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## A New Growth Center Project Focuses on Young Researchers

In 2019, the IEEE and the IEEE Industrial Electronics Society (IES) launched a Growth Center Project (GCP). IES President Xinghuo Yu, of the Royal Melbourne Institute of Technology, Australia, is spearheading this initiative, and his idea is to target IEEE and IES growth in specific parts of the world. The GCP coordinator is IES Vice President for Membership Yousef Ibrahim, from Federation University Australia, Ballarat, Victoria. This project focuses on three very important areas:

- Women in Engineering (WIE), led by Prof. Lucia Lo Bello (University of Catania, Italy)
- Chapter activation, guided by Prof. Kim Fung Tsang (City University of Hong Kong)
- Young Professionals and Students (YPS), led by Prof. Marek Jasinski (Warsaw University of Technology, Poland).
  - The YPS Activities Committee (AC) consists of seven excellent IEEE volunteers: Prof. Dmitri Vinnikov, Dr. Hani Vahedi, Dr. Marek Turzynski, Prof. Hong Li, Dr. Christian Rojas, Dr. Adam Milczarek, and Dr. Sertac Bayhan.

Let us focus on the YPS part of this interesting form of membership support. The GCP proposal was prepared in May 2018, and it was accepted in June 2018 by the IES Administrative Committee and in November 2018 by the IEEE Technical Activities Board (TAB) as an IES Major Initiative Project for 2019 and beyond.

For 19 years, the YPS-AC has continuously supported young, talented, and hardworking people and their projects through several activities focused mainly on IES conferences. To learn more, please see the YPS-AC Reports [1]. The IES continually increases its investment in growth in quality and excellence in professional and technical skills. The TAB's Society Review Committee (SCRC) has recognized the YPS-AC's actions as a best practice, stating in its Review Report:

The IES makes a substantial investment in scholarships, investing approximately US\$100,000 per year; the SCRC considers this a best practice.

This opinion stimulated us to provide wider promotion and support to young scientists. The IES budget history for young-researcher support is shown in Figure 1. Moreover, the IES would now like to provide these services in close cooperation with all IEEE bodies. The general idea is presented in Figure 2, where YPS cooperation inside and outside of the Society is presented. We are going to work on our current activities and introduce new initiatives, which will elevate our excellence as IES members.

The IES would like to provide the best conditions for members and increase its membership because:

- Our Society is like all human societies; that is, it draws its energy from the youngest members. This is nature!
- Working with young members gives our Fellows opportunities to be mentors.

- Thanks to mentors, IES mentees become the best professionals ever.

The question is how we would like to reach our goals. We hope that we have found the answer in the GCP. Some ideas are presented in this article, where you can find seven goals of the YPS (Table 1) and seven outcomes (Table 2).

The purpose of the GCP in the broader world context could be simply defined as follows. Today, Gaia, the mother Earth, becomes like our family home. Our house is generally well connected by:

- information flow—the Internet of Everything
- energy transfer and flow—smart grids
- technology flow—Industry 4.0
- automation and robotics, not only in industrial processes but also, or maybe above all, in health care, rehabilitation, and so forth.

We know that there is a potential to activate the scientific community in the world. The GCP proposes a solution for how to attract new YPS members (and their mentors). Please note what is missing from the aforementioned list of modern technologies. After a while, you realize what it is—personal contact. Bringing people together is part of the GCP's mission, and it is possible thanks to direct interaction with local professionals who can help us attract the most active scientists, young professionals (YPs), and students, especially from fast-growing countries (linking them with people in highly developed countries), such as China, India, Sri Lanka, Russia, Cambodia,

Vietnam, Laos, Thailand, Poland, and so on.

The desired outcome (Table 2) at the end of the GCP is that the IES will be more visible between professionals

and that our Society will become even more attractive for young, highly skilled researchers by offering discounts, financial support, mentoring, and professional-skills elevation.

