may be renewed if deemed desirable by the Committee. Current SC Members are Ray Larsen, Robin Podmore, Dan Wessner, Henry Louie, Patrick Lee and Derek Welbourn. The SC is supported by seven Subcommittees, namely Development (Ravi Seethapathy), Finance (Patrick Lee), Marketing (Derek Welbourn, Acting), Education (Robin Podmore, Acting), Engagement (Noel Schulz), Operations (Hardev Juj) and Technology (Ray Larsen, Acting). People in Acting positions are committed to finding replacements with the necessary talents, passion and time for the jobs which are all challenging. The organization is also strongly supported by the IEEE PES staff especially Pat Ryan, Executive Director and Mike Wilson, ISV Program Manager. The special Development Committee liaison person assigned from IEEE Foundation is Michael Deering. All supporting Societies to date are shown with Liaisons eligible for Committee positions. An appointed Advisory Committee to the Steering Committee is also appointed for term positions at the discretion of the SC.

## FINANCIAL PLAN

A financial plan developed by IEEE Smart Village with the guidance of the IEEE PES Board and The IEEE Foundation has been approved by the IEEE Board. This Plan calls for a ramp-up from 2015-2017 to reach a budget held by IEEE Foundation of \$10M. This level is planned to support an outlay of \$2M

per year for program and ultimately an operating budget of about 20% of that total. Historically the Nuclear and Plasma Sciences Society and Power and Energy Society have provided the bulk of the project and operations funds with strong support from the Humanitarian Ad Hoc Committee, Region 9 (Latin America) and the IEEE Foundation. The Foundation is guaranteeing a strong budget during the ramp-up while Societies and individual donors are asked for a three-year pledge. NPSS and PES have already committed strongly and several other Societies have pledged smaller amounts. Individual targeted fundraising however has gone very slowly so a special broader campaign is being considered.

We have noted often that if every IEEE member gave just \$5 per year we would have our \$2M per year projects budget. But the world does not seem to work that way. It's hard for a small underfunded group to generate a huge amount of publicity. People need to be educated on the magnitude and global urgency of what we are trying to accomplish. IEEE has been wonderful but in truth, by far the most charity funds come not from corporations but from committed individuals including the volunteers working in Smart Village in behalf of IEEE. We would humbly request that our readers find the time to become informed, inspired and excited to commit a pledge toward our program that is putting IEEE on the map in a place they have not ventured before; but IEEE will surely help change the world by championing that the extreme global poverty that is a blight on us all need not be so; it is solvable if we have the will to declare it unacceptable in a world where many are living in an unhealthy excess of plenty.

## ACCOMPLISHMENTS AND THE ROAD AHEAD

IEEE Smart Village has had very good success attracting partners through the very hard work of several individuals, including a special consultant for SE Asia, Farid Khan, who is largely responsible for the surge in opportunities that will launch in 2016. A number of partners have shown an ability to raise investment funds to begin to grow their businesses toward the goal of reaching a million people. The star performers include GVE in Nigeria, Sirona in Haiti, SunGate in South Sudan and on a smaller but very unique scale, Global Himalayan Expedition in

Ladakh, India. Because of the uniqueness of their program, GHE will soon be the subject of not one but two major TV documentaries, one by Sky News in the UK and another by National Geographic in the U.S. Hopefully IEEE Smart Village will get attention for its critical support for these enterprises which have brought life to our overall goals and program.

IEEE Smart Village itself has been a slow startup since the rush job in Haiti that launched the Community Solutions Initiative in 2010. Since 2010 we have given support to a number of partners as shown in the tables and graph below. During this slow ramp we developed new SunBlazers and also supported our partners' desires to develop new solar array and home system products as mentioned above. To date we have given partial funding to 11 new startups through 2015, a couple of which are in early survey mode preparatory to producing a proposal and five-year business plan. Smart Village provides guidance to help develop plans once a relationship of mutual trust is developed. All plans will be supported with a caveat of transparency and accurate reporting of impact results on a regular basis at least for the critical startup years. Note that in 2016 we plan to launch more startups than in all years to date. Moreover, there are at least three new initiatives that have emerged since these data were compiled in March 2016. This puts enormous pressure for us to work with partners to raise more resources than we can provide alone. It also drives home the point that we need to support a much more aggressive program than 10 new starts per year and aim for a much higher overall impact in going to scale.

