NPSS NEWS

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Moving to Virtual Conferences

Peter Clout
NPSS Communications Chair; TAB FinCom

What a year! In January all looked normal, February brought some storm clouds on the horizon and in March we saw that our lives would clearly be turned upside-down. The early March NPSS administrative meetings could well be the only traditional in-person meeting NPSS holds this year. Even then, some members from Italy and Australia could not attend in person and so were with us via the web. Many NPSS technical conferences were either canceled or postponed in the hope that the pandemic would pass but now, as will be seen below, all conferences for the remainder of the year have changed to virtual.

The IEEE Meetings, Conferences and Events (MCE) group has an emergency response team to help organizers when extreme things impact meetings. In mid-January they started working on the pandemic response and proactively reached out to organizers to offer advice built on expert input and meeting experience. The first IEEE conference was postponed on January 24th and in early March the first large virtual conference was held when the Optical Network and Communication Conference (~700 papers) quickly provided virtual access to the live meeting as many could not travel to San Diego.

Now, after a few more months, there is more experience with running virtual conferences. Clearly communities differ in their makeup and culture. This is clear in the results of six virtual conferences that have been reported. One went from the usual ~3,000 attendees to ~16,000. Seventy-four percent were first-time attendees, only 20% were authors and almost half were Young Professionals. One should note that for this conference no registration fee was charged. Others also saw a large growth in attendees and only one had a slight decline. Some conferences also saw a large increase in papers submitted. Even though registration fees were charged in some cases, no travel costs were involved. Time-zone issues were handled by spreading the meeting out longer in time with shorter sessions each day and making the presentations available to view later. There is only a short window in the day when every major geographical area is at a reasonable time, 3 pm GMT.

One experience has been that recorded presentations are better, of higher quality, than live presentations. One assumes that is because the presenter can re-record until they are happy with the result. Another advantage is that recorded presentations are not dependent on the instantaneous quality of the Internet connection of the presenter.

Much as this pandemic disruption to our routine has been a challenge, it also presents some opportunities for change and growth: I think that we will see better meetings and conferences as a result once the pandemic is past us and we can revert to in-person gatherings but with our experience of running virtual meetings.

So, what does a virtual conference look and feel like? Certainly different. As ever, there are plusses and minuses.

Advantages:

- No travel is required (cost, travel time and being away from family) so it is much easier to attend.
- Poster papers could become oral, have short videos in addition or a webpage with Q&A.
- Lower conference costs and so also lower registration fees.
- Exhibitors could also have sessions on technical issues or new products.
- No requirement to have a few very busy days, more scheduling flexibility. More time to browse the presentations if so interested.
- One can hear presentations that otherwise, with parallel sessions, one would have to choose between.

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Conferences

Continued from PAGE 1

» One can attend one or more conferences for a few papers each when, if it was a traditional conference, you would not have spent the time to travel and attend for the full meeting.

» No missing interesting presentations because of chatting in the foyer or dozing off mid-afternoon.

» One can have presentations available to view at viewers' convenience.

» Visa problems are minimized, if not eliminated.

Disadvantages:

» No personal contact: making new friends, seeing old friends, chatting outside the meeting rooms or in front of the poster. Fewer sparks of enlightenment.

» Students and Young Professionals do not have the opportunity to meet in person, and thus be inspired by, leaders in the field.

» No social events such as a conference dinner and receptions.

» Commercial exhibits are very different. One cannot see the products any better than a photograph on the datasheet.

» Time zone issues. Around 1–3 pm GMT is the only time in the day when no continent is in the middle of the night.

» Discussions arising from presented papers are difficult.

» No body language or even facial expression to read.

VIRTUAL CONFERENCES

Some things will not change. You will be invited to submit papers or abstracts for consideration to be included in the program. To attend the conference, you will need to register and there will be a registration fee but likely it will be lower than it used to be. There is no reason to change the publication of either conference proceedings or selected papers in one of the *Transactions*. There will be organizing and program committees. The local arrangements committee will likely become the IT committee.

What will change is everything around the old traditional meeting. One opportunity for the presentation of papers is to hold actual fixed-time virtual sessions either with live or recorded presentations. One can also have the fixed-time sessions just for the plenary sessions and have the other papers with recorded presentations generally available during the duration of the meeting and perhaps for a time following the meeting. Each paper will ideally have its own chat box for discussion and the authors will be obliged to respond to points raised and questions from attendees. Ideally there will be a way to register so that one would be alerted when there is a new entry in the chat box. In addition, the email address of the authors could be available for later use. Can one also have a live chat option at an agreed time to replace the meeting outside the presentation room?

The social side of traditional conferences is harder to replace effectively in a virtual world. Perhaps my age is showing here but one of the aspects of a live meeting is the unexpected connections one can make, sometimes well into a conversation. It is not just with people you know but also others in your technical field. I make a point of going up to a group or person who is alone and introducing myself and joining in the conversation. How does one virtually replace this and the facial expression or body language? Granted there is the possibility of a video chat in real-time but that may not be reasonable for some because they have poor Internet service. Perhaps the greatest loss here is the loss of the student just entering the field who will not have the opportunity to meet the leaders, the famous researchers in the field, who so far, they have only read about. Thus they miss gaining very valuable connections, excitement and inspiration.

Tutorials and workshops can and are being run as virtual events but, of course, again the hands-on practical and the one-on-one tuition would be very different and again the time-zone issues need to be addressed perhaps by running the event more than once at different times.

Exhibits are also set for a significant change. Traditionally the sales and engineering team would have the items for the booth shipped to the conference, perhaps with customs issues and they would arrive in time to set things up. Then they would be on the booth either talking to attendees, or trying to engage those who walk by or, worst to my mind, sitting at a table working on their phone or laptop oblivious of the attendees they really came to meet. Then, when it is all over, pack up the items and arrange the shipping back to base.

The virtual exhibit can have many components, including perhaps a meeting room and a presentation recorded ready for those interested to click on. One could imagine a web page or two and a click to a live sales engineer chat. The sales engineer would be sitting at his work desk in the office at the promised times and working when a window would pop up as an attendee has a question or wants a discussion.

Finally, there is the information and membership desk. My interest is the membership desk and what that will look like. Perhaps it is much like the exhibit discussed above with a roster of volunteers ready to talk about IEEE and NPSS activities and membership.

In the past, the conference chairperson and the organizing committee had to choose a location, negotiate hotel contracts with MCE help and deal with all the other suppliers. With a virtual conference, they have to choose and set up a virtual conference package, deciding on the facilities or the package to use and set them up with attractive graphics and a logical flow for the attendees. Also, technical support will be needed from the start of the arrangements right through to the end of the meeting and this might be hired professional support for the larger meetings. This virtual conference package will have to include or be interfaced to the registration system and the paper submission, selection and program system. The budget and financial system are generally separate although there are some connections that can be managed by hand.

THE FUTURE

I believe that there will be a pressure for in-person meetings to resume once the pandemic is tamed and travel is open and accepted as safe by all. However, with the experience of virtual connections, perhaps there will also be a new virtual component to traditional conferences. This could range from the expensive choice of having television cameras with operators in the back of the room to just capturing the projector video and sound as a video file or a PowerPoint file expanded at the live presentation with audio and slide changes embedded.

ISSUES

Presenters will have to agree with whatever method is used for recording the presentations and the use that will be made of that file.

Presentations will have to be protected somehow against recording and posting on a pirate site. (I recall Bill Gates saying many years ago that the Chinese market is saturated with a single software license sale.) It is not that one wants to limit distribution but rather there are expenses to be paid and the cost should be distributed fairly.

One assumes that everyone enjoys the Internet quality that one is personally used to. However, many regions and countries have poor Internet access and thus one cannot rely on videos being displayed smoothly and chats being natural. There have to be options for involvement that take poor Internet connections into account.

Finally, IEEE MCE is an amazing organization that has been working hard to provide organizers with advice and help on all conferences and meetings, not just virtual ones. I believe that the experience and knowledge that it gains now by implementing, of necessity, fully virtual interactions, will have lasting value. Some virtual aspects will enhance future in-person meetings which will be able to combine the best of both worlds. IEEE MCE can be found at https://ieeemce.org/ and information on organizing virtual events can be found at https://ieeemce.org/introduction-to-ieee-virtual-events/

We would like your opinion on what a virtual conference should be. Send us your ideas, and share your positive and negative experiences so NPSS can produce the best possible virtual conferences for our members. Send mail to me at the E-mail address below. We are eager to hear from you!

Thank you to Vesna Sossi and Susanne Kuehn for reviewing the draft and their excellent suggestions for changes.