We have some key project activities and milestones. Based on several discussions with the IES president, vice presidents, and officers; IES magazine editors; transactions editors-in-chief;

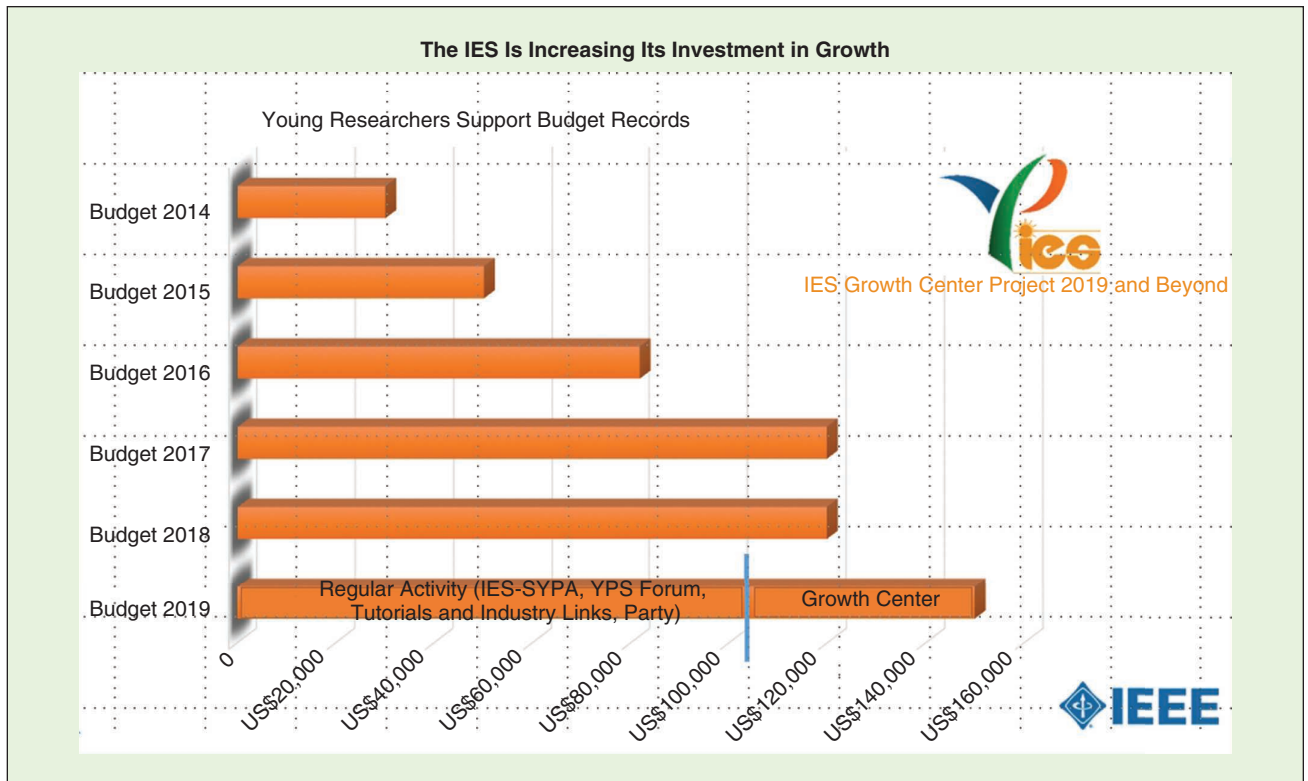


FIGURE 1 – The IES is increasing the amount it invests in growth initiatives that support young researchers seeking to grow their skills and attain excellence.