### DID YOU KNOW THAT...

What we do not know harms us less than what we think we know, but don't.

*Voltaire*

### ANOTHER HOPE LOST

Now that I am 60, I see why the idea of elder wisdom has passed from currency.

*John Updike*

### AS DO PROGRAMMERS

Simplicity is an acquired taste. Mankind, left free, instinctively, complicates life.

*Katherine Fullerton Gerould*

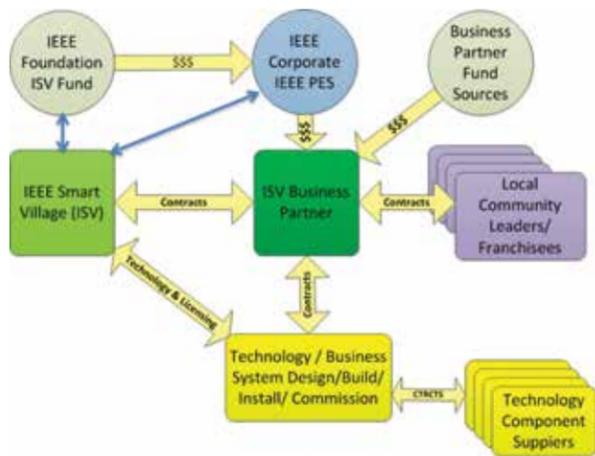


Figure 3: IEEE Smart Village Partnership Business Relationships with Villages ISV in-country Business Partner (Dark green, center) who runs multiple village franchisees and contracts with technical partners for systems construction, installation, commissioning and (optional) maintenance services

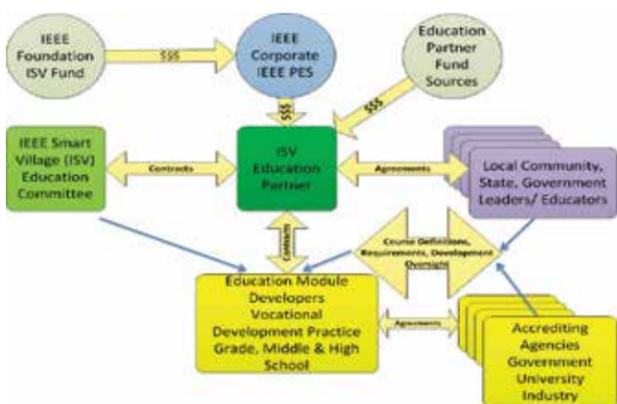


Figure 4: ISV Education Partner Relationships including local education authorities, Curricula Developers, Accrediting Agencies, Agreements & Oversight

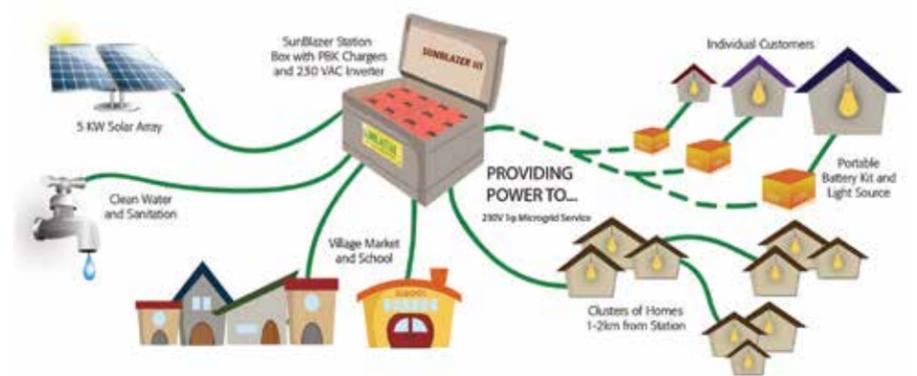


Figure 5: SunBlazer Products 2015. NOTE: A new SunBlazer III has just been completed with up to 9 solar panels on an A-Frame which is expandable to 18 panels, i.e. 4.5 kW with 250 W panels. A water irrigation pump needs 3-4 kW. The larger array can be split and time-shared to run a number of applications.