Peter Clout can be reached by E-mail at p.clout@ieee.org

Susanne Kuehn, NPSS Conferences Chair, compiled the table above. She can be reached by E-mail at susanne.kuehn@cern.ch.

Susanne Kuehn
NPSS Conferences Chair

CONFERENCES AT A GLANCE

Start	End	Website	City	Sponsorship	Conference Type
REAL TIME CONFERENCE					
12-Oct-2020	18-Oct-2020	indico.cern.ch/e/rt2020	Quy Nhon, Vietnam	S	Virtual
INTERNATIONAL CONFERENCE ON PLASMA SCIENCE					
6-Dec-2020	10-Dec-2020	https://icops2020.org/public.asp?page=home.html	Singapore	S	Virtual
NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE					
1-Dec-2020		www.nsrec.com	Santa Fe, NM	S	Virtual
21TH INTERNATIONAL SYMPOSIUM ON HIGH CURRENT APPLICATIONS					
20-Sep-2020	24-Sep-2020	http://efre2020.hcei.tsc.ru/	Tomsk, Russia	Requested TCS	Virtual
NUCLEAR SCIENCE SYMPOSIUM MEDICAL IMAGING CONFERENCE					
31-Oct-2020	7-Nov-2020	www.nss-mic.org/2020	Boston, US	S	Virtual
RADIATION AND ITS EFFECTS ON COMPONENTS AND SYSTEMS					
New Dates	New Dates	radecs2020.org	Vannes, France	TSC	Virtual+Webinar

FILTER TIP

There are only two kinds of people who fail: Those who listen to nobody and ... those who listen to everybody.

Thomas M. Beshere Jr.

THE INVISIBLE MEDIOCRITY

Blame is most readily averted by being so much like everybody else that one passes unnoticed.

John Dewey

BUT SCAVENGERS CAN PROSPER

Things may come to those who wait ... but only the things left by those who hustle.

Abraham Lincoln

AND VICE-VERSA

A great many people mistake opinions for thought.

Herbert Victor Prochnow

SO, WHO CARES?

My sad conviction is that people can only agree about what they are not really interested in.

Bertrand Russell

TWO TOO MANY?

The factory of the future will have only two employees, a man and a dog. The man will be there to feed the dog. The dog will be there to stop the man from touching the equipment.

Warren Bennis

NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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NSREC 2020 Going Virtual

NSREC announced July 1, out of concern for the health and safety of all participants, the Conference, which had been postponed from July 2020 to December 2020, is transitioning to a virtual event.

The timeframe for the virtual event will be December 2020. The 2020 Committee will develop the new Virtual NSREC 2020 schedule for technical presentations, posters, workshop and Industrial Exhibits by September 1, 2020. Technical Registration will open thereafter. Please view HYPERLINK "about:blank" www.nsrec.com for more details.

NSREC LAUNCHES SOCIAL MEDIA

NSREC is proud to announce the launch of our new social media profiles July 1, 2020, sharing information and updates related to the conference and the field of radiation effects. Please take a moment to Like or Follow our pages on Facebook, Instagram, LinkedIn and Twitter which you can find by searching "IEEE NSREC". We encourage you to engage with other conference attendees by sharing your photos, stories, and memories using our official conference hashtag: #nsrec2020

STILL DISAPPOINTED?

I believe our Heavenly Father invented man because he was disappointed in the monkey.

Mark Twain

BUT IT'S LIVE!

The vast wasteland of TV is not interested in producing a better mousetrap but in producing a worse mouse.

Laurence C. Coughlin

TOO OFTEN EXERCISED

Oh, it is excellent to have a giant's strength; but is tyrannous to use it like a giant.

William Shakespeare

Real Time Conference Goes Virtual

Martin Grossmann
CANPS Chair

In view of the current worldwide situation, the CANPS committee decided that we will transform the 2020 Real Time Conference into a virtual event in October 2020.

The current concept plans for a five-day conference, with three hours of conference time each day. The day will start with a keynote talk, followed by some oral presentations. These presentations will be live, with a worldwide audience listening and with an interactive Q&A session at the end. Each day will finish with a 40-minute poster session. Each poster will have its own virtual room, and the audience can "walk" from room to room and discuss the papers with the authors.

Contributions that have been accepted for the originally planned on-site conference in April 2020 will automatically enter the program of the virtual event. A few additional contributions may be accepted. All contributions may be submitted for publication in a special issue of TNS.

For detailed information please check out our website https://indico.cern.ch/e/RT2020

Even if we are all disappointed about missing a "real" conference this year we are confident that this first virtual Real Time Conference will be a completely valid event on its own, bringing together our community in a new and innovative way. We are now already looking forward to a 'real' Real Time Conference 2022 at the site foreseen for 2020, the splendid ICISE conference center in Quy Nhon, Vietnam.

Martin Grossmann, Chair of the CANPS Technical Committee, sponsor of the Real Time conferences, can be reached by E-mail at martin.grossmann@psi.ch.

2021 IEEE NSREC is Planning For Ottawa, Canada

Teresa Farris
Vice Chair, Publicity, Radiation Effects

Janet Barth
Chair, REC

The IEEE Nuclear and Space Radiation Effects Conference will be held July 19th–23rd, 2021, in Ottawa, Canada at the Westin and Shaw Center. The conference will feature a Technical Program consisting of ten sessions of contributed papers (both oral and poster) that describe the latest observations and research results in radiation effects, an up-to-date Short Course offered on July 19th, a Radiation Effects Data Workshop, and an Industrial Exhibit.

The Westin Ottawa with the adjoining Shaw Centre is the location for NSREC 2021. Ottawa is Canada's capital, a dynamic showcase city of more than one million people. Located in Ontario at the Quebec border, it's a place where you'll hear English and French spoken in the streets; where you can discover Canada's proud heritage at impressive sites and famous landmarks, including the Rideau Canal, a UNESCO World Heritage Site. It's a city steeped in culture, with world-class museums and galleries displaying stunning national collections and special exhibitions from Canada and around the world. This city is a uniquely beautiful place: an urban centre on the edge of nature where you can enjoy the great outdoors either just outside your hotel room or nearby in the surrounding countryside. There's an easy cosmopolitan vibe here, and Ottawa is known for being both welcoming and walkable. Explore the distinctive local neighbourhoods, including the historic ByWard Market: by day this area boasts a bustling farmers' market and chic shops, by night it hums with activity at the restaurants, pubs, and nightclubs.

This is also a city that enjoys the finer things in life, with a culinary community that's earning wide acclaim, unique boutiques and shopping districts, a lively local music and art scene, and always exciting nightlife. The Westin Ottawa is ideally located right downtown, mere steps away from the historic sites and landmarks, and only a short drive from Ottawa's international airport.

This is Ottawa, Canada's capital. Please join us for NSREC 2021 and experience it for yourself!

TECHNICAL PROGRAM

Chaired by Brian Sierawski, Vanderbilt University, papers to be presented at this meeting will describe the effects of space, terrestrial, or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits. The conference will be attended by engineers, scientists, and managers who are concerned with radiation effects.

The conference committee is soliciting papers describing significant new findings in the following or related areas:

Basic Mechanisms of Radiation Effects in Electronic Materials and Devices

- Single Event Charge Collection Phenomena and Mechanisms
- Radiation Transport, Energy Deposition and Dosimetry
- Ionizing Radiation Effects
- Materials and Device Effects
- Displacement Damage
- Processing-Induced Radiation Effects

Radiation Effects on Electronic and Photonic Devices and Circuits

- Single Event Effects
- MOS, Bipolar and Advanced Technologies
- Isolation Technologies, such as SOI and SOS
- Optoelectronic and Optical Devices and Systems
- Methods for Hardened Design and Manufacturing
- Modeling of Devices, Circuits and Systems
- Cryogenic or High Temperature Effects
- Novel Device Structures, such as MEMS and Nanotechnologies
- Techniques for Hardening Circuits and Systems

Space, Atmospheric, and Terrestrial Radiation Effects

- Characterization and Modeling of Radiation Environments
- Space Weather Events and Effects
- Spacecraft Charging
- Predicting and Verifying Soft Error Rates (SER)

Hardness Assurance Technology and Testing

- New Modeling and Testing Techniques, Guidelines and Hardness Assurance Methodology
- Unique Radiation Exposure Facilities or Novel Instrumentation Methods
- Dosimetry

New Developments of Interest to the Radiation Effects Community

RADIATION EFFECTS DATA WORKSHOP

The Radiation Effects Data Workshop is a forum for papers on radiation effects data on electronic devices and systems. Workshop papers are intended to provide radiation response data to scientists and engineers who use electronic devices in a radiation environment, and for designers of radiation-hardened or radiation-tolerant systems. Papers describing new simulation facilities are also welcomed.