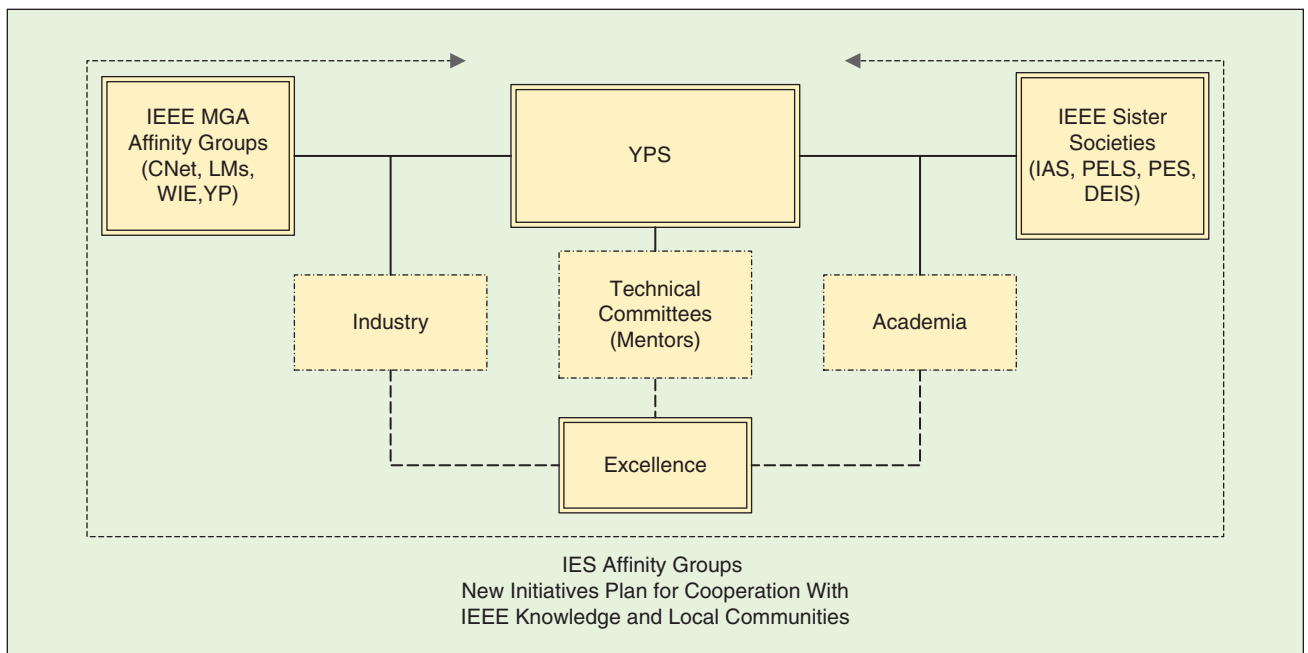


FIGURE 2 – This flowchart illustrates YPS connections within the IEEE and the broader community. MGA: Member and Geographic Activities; CNet: Consultants Network; LMs: Life Members; PELS: Power Electronics Society; PES: Power and Energy Society; DEIS: Dielectrics and Electrical Insulation Society; IAS: IEEE Industry Applications Society.

and AC members, the GCP is considering seven steps toward a better future that should be implemented and tested in 2019:

- 1) YPS tutorials and industry links, workshops, and other activities at IES conferences, with funds for invited speakers
  - travel-cost reimbursements, on average, of up to US\$3,000 per speaker
  - tutorial speakers from academia
  - industry-link speakers from local businesses
  - funds for YPS workshop coorganization
  - YouTube as a useful source for professors to get ideas for proposing new projects and citing related IES papers and recommending it as a reference during academic lectures, which is an attractive way to share knowledge and promote the Society.
- 2) activating and increasing the number of SBCs
  - organizing and supporting membership-activity growth centers
  - travel support for IES volunteers to attend YPS events and help to open SBCs
  - consideration of allowing YPS to join SBCs
  - organizing dedicated IES workshops, seminars, tutorials, and so forth
  - supporting existing YPS events organized by IEEE Chapters, sister Societies, universities, industries, and affinity groups
  - two years of free IEEE and IES membership for YPS (carefully evaluated by an ad hoc committee, based on the quality of presented projects).
- 3) making publication a possibility in IES magazines and transactions as the next stage of the IES Student and Young Professionals Paper Assistance (SYPA) competition
  - organize regular special sessions (SS), inviting authors supported by the IES-SYPA, during the YPS Forum, with SS common subjects that are proposed and defined.
- 4) more IES promotion at conferences and workshops

- all IES members, YPS and young professors, Distinguished Lecturers—webinars, YouTube tutorials, and so forth
- posters, T-shirts, presentations, and dedicated workshops with cooperation from

- local IES Chapters (initial workshops based on proven presentations)
- start-up funds for these activities would be required; amount should be determined after the first year of implementation

**TABLE 1 – THE GCP'S OBJECTIVES.**

**YPS-AC'S SEVEN GOALS**

Activate cooperation with IEEE MGA Affinity Groups:

- 1) CNet
- 2) LMs
- 3) WIE
- 4) YPS

Closer cooperation with Chapters and SBCs

Opening new Chapters and SBCs

Closer cooperation with academia through visits to several universities

Industry cooperation through common scientific/social events

Close cooperation with Technical Committees (TC) that are searching for mentors and mentees

Cooperation with sister Societies by having several Joint Chapters or Affinity Groups organize common scientific/social events

**SUMMARY OF GOALS**

Provide better conditions for IES members and increase membership numbers

Provide opportunities for IES Fellows to serve as mentors

**TABLE 2 – THE GCP'S RESULTS.**

**YPS-AC'S SEVEN DESIRED OUTCOMES**

Keep abreast of what is happening in the professional world by:

- 1) Learning from experts that sit on the Alliance of IEEE Consultants' Networks Coordinating Committee how YPS can take part in, and contribute to, the process, with the goal of professional-skills improvement
- 2) Finding mentors among LMs, interacting with them, and recording tutorials with them, and publishing the tutorials on YouTube and IEEE Collabratec
- 3) Coordinating actions with WIE to attract and support IES women members, which will improve the quality of the Society and its work
- 4) Coordinating action with the IEEE YPS to maintain up-to-date information and promote our point of view to the whole IEEE YP audience.

Engage with Chapters only through personal contact to strengthen ties and collaborate on areas of impact around the world. Chapters are the IES' front men, and stronger Chapters mean a stronger Society.

GCP supports Chapters and SBCs directly, with the goal of opening new IES Chapters, especially in growing markets, such as China, Russia, Africa, India, and Asia.

IES promotion to establish new cooperation opportunities and, possibly, to support the Society by helping it attract new members and share knowledge resources with universities.

Build cross-disciplinary synergy and knowledge through close cooperation between Chapters, academics, and members of industry, which should also help to attract new members from the business community.

Improve the flow of experience-related knowledge between TC chairs and YPS using Collabratec, among other platforms.

Provide a positive atmosphere for members to share experiences, thereby improving membership excellence and IES visibility.

**SUMMARY OF DESIRED OUTCOMES**

Increase the professional skills and excellence of YPS members.

Improve the standing of the IES in the world.

Increase interaction with academics and industry professionals and attract them as members.



FIGURE 3 – More than 100 people attended the 18th International Winter School Symposium, “Topical Problems in the Field of Electrical and Power Engineering” and “Doctoral School of Energy and Geotechnology III,” held during January 2019 in Toila, Estonia.



FIGURE 4 – Andreas Armstorfer holds the GCP special award he won for best presenter. He was joined by (from left) Mariusz Malinowski, Dmitri Vinnikov, Elizaveta Liivik, and Andrii Chub.

- 5) closer cooperation with YP from sister IEEE Societies
- meet-ups, workshops (for example, <https://www.ypinspace.com/>), and so on
  - IEEE Young Professionals Society/council liaison summits (Celia Desmond, organizer)

- face-to-face recap of YP annual meetings (Rafal Sliz, organizer)
- reduced IEEE and IES membership fee for YP
  - substantiation: “The largest objection I hear from Young Professionals is jumping from the Student rate to the IEEE rate.

- I would suggest that the IEEE have a YP rate, less than IEEE, good for five years after their last degree” —*Michael W. Condry, Ph.D. (IEEE Fellow)*
- 6) student and YP project competition and support
- join the IES and apply for financial support; local IES Chapters and SBCs should also provide support, for example, based on project formulas
  - cooperate with industry and support interesting scientific, educational, mentoring, and networking projects, and so forth, proposed by students and YP
  - close cooperation with WIE and Education Committee
- 7) new documentation and information about YPS-AC
- annual meeting with the IES president, officers, YPS chair and cochair should be supported by the IES for planning future activities in the field



FIGURE 5 – Participants assembled for 26th International Workshop on Electric Drives (IWED 2019) in Moscow.