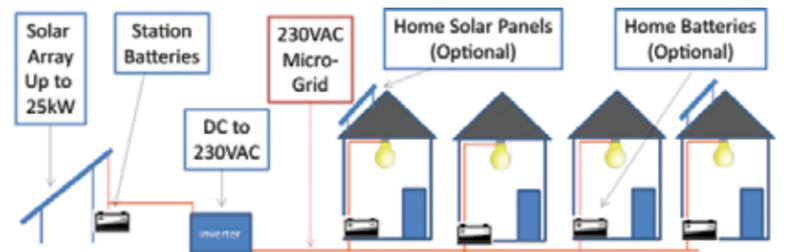


Figure 6: Solar Arrays plus microgrids by ISV Partners: Cameroon (8 kW), South Sudan (6 kW), Nigeria (multiple 25-37 kW, Ladakh India (multiple 4 kW), South Sudan & Cameroon: Solar Home Systems self-contained; deployment underway

## SUMMARY OF PARTNER COUNTRIES' AND STARTUPS BY YEAR

- |                 |                      |                 |
|-----------------|----------------------|-----------------|
| 1. Benin        | 8. India             | 15. Philippines |
| 2. Burkina Faso | 9. Kenya             | 16. Rwanda      |
| 3. Cambodia     | 10. Malawi           | 17. South Sudan |
| 4. Cameroon     | 11. Namibia          | 18. Uganda      |
| 5. DR Congo     | 12. Nepal            | 19. Zambia      |
| 6. Ecuador      | 13. Nigeria          |                 |
| 7. Haiti        | 14. Papua New Guinea |                 |

\*Countries as of April 2016

Start Year	2011	2012	2013	2014	2015	2016
	Haiti	Cameroon Nigeria South Sudan	India-Ladakh	Kenya Namibia	India (UfH) Malawi DR Congo	India (7 New) Burkina Faso Ecuador Philippines Nepal Papua NG Uganda Rwanda Cambodia
<b>Starts/Year</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>15</b>
<b>Total</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>11</b>	<b>26</b>



India Himalayas: Installing solar trekker village Microgrids at 16,500 feet Global Himalayan Expeditions CEO Paras Loomba on right.



India: Village Market Mall, UP State – Smart Village Surveys



UP Village Street Scene with load of hay



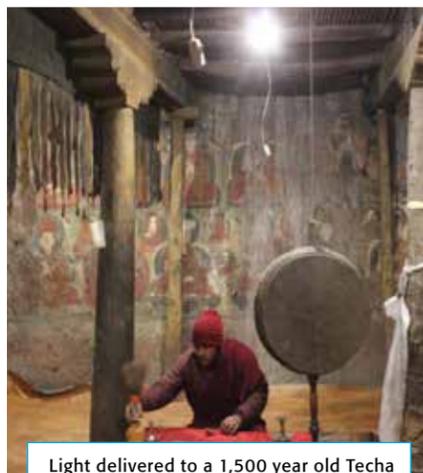
The UP Village Survey Team. Center- ISV Consultant for SE Asia Farid Khan in center



Nigeria: Green Village Energy Projects Founder and CEO Ifeanyi Orajaka and children with new 25 kW installation