PAPER SUBMITTAL

Information on the submission of summaries to the 2021 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries is February 5th, 2021.

SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 19th. The short course is being organized by Marta Bagatin, Padova University. The course will be of interest both to radiation effects specialists and newcomers to the field.

2021 IEEE NSREC

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INDUSTRIAL EXHIBIT

An Industrial Exhibit will be included as an integral part of the conference and will be chaired by Larisa Milic, EMPC. Exhibitors will include companies or agencies involved in manufacturing electronic devices or systems for applications in space or nuclear environments, modeling and analysis of radiation effects at the device and system level, and radiation testing.

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ANIMMMA 2021

With a spirit of hopefulness and realistic optimism I am delighted, on behalf of ANIMMA Program Committee, to announce to you that the seventh international conference on Advancements in Nuclear Instrumentation Measurement Methods and

Abdallah Lyoussi
ANIMMA General and Program Committee Chair

their Applications ANIMMA 2021 www.animma.com will be held at Clarion Congress Hotel in Prague, Czech Republic, from June 21st to 25th, 2021.

ANIMMA 2021 is the seventh of a series of conferences devoted to endorsing and promoting scientific and technical activities based on nuclear instrumentation and measurements. The main objective of the conference is to unite the various scientific communities not only involved in nuclear instrumentation and measurements, but also in their wide fields of applications such as fundamental physics, nuclear physics, nuclear medicine, medical and environmental sciences. The conference is all about getting scientists, engineers, students and the industry to meet, exchange cultures and identify new scientific and technical prospects to help overcome both current and future unresolved issues. The ANIMMA conference provides scientists and engineers with a veritable opportunity to compare their latest research and development in different areas : physics, fission and fusion energy, nuclear fuel cycle, safety, security, future nuclear energies (GEN III+, GENIV, SMRs, ITER…), space sciences and technology, medical and environmental sciences.

The ANIMMA 2021 topics, slightly updated, include instrumentation and measurement for:

» Fundamental Physics

» Space Sciences and Technology

» Fusion Diagnostics and Technology

» Research Reactors and Particle Accelerators

» Nuclear Power Reactor Monitoring and Control

» Severe Accident Monitoring

» Nuclear Fuel Cycle, Safeguards and Homeland Security

» Decommissioning, Dismantling and Remote Handling

» Environmental and Medical Sciences

» Education, Training and Outreach

Authors are invited to submit abstracts on any of the above topics, before November 2nd 2020.

Abstract Submission Guidelines, important dates and deadlines and all others details are available on the conference web site: www.animma.com

For any other specific information concerning the Call for Abstracts campaign or the conference organization in general you can contact conference @animma.com

We are looking forward to welcoming you in Prague.

Abdallah Lyoussi, ANIMMA General and Program Committee Chair, can be reached by E-mail at abdallah.lyoussi@cea.fr.

Download the ANIMMMA 2021 flyer : https://indico.utef.cvut.cz/event/23/attachments/152/160/Flyer_Animma2021_final.pdf

President's Report

Ron Schrimpf
IEEE NPSS President

Since the last newsletter, there have been many changes in activities associated with NPSS, particularly associated with conferences and travel. The last business trip I took was to the NPSS AdCom annual retreat and meeting that took place in Santa Fe in early March. The IEEE Technical Activities Board meeting was held in late June, but it became a virtual meeting. As I write this article, the summer NPSS AdCom meeting is approaching and it also will be a virtual meeting. Like many of you, I have been working from home, with my days filled by Zoom, WebEx, and Teams meetings.

The NPSS has been working to adapt to changes produced by the corona virus. Most of our conferences for 2020 have been postponed, canceled, or transitioned to virtual events. We have worked closely with the IEEE to determine the best approach for each conference. In particular, the Event Emergency Response Team (EERT) at IEEE has been very helpful in working with conference organizers to evaluate options and make alternate plans. IEEE conferences and meetings vary significantly in size, style, history, and attendees, so there is no single approach that works best. There are a number of trends that have been identified, however. Some of these changes present great opportunities for us to increase the number of people we serve, and the value provided to participants.

For some IEEE conferences that have been held so far in 2020, the change to virtual has resulted in dramatic increases in attendance. The demand for virtual conferences appears strong from regular attendees, but particularly from first-time attendees. This should allow us to reach additional participants who are interested in the technical content of our conferences, but who may not be able to travel to a physical conference. Most virtual conferences have made use of recorded presentations, but synchronous options also are available. There are a variety of platforms available for organizing the conferences, depending on the number of participants and the style of the presentations. It appears likely that there will be a virtual component to most conferences in the future, either purely virtual or a hybrid virtual/in-person event.

One of the main challenges of moving to virtual conferences is the possible loss of personal interaction. Many of us value this aspect of conference attendance very highly and look forward to seeing friends and collaborators each year at our annual events. Conference attendance has been a great way to build our professional networks. There are virtual options for breakout rooms and informal interactions, but it is not yet clear how these might complement in-person meetings. We will be learning more about these issues as the situation develops.

Although the short-term situation is challenging, it is exciting to consider the possibilities for increasing the value of NPSS to our technical community and expanding the number of people who are part of the community.

As always, I welcome your feedback.

Ron Schrimpf, IEEE NPSS President, can be reached by E-mail at ron.schrimpf@vanderbilt.edu

TOO OFTEN EXERCISED
Oh, it is excellent to have a giant's strength; but is tyrannous to use it like a giant.
William Shakespeare

Draft IEEE Nuclear and Plasma Sciences Society (NPSS) Strategic Plan

Steve Meikle
IEEE NPSS Vice President

Most IEEE Societies and Technical Councils have a five-year strategic plan which aligns with the strategic plans of IEEE and Technical Activities (the Technical Activities Board governs all 39 Societies and seven Councils of IEEE). You can find the IEEE strategic plan at https://www.ieee.org/about/ieee-strategic-plan.html and the TAB strategic plan at https://ta.ieee.org/images/files/TA-StrategicPlan.pdf. Our Nuclear and Plasma Sciences Society (NPSS) is one of the few societies that currently does not have a written strategic plan.

In the most recent society review in February 2019, the review committee noted that, despite the lack of a strategic plan, the Society takes a very strategic approach to operations and it has a comprehensive Policies and Operations Manual. Nevertheless, it recommended that we develop a written strategic plan. Consequently, over the last 18 months AdCom has developed a five-year strategic plan and we welcome feedback from our membership on the draft vision, mission statement and strategic goals:

Vision:

NPSS will be the leading nuclear and plasma science community.

Mission:

To provide opportunities for scientific exchange and career development, and to promote a diverse and inclusive community of nuclear and plasma scientists and engineers.

Strategic Goals:

1. To offer high-quality technical conferences, community engagement, networking and outreach activities that meet the educational, research and professional development needs of our community.
2. To provide publications that are among the highest ranked journals in their respective fields.
3. To encourage growth of a diverse and inclusive community of volunteers, with a particular focus on internationalization and increasing the participation and leadership opportunities for underrepresented groups.
4. To undertake impactful development activities that foster technological innovation, with priority given to activities related to the NPSS fields of interest, and to sustainability for recurring activities.

The draft strategic goals emerged over several meetings of AdCom throughout 2019 and 2020 following a thorough analysis of our strengths, weaknesses, threats and opportunities (SWOT). These goals reflect the priorities agreed upon by the representatives of all eight technical committees that make up NPSS, as well as our appointed functional committees and liaisons. We believe they will position NPSS to realize its vision of being the leading international nuclear and plasma science community.

We now seek your feedback on the draft strategic plan which will be incorporated into consideration of the final strategic plan at the November AdCom meeting. Once formalised by approval of AdCom, the strategic plan will guide our decision making over the next five years. It will subsequently be reviewed and updated every five years to reflect changing circumstances and priorities.

Please send your comments to your AdCom representative or by E-mail to steven.meikle@sydney.edu.au by 23rd October 2020.

Steven Meikle
Vice President, NPSS

YOU CAN LEAD A HORSE TO WATER

Don't worry about people stealing your ideas. If your ideas are any good, you'll have to ram them down people's throats.

Howard Aiken

NO IMAGINATION

The saddest thing I can imagine is to get used to luxury,

Charlie Chaplin

Secretary's Report

Albe Larsen
IEEE NPSS Secretary and Newsletter Editor

AdCom held its first virtual meeting on July 10th and 11th, preceded on July 9th by Finance and Communications Committee meetings. To accommodate time zones across the globe, meetings were scheduled for two hours daily, and only essential business was brought forward. However, committee reports were posted ahead of the meeting to allow people to be prepared in case there were questions or items to vote on.