- preparing documentation about the IES SYPA rules during the selection process, in addition to information distributed online at [www.ieee-ies.org](http://www.ieee-ies.org)
- updating data in electronic information channels (YouTube, Facebook, Collabratec, and so on)
- publishing reports of activity
- advertising YPS through all information channels (IEM, TIE, TII, Collabratec, technical committee chairs, and so forth)

That is the basic outline of the GCP. It was started in January 2019 in Estonia and Russia with a kick-off event during the 18th International Winter School Symposium, “Topical Problems in the Field of Electrical and Power Engineering” and “Doctoral School of Energy and Geotechnology III,” which was held 14–19 January in Toila, Estonia (Figure 3). This internationally recognized scientific event has traditionally provided a unique opportunity for Ph.D. students to present the results of their research covering electrical engineering, mechanical engineering, and mechatronics and attend lectures given by experienced invited speakers from partner universities and enterprises. Annually organized by the Department of Electrical Engineering and Mechatronics at the Tallinn University of Technology (TalTech) in different parts of Estonia, this Winter School has become the largest forum for doctoral students and young engineers in the Northern Europe.

This year, the program included more than 120 presentations from Ph.D. students, renowned researchers, and representatives from enterprises

in Estonia, Latvia, Lithuania, Ukraine, Poland, the Russian Federation, Czech Republic, Belarus, United Kingdom, Finland, Sweden, Portugal, Spain, Germany, Italy, Albania, Denmark, France, Hungary, and Brazil. Along with interesting speeches and dynamic regular sessions, the Winter School featured unforgettable social events, one of which was the IEEE-IES Students and Young Professionals’ Night organized by the GCP. With more than 100 attendees, the event opened with a welcome speech from Prof. Mariusz Malinowski (IES vice president for publications) who delivered greetings from the Society and explained the membership benefits and overall idea of the GCP. This was followed by a question-and-answer session on YPS activities and IES-supported actions and a discussion of the formation of an IES SBC in Estonia in 2019.

The second half of the night was dedicated to an open discussion of one of the most challenging questions for Ph.D. students and YP: how to publish an article in IEEE journals and get a good H-index score of a publication’s impact. The panelists, IEEE Fellows Prof. Mariusz Malinowski and Prof. Jose I. Leon delivered many useful tips and a great deal of professional advice, and they answered all of the questions asked by their younger colleagues. Prof. Joao Martins pointed out that many highly cited papers have appeared through the joint activities of different research groups from all around the world. Therefore, the cross-border research cooperation enabled by the GCP is essential to advancing scientific goals.

Finally, Dr. Andrii Chub, IES-SYPA recipient and IES volunteer, told the story of his journey from earning a Ukrainian master of science degree to an Estonian Ph.D. degree to German and Chilean postdoctoral degrees, which was a nice example of cross-border career development and a strong encouragement for the students to make the most of the international experiences available to them. In addition, the GCP presented a special award for the best presenter at the Winter School. Andreas Armstorfer (Figure 4), a joint Ph.D. student at TalTech and the Kempten University of Applied Sciences, Germany, was the winner, and he was invited to publish a paper and attend the YPS Forum at the upcoming 45th Annual Conference of the IES in Lisbon, Portugal, with the exclusive support of the GCP.

The next event was organized in Moscow during the 26th International Workshop on Electric Drives (IWED 2019), which is held annually at the National Research University Moscow Power Engineering Institute (MPEI) as a small IEEE and IES conference with a large number of invited keynote speakers (Figure 5). This year, very interesting keynotes and tutorials were delivered to the participants by Prof. Joachim Holtz (efficiency of medium voltage drives), Prof. Istvan Vajda (design of electrical machines), Dr. A. Kallaste (3D printing of electrical machines), and Dr. V. Kalitka (superconducting materials in electrical machines). More than 150 participants attended this event.

The second day of the workshop was fully devoted to YPS from Russia, Latvia, Estonia, the United Kingdom, China, Germany, and Poland, including



FIGURE 6 – Elena Dukhnich (second from left) won the Best Paper Award at IWED 2019. With her are (from left) Marek Jasinski, Lev Rassudov, and Alecksey Anuchin.