India: Typical rural house construction in UP State –Smart Village Surveys



Light delivered to a 1,500 year old Techa Monastery at 16,700 feet



Phuktal Village GHE plans to electrify in 2016



Kushinagar UP India: Survey Team for two large villages – F. Khan

# Smart Village Continued from PAGE 17

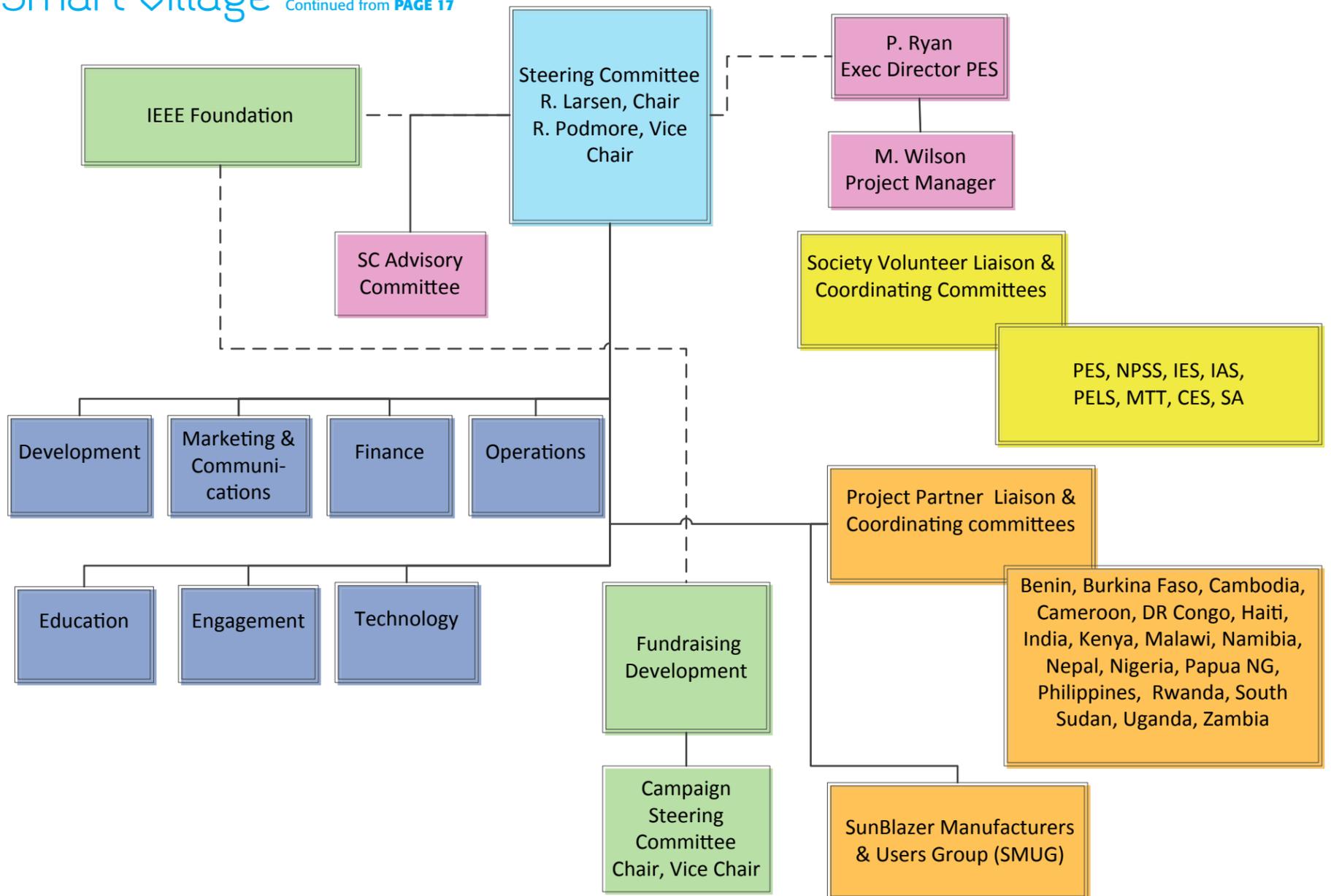


Figure 7: IEEE Smart Village Organization Chart – Rev. 04/2016

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Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by July 5<sup>th</sup>, 2016 for publication in the June 2016 Newsletter.

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