It has also been decided that our AdCom meetings will remain virtual at least through our July 2021 meeting. The state of the pandemic, widespread availability of vaccines and medications (or not) will determine meetings beyond that. However, I think it was pretty well agreed that this first effort was quite successful.

Both our Treasurer and our President note that for fully sponsored NPSS conferences now on the books it is important to work with MCE to make any changes BEFORE November, 2020. After that there will no longer be coverage in IEEE's policy for cancellations or changes due to the Covid-19 pandemic. Conference treasurers need to submit new budgets to Ralf Engels and Ron Keyser, respectively the NPSS Treasurer and Assistant Treasurer in a timely way. MCE's Emergency Event Response team is also available for help and guidance at eert.ieee.org. Conferences of the future are unlikely to return to fully in-person events. Virtual conferences held so far have had significant attendance increases—up to five-fold in some instances. Registration fee guidance is 60 to 75% of in-person fees.

While we are managing financially at present, 2021 is expected to be a challenge with possible changes to publications and more Open Access papers as well as uncertainty about 2021 conferences. All 2020 conferences have either converted to virtual format or have been canceled. Plans for outlying years are being developed and, in some cases, the 2020 venue will be rescheduled for a later date.

Our technical committees and the Transnational Committee have been seeking candidates for elected seats (four-year term) on AdCom (Plasma Science, Particle Accelerator Science and Technology, Nuclear Medical and Imaging Sciences and Transnational Functional Committee) as well as for a number of technical committee Executive or Steering committees. Your ballots should have arrived. Voting is important, so please return them electronically or by mail before the deadline. Concerns are, of course, how to handle meetings for 2020 and 2021, with the hope that by 2022 we will be able to have in-person or hybrid meetings safely.

Functional committees are also looking at ways to do their work in this new environment. There are no needs for giveaways at conferences; there are no membership desks; chapters can have Zoom meetings, but there are no Instrumentation or other schools for now. Distinguished Lectures can be given virtually and some have been, but something is lost from the in-person experience unless there is a good mechanism for interactive Q&A with the speaker.

See LIAISON REPORTS for updates on IEEE Smart Village.

ADCOM ACTIONS:

» SORMA WEST Full Sponsorship: The Radiation Instrumentation Steering Committee moves that 2021 IEEE SORMA West (rescheduled from 2020 IEEE SORMA West due to COVID19 pandemic), be a fully sponsored conference of NPSS. Approved (19 Y, 2 A, 0 N).

» The Radiation Instrumentation Steering Committee moves that SCINT 2021 that will be held in Santa Fe, NM become a Technically Co-Sponsored conference of NPSS under the auspices of the Radiation Instrumentation Technical Committee. Approved (21 Y, 0 N, 1 A).

» The Radiation Instrumentation Steering Committee moves that NPSS will pay the $1450 MCE administrative fees for the 2021 SCINT conference. Approved (22 Y, 0 N, 0 A)

» Motions from the Finance Committee

- NPSS FinCom (expanded) recommends approval of the ranking for budgeting available 2021 initiative funding, drawing a line at the limit of available funding. Approved (20 Y, 1 N, 1 A)
- NPSS FinCom (expanded) recommends approval of the use of the remaining $137k of budgeted 2020 initiative funds for NSREC Publicity & Communication Initiative ($15k) and Aravalli Six Village Project ($122k). Approved (18 Y, 1 N, 3 A)
- NPSS FinCom (expanded) recommends approval of the use of $28k of the $350k of the 50% of 2019 Operational Surplus funds to make the Aravalli Six Village Project whole to the requested $150k. Approved (15 Y, 3 N, 4 A)

AdCom will next meet in November 2020 at the end of the virtual NSS-MIC conference, originally scheduled to be held in Boston, MA.

Albe Larsen, IEEE NPSS Secretary and Newsletter Editor, can be reached by E-mail at a.m.larsen@ieee.org.

Technical Committees

Martin Nieto-Perez
Chair, FTC

David Ruzic
2020 NPSS Fusion Award

FUSION TECHNOLOGY

The IEEE Nuclear and Plasma Science Society Fusion Technology Standing Committee is happy to announce Professor David Ruzic as the recipient of the IEEE NPSS 2020 Fusion Technology Award. This award has been bestowed in recognition of Dr. Ruzic's extensive research into plasma-material interactions and for his leadership at the University of Illinois that established the Center for Plasma Material Interactions and for promoting international symposia to study liquid metals for reactor walls. This also recognizes Dr. Ruzic's research in the use of lithium for divertors and Tokamak walls. Experimental tests of the self flowing Lithium design are being used on large scale machines now. In addition to his contributions to fusion science and technology, Professor Ruzic also has made important contributions to the field of plasma processing in the microelectronics manufacturing industry.

The award will be presented at the conference banquet during the 2020 edition of the Symposium on Fusion Engineering (SOFE), to be held in Denver, Colorado from May 31st to June 4th, 2021

The Fusion Technology Committee is now considering a change in the Technology Award for 2021 to encourage consideration for groundbreaking research. Keep tuned to hear developments.

Continued on PAGE 6

Technical Committees

Continued from PAGE 5

Humrickhouse selected for DOE Early Career Research Grant.

Paul Humrickhouse
DOE Early Career Research Grant Recipient

Dr. Paul Humrickhouse, a member of the IEEE NPSS Fusion Technology Committee is one of 76 scientists from around the nation—50 from universities and 26 from national laboratories—to be granted a DOE Early Career grant. Dr. Humrickhouse received his doctorate in nuclear engineering and engineering physics from the University of Wisconsin in 2009. He came to the Idaho National Laboratory (INL) as a postdoctoral researcher that year, then joined the staff. He is Idaho National Laboratory's Fusion Safety Program lead, where his research has been focused on computational modeling and analysis of fission and fusion systems. Thanks to this grant, Dr. Humrickhouse will explore the use of Multiphysics Object-Oriented Simulation Environment (MOOSE)—an open-source simulation platform developed at INL—for getting insights into the influence of high magnetic fields and structural materials on tritium transport by coupling to other physics models and simulation tools. This should lead to safety evaluations necessary for the realization of fusion energy.

Under the Early Career program, run by the DOE Office of Science for the past 11 years, selected researchers receive grants of at least $500,000 per year over a period of five years, intended to provide support to exceptional researchers during their crucial early career years when many do their most formative and groundbreaking work.

Martin Nieto-Perez, Chair of the Fusion Technology Standing Committee, can be reached by E-mail at nieto@ieee.org.

PLASMA SCIENCE AND APPLICATIONS (PSAC) AWARD NOMINATIONS

David Abe
PSAC Awards Chair

Nominations are currently being accepted for the 2021 Plasma Science and Applications Award sponsored by the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS). The purpose of the award is to recognize individuals who have made outstanding contributions to the field of plasma science through the impact of their research, development of new applications, contributions over a technical or pedagogical career, or through professional service to the IEEE and plasma science community. The $3000 cash award and plaque will be presented at the 2021 International Conference on Plasma Science (ICOPS) at Harveys Lake Tahoe, Nevada (USA). Nomination forms are available electronically at https://ieee-npss.org/technical-committees/plasma-science-and-applications/ and must be submitted by October 01, 2020. Additional information can be obtained from David Abe, PSAC ExCom Awards Subcommittee Chair by email at david.abe@ieee.org.

Igor Alexeff Outstanding Student in Plasma Science Award

Nominations are currently being accepted for the 2021 Igor Alexeff Outstanding Student in Plasma Science Award sponsored by the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS). The purpose of the award is to recognize outstanding student contributions to the field of plasma science and technology. The award is open to any full time undergraduate or graduate university student in plasma science; the nominees will be judged based on their research contributions, their educational accomplishments, and the quality and significance of their publications and patents. The $2000 cash award and Certificate will be presented at the 2021 International Conference on Plasma Science (ICOPS) at Harveys Lake Tahoe, Nevada (USA). Nomination forms are available electronically at https://ieee-npss.org/technical-committees/plasma-science-and-applications/ and must be submitted by October 01, 2020.

David Abe, Awards Subcommittee Chair for PSAC ExCom can be reached by E-mail at david.abe@ieee.org.

RADIATION INSTRUMENTATION STEERING COMMITTEE

I wrote in the June Newsletter that I was hoping that—when reading the update from RISC—the pandemic of the SARS-CoV-2 virus has ended. Unfortunately—at the time of writing, July 2020—this is not the case and we all are still living in a different way and the pandemic has diffused even further I definitely hope you all and your families are safe and not impacted too much by the virus. We are all aware that these are challenging times for each of us. Nothing will be the same, but we are all doing our best to carry on our activities with renewed enthusiasm and creativity and we are all busier than previously to accomplish our tasks.