15 presentations from student participants during the oral sessions. Career development and opportunities for YPS were discussed in the presentations from Marek Jasinski (“IEEE IES Membership Benefits” and “Young Professionals and Students Activity”) and Georgy Zakhmylov, of the ABB Group’s Moscow office (“Graduates Career Opportunities”). The Best Paper Award was given to Elena Dukhnich, a Ph.D. student in MPEI’s Power Electronics Department, whose paper was titled, “Research of Switching Capacity Increase of the Composite Transistor Switch With Distributed Reactive Components”

(Figure 6). The students’ attendance and participation were free of charge thanks to the private support of Alexander Prudnikov, an alumnus of the Department of Electric Drives at MPEI and a vice president of ABB Russia. The workshop ended with the YPS social event—a bowling party (Figure 7).

IES’s Yousef Ibrahim started the GCP even earlier in Sri Lanka. He also focused on the youngest researchers at the Students, Women in Engineering, and Young Professionals Congress (Figure 8). Sri Lanka’s IEEE Section conducted a congress that took place at the end of December 2018. The

president of the IEEE Industrial Application Society, Dr. Tomy Sebastian, attended this congress as well. Prof. Ibrahim presented two talks, one on how to employ technical-engineering expertise for the economic welfare and development of local communities and the other on the IES. Approximately 300 participants from universities all around Sri Lanka attended this event (Figure 9). At the end, there was a keen interest from the delegates to join the IES SBCs at four of the country’s academic institutions. This resulted in 108 IEEE Student Members in Sri Lanka signing up for IES membership. In addition, a process is currently underway to establish a professional IES Chapter in collaboration with the IEEE Sri Lanka Section chair and the various academic and professional IEEE members in Sri Lanka.

To summarize the GCP: We would like to join our mentors with mentees on a high-quality science platform under the auspices of the IEEE. We would like to send a message from IEEE volunteers to the youngest researchers in academia that to be a member of the IES is worthwhile.

In Figure 10, Prof. Holtz is receiving the IEEE IES Young Professionals



FIGURE 7 – YPS attending IWED 2019 closed the event with a bowling party.

and Students Outstanding Mentor Appreciation Diploma with the citation: “For his contribution in science and the teaching process of many generations of engineers. Thank you for your vector control, feedforward, and feedback to our professional skills.”

Prof. Holtz is an example of an excellent mentor, and he has many well-recognized former students and friends. We asked some of them for short sentences to summarize his impact on their professional lives:

1) He has made an “extraordinary contribution in research and the teaching process of many generations of engineers, especially in the area of high-power converters, modulation techniques, and sensorless control of drives.” —*Prof. Marian P. Kazmierkowski*

2) “Indeed, it is difficult for me to find proper words describing and appreciating such a unique scientist and man. Prof. Holtz is a true example of dedication, strength, honesty, success, and perfection. With love, he used to carry over his rich experience to help and educate new generations of researchers and students.” —*Prof. Haitham Abu-Rub*

3) “Prof. Holtz’s main achievements are space-vector modulation (and) encoderless/self-sensing/sensorless control of ac drives. He found a progressive solution for induction motors, which still is the basis of many concepts for induction-motor drives, and predictive control—he developed and published the first hysteresis-based predictive current control.” —*Prof. Ralph Kennel*

4) “From 1987 to 1996, I did research with the team of Prof. Holtz at the University of Wuppertal. In particular, the work in the field of predictive current control and the synchronous, optimal pulsewidth modulation was very far ahead. Everyone in the working group, especially the doctoral students, of course, profited greatly from



FIGURE 8 – IES Vice President for Membership Yousef Ibrahim (right) attended the Students, Women in Engineering, and Young Professionals Congress organized by Sri Lanka’s IEEE Section in December 2018.



FIGURE 9 – Prof. Ibrahim (center) poses with young researchers.



FIGURE 10 – Prof. Joachim Holtz (center) received the YPS Outstanding Mentor Appreciation Diploma at IWED 2019. Alecksey Anuchin (left) and Marek Jasinski joined him.

the strong practical relevance.”  
—*Prof. Jens Onno Krahl*

In the near future, the GCP is going to visit China and many more places where there are excellent researchers. See you soon!

### Reference

- [1] IEEE Industrial Electronics Society, “Introduction to the IEEE IES Students and Young Professionals Activity Committee (SYP-AC),” 2019. [Online]. Available: <http://www.ieee-ies.org/syp>