The Radiation Instrumentation Steering Committee met on July 3rd, 2020 via teleconference to plan future activities and to assess the first part of the year. The new Members-At-Large for the term 2020—2022 are well settled in the Committee.

As you read this newsletter, you should be working on your presentations for the 2020 IEEE Nuclear Science Symposium and Medical Imaging Conference. Lorenzo Fabris is the General Chair and Sara Pozzi is the NSS Program Chair and Stefan Ritt is her Deputy. They have prepared an outstanding program for you all.

In addition, as you read this newsletter, you should have already cast your vote for the 2021 Members-At-Large Elections (deadline September 14th , 2020, 4:00 pm Eastern Time). For the five RISC Member-At-Large vacancies for the term 2021-2023, we had nine candidates, both newcomers to this role and those who have already served in the past: two women, three nominations from the U.S., four from Europe, one from Australia and one from Argentina. It is a good pool showing the opening of RISC towards diversity and inclusion. For the future we would like to do even better, so start now to think of candidates for the next term and send me an E-mail to have more information.

The Committee for the 2021 IEEE Nuclear Science Symposium and Medical Imaging Conference in Yokohama (Japan) is already working to prepare another amazing edition of our conference. Ikuo Kanno is the General Chair and Hiroyuki Takahashi is the NSS Program Chair and Craig Woody his Deputy. The organization for the 2022 IEEE Nuclear Science Symposium and Medical Imaging Conference in Milan (Italy) has already started and I have the honor and responsibility of being the General Chair.

We have proposed and NPSS AdCom approved IEEE 2021 SORMA West, John Valentine, General Chair, be a fully financially sponsored conference and ANIMMA 2021 in Prague (Czech Republic), Abdallah Lyoussi, General Chair, and SCINT 2021, Zhehui (Jeph) Wang General Chair, in Santa Fe (New Mexico, U.S.) be technically cosponsored conferences. Stay tuned for updated news in the December newsletter and on the respective websites! The Radiation Instrumentation Technical Committee is active and producing new ideas, results, measurements, instrumentation, electronics despite the present situation…

Chiara Guazzoni
RISC Chair

Chiara Guazzoni, RISC Chair, can be reached at the Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano and with INFN—Sezione di Milano, P.za Leonardo da Vinci, 32—20133 Milano—Italy, Phone: +39 02 2399 6147; Fax: +39 02 2399 3699; E-mail: Chiara.Guazzoni@mi.infn.it.

Functional Committees

AWARDS

2020 Plasma Science and Applications Award Winner

Monica Blank
2020 PSAC Award recipient

Dr. Monica Blank has been selected as the recipient of the 2020 Plasma Science and Applications (PSAC) Award for her outstanding technical contributions to the development of high-power, high-frequency gyrotron amplifier and oscillator sources for spectroscopy, radar, fusion, and industrial applications. Dr. Blank began her professional career at the Naval Research Laboratory (NRL) in Washington D.C. where she was responsible for the design and demonstration of high-power millimeter-wave vacuum electronic devices for radar applications. Since 1999, she has worked as a member of the gyrotron team at Communications and Power Industries (formerly Varian) where she continues her work on high-frequency gyrotron amplifiers and oscillators. Dr. Blank has received several professional awards, including an Alan Berman Publication Award (NRL) in 1998, the Robert L. Woods Award for Excellence in Vacuum Electronics Technology in 1999, and an R&D 100 Award in 2015.

In addition to her professional activities, Dr. Blank is an Editor for the IEEE *Transactions on Electron Devices*. She has also previously served several terms on the IEEE Plasma Science and Applications Executive Committee, one term on the IEEE Nuclear and Plasma Sciences Society Administrative Committee and was a Senior Editor for the IEEE *Transactions on Plasma Science* from 2009 - 2015.

David Abe, PSAC Awards Chair, can be reached by E-mail at david.abe@darpa.mil and Monica Blank can be reached at Monica.Blank@cpii.com

NUCLEAR AND SPACE RADIATION EFFECTS

Nominations for 2021 Awards

Nominations are due January 29th, 2021 for awards that will be presented at the IEEE NSREC 2021 Conference, July 19th–21st in Ottawa, Canada.

Radiation Effects Award Nominations

Nominations are currently being accepted for the 2021 IEEE Nuclear and Plasma Sciences Society (NPSS) Radiation Effects Award. The purpose of the award is to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community. The $3000 cash award and plaque will be presented at NSREC Ottawa, Canada. Forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Kyle Miller, Senior Member-at-Large, Ball Aerospace, for the Radiation Effects Steering Group. Kyle can be reached at kbmiller@ball.com.

Radiation Effects Early Achievement Award Nominations

Nominations are currently being accepted for the 2021 Radiation Effects Early Achievement Award. The purpose of this award is to recognize an individual early in his or her career whose technical contributions and leadership have had a significant impact on the field of radiation effects. The $1500 cash award and plaque will be presented at NSREC Ottawa, Canada. Forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Kyle Miller, Senior Member-at-Large, Ball Aerospace, for the Radiation Effects Steering Group. Kyle can be reached at kbmiller@ball.com.

Paul Phelps Continuing Education Grant Nominations

Nominations are currently being accepted for the 2021 Paul Phelps Continuing Education Grant. The purpose of the grant is to promote continuing education (attendance at the 2021 NSREC Short Course) and encourage membership in NPSS. Outstanding members of NPSS who are either Student Members, Postdoctoral Fellows or Research Associates, or unemployed members needing assistance in changing career direction can be nominated for the award. The actual amount of the

grant will be determined prior to the 2021 NSREC in Ottawa, Canada. Funds are to be used towards covering travel costs to attend the NSREC Short Course. The grant also provides complimentary short course registration.

Nomination forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Michael Campola, Member-at-Large, NASA GSFC, for the Radiation Effects Steering Group. Michael can be reached at Campola, michael.j.campola@nasa.gov.

FELLOW EVALUATION COMMITTEE

Elevation to IEEE Fellow Status—Class of 2022

Alberto Del Guerra
Chair, Fellow Evaluation Committee

The evaluation by the NPS Fellow Evaluation Committee (NPS FEC) for the Fellow Class of 2021 was completed on 15 June 2020 and has been passed to the IEEE Fellow Committee that will examine the NPSS nominees with respect to all the other nominees submitted by the other Societies and Technical Councils. The results will be published by November.

It is now time to start the search for new Fellow nominees for the class of 2022, whose nomination should be submitted by 1 March 2021 at the latest. An IEEE Senior or Life Senior Member in good standing and who has been an IEEE member for the preceding five years or before 1 January of the year of elevation may be nominated for Fellow grade based on technical excellence and the demonstration of the highest standards of professional ethics and scientific integrity.

A Nominee could be nominated in one of the following four categories:

» Application Engineer/Practitioner (AE/P)

» Educator (EDU)

» Research Engineer/Scientist (RE/S)

» Technical Leader (TL)

The total number of IEEE Fellows selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership (~300 selected Fellows/year for the entire IEEE, and on average three selected Fellow/year for NPSS).

Hence it is a very competitive process and the nominator has the responsibility of presenting the case with the best scenario and according to the indications/recommendations of IEEE.

With the purpose of stimulating this process, I would like to summarize here the most important information/recommendations for the nominator to use to prepare a successful nomination:

» The nominator does not need to be an IEEE Fellow, or even an IEEE member.

» The status of Fellow is not given for one's career, but for specific scientific/technical achievements.

» Select the right category for the nominee.

» Adhere to the clear indications as suggested by the official IEEE documents: *"Nominees must have verifiable evidence of specific and outstanding individual technical contribution and their impact," where Elevation to Fellow grade* **is for specific one or two important contributions**—Not for a body of work. The **Impact** must be already evident, not potential.

» The endorsements (up to three) are not mandatory but could be very important. The Endorsers do not need to be Fellows. Scientific activities covered by proprietary or military or security reasons that are not available to the general public, could be supported well by specific endorsers' presentation.

» References (from three to five) are mandatory and should be Fellows (except for nominees of Region 9, when they may also be Senior Members). The references are only visible to the IEEE Fellow committee, not to the NPS FEC.

» The elevation to Fellow is on competitive basis both intra-NPS society and inter-IEEE. If the nominee does not get elevated to Fellow in one year, he/she should/could try again the following year, preferably with a stronger nomination package.

» Before preparing the nomination, the Nominator should read very carefully the relative IEEE manuals at the website https://www.ieee.org/membership/fellows/ and in particular the IEEE document **Recommendation Guide:** ***How to Write an Effective Nomination*** (December 2018 or more recent version if available).

» Last, but not least, do not forget that the Fellow status is an important recognition for the nominee and a great asset to our Society

For NPSS Fellow Nominators and Nominees, the FACT committee, chaired by Jane Lehr, is available to provide expert help in preparing and reviewing application packets before submittal. Contact Jane at jmlehr@unm.edu.

Alberto Del Guerra, Chair of 2020 NPS Fellow Evaluation Committee, can be reached by E-mail at alberto.del guerra@df.unipi.it.

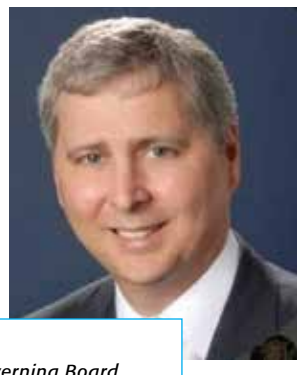
Liaison Reports

Report From IEEE Smart Village (ISVx)

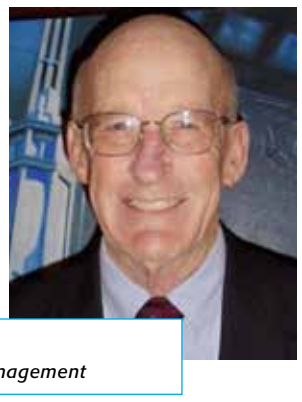
REORGANIZATION

Ten years after its beginning as the Community Solutions Initiative, an offspring of the IEEE Humanitarian Technology Challenge with the UN of 2008-10, and five years after being adopted as a Signature Program of the IEEE Foundation, IEEE Smart Village has undergone a major change in governance and leadership. The major change is formation as an IEEE Technical Community (TC) overseen by a new multi-Society Governing Board (GB) headed by Pedro Ray, Past President of IEEE (2010); immediate past Board Member and Treasurer of IEEE Foundation; and founder and President of Ray Engineers. https://www.linkedin.com/in/pedro-ray-67611162/.

The Governing Board consists of 13 Societies and Councils and includes representative from each plus two reps from the Management Committee (formerly Steering Committee) and two from the ISVx Entrepreneurs in the field (ISVE's). The new label for the TC is ISVx where "x" denotes Next Generation to flag the new design for future growth and inclusiveness of all IEEE technologies.



Pedro Ray
Chair ISVx Governing Board 2020-2022



John Nelson
Chair ISVx Management

The new Chair of the Management Committee (MC, formerly Steering Committee) Is John Nelson, a power engineer with memberships in IES and PES and head of his own company, NEI Engineering, www.NEIengineering.com. In addition to top leadership, subcommittees are being replenished with not only new chairs but also vice chairs and secretaries to provide a succession plan for all positions. John replaces Ray Larsen, lead founder of Community Solution and IEEE Smart Village with Robin Podmore.

The IEEE NPSS Representative on the GB is Jane Lehr, Past President of NPSS, IEEE Fellow, Professor of Electrical Computer Engineering at the University of New Mexico. Many thanks to Jane for stepping up to this challenging next-generation expansion project.

Prof. Jane Lehr
NPSS Rep. to Governing Board 2020-2022

GB MEMBERSHIP:

Societies and Councils joining the GB are:

1. Computer
2. Council on Superconductivity
3. Electron Devices
4. Industrial Applications
5. Industrial Electronics
6. Nuclear and Plasma Sciences
7. Power and Energy
8. Photonics
9. Reliability
10. Robotics and Automation
11. Systems Man and cybernetics
12. Technology and Engineering Management.

Other GB Members are: IEEE Foundation (Pedro Ray), Management Committee (Ed Rezek, John Nelson) and Entrepreneurs [(Monica Labiche Brown (ADP Uganda–Rwanda) and Jude Numfor (REIc Cameroon)]

RECENT SUBCOMMITTEE TASK PROGRESS:

Operations: AM&E:

The Operations Committee under Prof. Alan Mickelson has been funded for an urgent task in collaboration with the Maa Trust in Kenya to produce a standardized AM&E (Assessment, Measurement and Evaluation) protocol that in future will be applied to both existing and all new projects since inception. This is an urgent addition because the existing ISV system tracks progress against milestones and awards tranche payments only during the completion of the construction project, after which data gathering has been based on reports from the field rather than a rigid periodic analysis against the business plan goals used to secure the award. Such a tool will greatly strengthen all projects as they work toward attracting major contracts with investment support. The project has been slowed by the Covid19 lockdown but results are expected by yearend.

Technology: SunBlazer IV (SB IV) and Portable Battery Kits (PBKs):

Two Africa-Built versions of SB IV in Nigeria and Cameroon are in operation and attracting new customers including in Kenya. The modular design is finally coming into its own. The portable battery kits have been field tested in Nigeria and reworked to eliminate issues found. Forty (40) tested units are in final packaging for shipping for more extended testing with customers. The PBK design has been done in France, while assembly is done in New York. The plan is to spin off production to a number of commercial suppliers. We are seeking funding from NPSS to establish similar vendors in India in 2020–2021.

Recent ISVx Entrepreneur Project Progress:

Major expansion awards in process: Despite the restrictions, major progress has been made by our entrepreneurs in Nigeria and Cameroon who continue to to win major Government-agency-funded social investment contracts to electrify hundreds of villages which still need some fractional financial participation from ISVx. Green Village Energy Partners and Darway Coast in Nigeria, and Renewable Energy Innovators in Cameroon comprise three of a total of seven awardees.

ARTICLE Continued on PAGE 8

Liaison Reports

Continued from PAGE 7

Covid Hospital wing installation Shaybis Ltd. Kwara State Nigeria—Tunde Salihu

Covid Response: Another notable event is our project Shaybis Ltd. In Nigeria (Chief Tunde Salihu) recently donated a SunBlazer IV to electrify a wing of a new Covid hospital in Kwara State Nigeria; more units are being ordered for additional hospital wings and medical staff housing.

Recent Budget Restrictions & New Fundraising:

Due to significantly reduced budgets in 2019 and 2020, the latter due to loss of donations since the advent of Covid, new projects continue to be solicited and evaluated but are being held up until more funds come in from internal and external sources. We continue to make every effort to reduce overhead and are going virtual for all foreseeable meetings. We have close to $1M in new applications under review. Both IEEE Foundation and ISVx Funding Development are striving to meet the challenge through IEEE and private grants and donors. We have been unable to support new major projects since early 2019 except for those multiyear projects already launched in 2017-18.

New Donor Opportunities Booklet: We are in process of capturing all new promising projects into a Market Basket or Donor Opportunities Booklet as done in the past, to allow donors to designate gifts to specific projects if they prefer. Due to new members joining ISV from the Southern Hemisphere we expect to see major new applications from them, and expect so see new GB Society members joining subcommittees both to promote new projects and help with fundraising. The opportunities are truly unlimited, but development of new sustainable businesses is a serious undertaking that can easily take a year to assemble the team and develop a demonstrably viable sustainable business plan. With more rigid AM&E requirements to be built into the IEEE Legal Project Agreements the process will take longer so that we have up-front agreements requiring at least annual tracking information well beyond the pilot construction phase.

Major NPSS Award for India Six-Villages Collaboration Project:

At the July 9th–11th 2020 NPSS AdCom meeting the FinCom recommended an award of $150K to join with WHEELS Global Foundation (WGF) and other partners to bring sustainable development projects to six villages in the Aravalli district. This partnership stems from an initial meeting in November 2018 with WGF leaders who expressed a strong interest in adopting the ISVx business models for sustainable development social initiatives. The Government of Gujarat is a third partner. WGF was founded in 2013 and incorporated in both USA and India by alumni of the India Institute of Technology (IIT) with 23 campuses in India. The acronym means Water, Healthcare, Energy, Education, Livelihood and Sustainability (See wheelsglobal.org/our story). The organization grew from a Pan-IIT alumni conference in Silicon Valley in 2003 covered by CBS 60 minutes and featured Microsoft's Bill Gates as keynote speaker, recognizing the impact of global contributions of IIT Alumni.

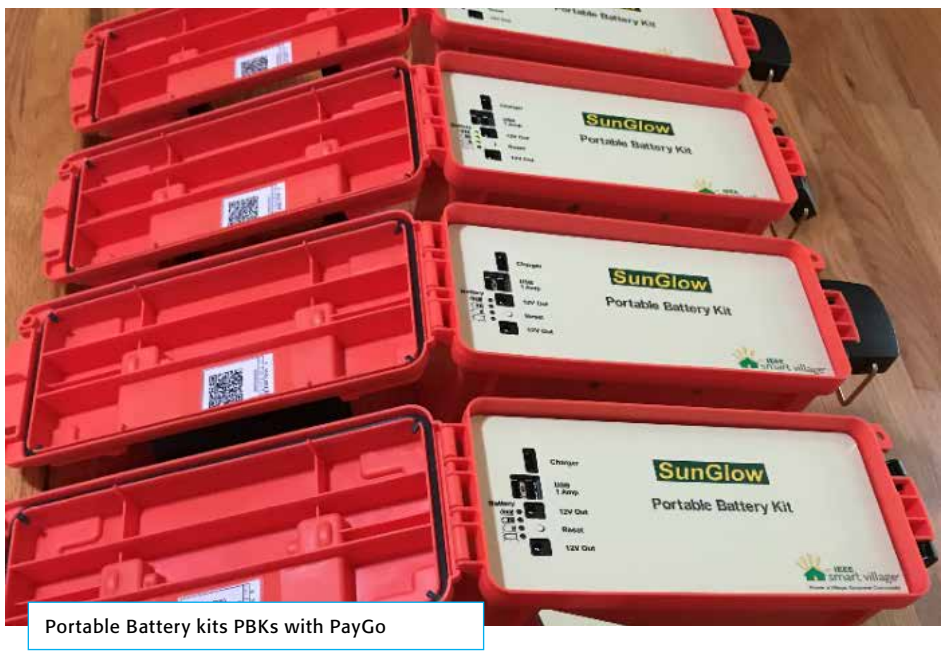
Aravalli is the leadoff collaborative project in India. ISV agrees to contribute effort and funds to pilot sustainable solutions that India partners can replicate many-fold over huge areas of need. They will tap Corporate Social Responsibility (CSR) funds from corporations (required by India law) as well as foundations and individual donors within India.

Developing New Suppliers in India: ISVx is also requesting $100K from NPSS in 2021 to establish two new suppliers in India for SunBlazer modular scalable electricity systems in remote areas and Portable Light Kits (PBKs) for the estimated 20% of people beyond reach of a Microgrid. Other projects in the pipeline are an adaptation of the PBK circuit to both DC and AC metering for microgrids since existing commercial products are problematic to our entrepreneur users.

Silicon Valley Smart Village Rotary Club:

Ramesh Hariharan, a longtime former associate of Robin Podmore who was President of Rotary Silicon Valley District 5170, reconnected recently and began promoting that ISVx should form a Rotary International Silicon Valley District e-Club. The common interest is collaboration on global projects of which Rotary has thousands among its 36,000 global clubs, mainly in health, sanitation, clean water, agriculture and its renowned education programs. Project funds can be raised through the new club and channeled to Rotary "Host Clubs" near the point of need, in the process receiving significant matching funds from Rotary International. Robin is co-founder and Vice Chair of ISV who is stepping down so now has volunteered to be the first Chair of the new club dubbed Silicon Valley Smart Village (SVSV) which had its first meeting on Zoom on July 6th, 2020 with 44 founding members. Local Rotary members are already collaborating on proposing new and urgent projects. The Club meets at 0700 PDT on the first and third Monday of the month.

Nextek SB IV3.6kWp Rugged Outdoor Chassis



Portable Battery kits PBKs with PayGo

Battery and Lighting Kit ready to mount

SunBlazer IV 4kWp version by Shaybis Ltd., Nigeria—T. Salihu

SunBlazer IV 1.2kWp module, scalable, by Reliable Energy Innovators, Cameroon (REIc) —J. Numfor

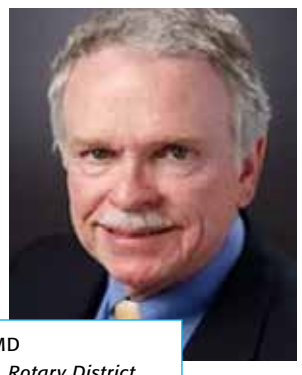
Rotary provides Telehealth Volunteer MDs, remote health worker support for Diagnostics in collaboration with Treatment Clinics, local Rotary Club resources

ISV—Rotary Joint Project for Covid Response Grant Opportunities:

A local Rotary Club member Dr. Jack Higgins, MD, is also President and Chief Medical Officer of Global Telehealth Network, GTN, www.globaltelenet.org/the-gtn-team. A small team of Jack and ISV Management Committee members constructed a proposal entitled,

"Fighting the COVID-19 Pandemic and Reducing Health and Livelihood Disparities in East Africa through Telehealth and Entrepreneurism."

The first grant submittal via IEEE Foundation was unsuccessful but the scope is being enlarged and more partners being engaged to seek major funding not just for a Covid emergency response but for basic health care long term where virtually none exists. ISV will provide, as a sustainable business model, solar electricity and Internet connectivity while GTN and Rotary provide all health services, diagnostics and treatment for remote areas as a long term collaboration with local health authorities with Rotary Host Club resources. The work is continuing toward building partnerships for a sustained response globally.



Jack Higgins, MD
President GTN, Rotary District 5170 Covid Response Team Leader

Sincere Thanks to NPSS:

Once again we express our sincerest thanks to NPSS for supporting this program that has become vital to the image and brand of IEEE globally. NPSS should be proud of its leading role. Today ISVx is taking major steps to expand its reach both within and outside of IEEE: inside with the new Governing Board and 11 Societies and one Council represented; and outside with a Rotary International Smart Village e-Club connection to a unique community-based global projects agency with a budget of $160M per year, with the Silicon Valley District 5170 raising over $7M in the past year alone. The skill sets of IEEE and areas of interest of Rotary such as health, clean water, sanitation agriculture and education are wonderfully complementary and we look forward to unique joint accomplishments. None of this would have been possible without NPSS's timely and critical support. Many, many thanks to all.

Ray Larsen (Emeritus Chair)
for ISVx and Silicon Valley Smart Village

Ramesh Hariharan
Director, Silicon Valley Rotary District 5170

Robin Podmore
ISV VP Emeritus, President Rotary Silicon valley Smart Village e-Club

TOO OFTEN EXERCISED

Oh, it is excellent to have a giant's strength; but is tyrannous to use it like a giant.

William Shakespeare

Article

Fundamental Research Funding

Nobel Prize-winner Robert Solow's pioneering study showed that more than half, and perhaps as much as 85%, of productivity growth in the United States in the first half of the 20th century could be attributed to technical advances. Other studies indicate that 50% or more of the growth the country has enjoyed since the end of World War II is attributable to technological innovation, resulting from investments in research and development.

Brendan Godfrey
IEEE NPSS AdCom and IEEE-USA VP for Communications

Economic growth as described by Solow and others requires stable support for research as a fraction of the Gross Domestic Product (GDP). Research funding that does not at least keep pace with the GDP inevitably has a decreasing impact on future GDP growth. Unfortunately, federal support of science and engineering research declined significantly from 1970 to 1997, and has gyrated wildly since then; see the first figure.

The increase in 2004 was the result of a temporary doubling of the NIH budget, and the 2009 spike was the result of a one-year Stimulus Bill. (See AAAS Historical R&D Data, available at www.aaas.org/programs/r-d-budget-and-policy/historical-rd-data.)

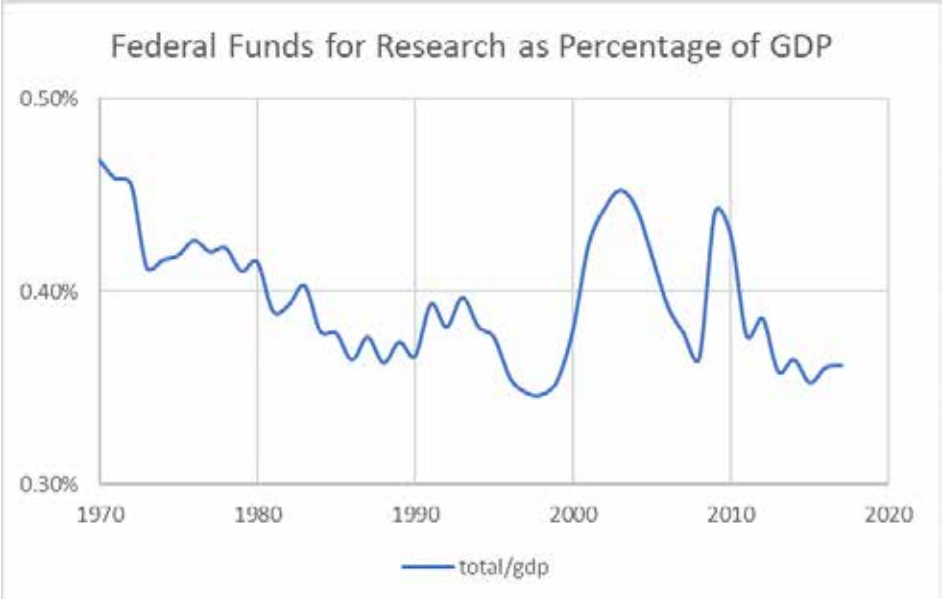
In 2012, a National Academies study on research universities concluded that, "The nation will increase the performance of its research enterprise — by providing steady, predictable streams of funding for research over time. The last decade has seen damaging fluctuations in research appropriations." The impact is, of course, particularly severe for young researchers. Under such circumstances, students question whether the United States remains committed to technological advancement, and whether a career in science, technology, engineering or mathematics is a wise choice. A related National Academies study on America's research enterprise noted: "Stable and predictable federal funding encourages talented students to pursue scientific careers, keeps established researchers engaged over a career, and attracts and retains foreign talent. It also supports a diversity of institutions that both fund and conduct research, as well as essential scientific infrastructure — the tools necessary for conducting research. Stable resources are increasingly important to future competitiveness, given the rising investments in research by other countries."

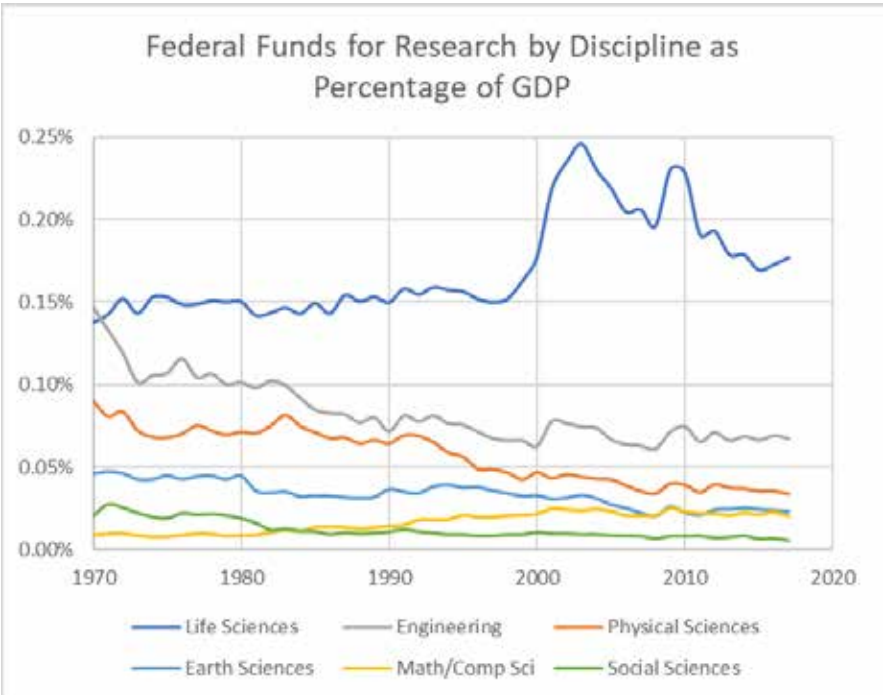
Federal support of research also has become unbalanced. As the figure below makes clear, federal support for engineering and physical sciences research has declined even more sharply than support for research as a whole. (Data from AAAS Historical R&D Data, previously cited.)

A healthy economy requires innovative research in a range of disciplines. Truly transformative scientific discoveries often depend on research in a variety of fields. Maintaining broad expertise among those who conduct research also sustains the innovation system, because technological problems often arise in the development of innovation that requires research for their solutions. As emphasized in Rising Above the Gathering Storm, "special attention should go to the physical sciences — engineering, mathematics and information sciences, and to Department of Defense (DOD) basic research funding." DOD accounts for one-third of all federal investment in engineering, and the declining share of federal research funds flowing through DOD strongly impacts the viability of U.S. engineering research. A nation that leads in one key area but lags in others will not fare well in the long-term.

IEEE-USA strongly advocates increased government funding for fundamental research. Its position statements can be found at https://ieeeusa.org/advocacy/policy-positions/.

Brendan Godfrey is an elected member of the NPSS AdCom Class of 2020 and is an IEEE-USA Board Member and its Vice President for Communications. He can be reached by E-mail at Brendan.godfrey@ieee.org.





In Memoriam

Gerd and Ursula Muellehner

Gerd Muehllehner, Ph.D.
1939–2020

It is with much sadness that we note the passing of Gerd Muehllehner, Ph.D., a pioneer in nuclear medicine and PET. Born in Germany and educated as an undergraduate at Georgetown University (Washington, DC), he earned a Ph.D. in nuclear physics at the University of Michigan (Ann Arbor). He started his early career at Searle Radiographics (later Siemens Gammasonics), quickly becoming a leader in nuclear imaging technology. During this time, he led a number of important advances in imaging technology that included novel nuclear camera collimators, one of the first digital nuclear image correction methods, and a prototype gamma camera with extended count rate capability for use in positron-emitter imaging.

In 1979, Gerd moved to the University of Pennsylvania School of Medicine (Philadelphia) to join the Division of Nuclear Medicine in the Department of Radiology, recruited by Abass Alavi, M.D., and Stanley Baum, M.D., at that time the division chief and department chair, respectively. Always a visionary, Gerd chose to move to academics at Penn to pursue PET, which he saw as the future of radioisotope imaging at a time when industry was not fully ready to embrace that path. He built one of the top academic nuclear medicine physics and instrumentation programs in the world and became a professor of radiology in 1988. At Penn, Gerd and his colleagues helped create the modern generation of PET imaging devices. Seminal advances during his time at Penn included large-area NaI position-sensitive detectors with digital encoding for PET including techniques to increase the count rate capability by nearly 10-fold over prior Anger-logic detectors. These innovations formed the basis for a prototype at Penn (the PennPET scanner) and commercial coincidence camera devices that broadened clinical access to PET in the early 1990s. The PennPET was the first fully 3D PET tomograph used clinically, for which Gerd and his team also developed scatter correction methods and practical image reconstruction algorithms to handle 3D data for septaless scanners such as the PennPET.

In 1990, Gerd left Penn and became president of UGM Medical Systems, Inc., a company he founded with his wife, Ursula, transferring leadership of the Penn nuclear medicine physics laboratory to his long-time collaborator, Joel Karp, Ph.D., the current Physics & Instrumentation lab leader. At UGM, Gerd continued his leadership in the field of PET instrumentation, collaborating with Dr. Karp's Penn team to introduce important advances in the technology for gadolinium oxyorthosilicate– and lutetium yttrium orthosilicate–based detectors for animal and whole-body scanners, implementation of singles-based attenuation correction, and implementation of modern time-of-flight methodology that is now an essential part of all commercial PET scanners. PET imaging systems created by his team at UGM led to widely used commercial systems that eventually became the Philips line of PET and later PET/CT scanners. Throughout his career Gerd's work remained true to his vision that instruments should be practical, cost-effective, and, above all, meet clinical needs.

After his retirement from Philips in 2004, Gerd remained active as a partner to the Penn academic lab as an adjunct professor of radiology. Working with Dr. Karp and the Penn lab, he made contributions to the current whole-body PennPET Explorer, one of only two currently operating long-axial field-of-view whole-body PET systems in the United States. He thoroughly enjoyed taking breaks from retirement to become reengaged with PET instrumentation research at Penn and continued to take great pride in the achievements of the academic group he had created.

Gerd was highly respected in the broad community of IEEE and nuclear medicine and was recognized with the highest awards in his field of study, including the SNMMI Aebersold Award, the SNMMI Georg de Hevesy Pioneer Award, and the IEEE Medical Imaging Senior Scientist Award (later renamed the Edward J. Hoffman Award), and was named an IEEE Fellow for his contributions to nuclear medicine, PET instrumentation, and image reconstruction techniques. During his retirement, he contributed significantly to his local community in Wisconsin, including work in local government and, with Ursula, support of environmental issues. Gerd and his family created an endowed fellowship at Penn to support PET instrumentation research, which later became the Gerd Muehllehner Professorship, currently held by David Mankoff, M.D., Ph.D., Gerd's first (and only) graduate student.

We remember Gerd fondly for his scientific accomplishments, his vision, leadership, and mentorship—and as a person dedicated to the betterment of all who had the pleasure of knowing him professionally and socially. It is with great admiration for his contributions to nuclear medicine and PET and for the legacy he leaves in the form of advances in the field, that we remember Gerd and cherish his memory together with the entire nuclear medicine community.

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CONTRIBUTED ARTICLES

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 no later than October 5, 2020 for inclusion in the December 2020 Newsletter.

News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical breakthroughs, accomplishments at the big laboratories and similar subjects. The various *Transactions*, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor.