

October 15, 2023



**Institute of Electrical and Electronics Engineers, Inc.
Antennas and Propagation Society**

**Strategic and Operation Plans
for years 2024-2028**

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1. Mission and Vision of the IEEE Antennas and Propagation Society

In July 2018, at the proposal of AP-S Strategic Planning Committee, the AP-S Administrative Committee (AdCom) approved the following mission and vision of the Society, which remains unchanged as of October 2023:

Mission: AP-S's core purpose is to foster antennas, propagation and electromagnetics theory, technology, applications innovation and excellence for the benefit of humanity.

Vision: AP-S will be essential to the global electromagnetics community, and be universally recognized for the contributions of antennas, propagation, and electromagnetics and its professionals in improving worldwide conditions.

The Mission and Vision of the Society will be posted on the Web and will be publicized in the AP-S *Magazine*. It is believed that its use will enhance AP-S's visibility.

2. Field of Interest (FoI) and Tag lines

2.1. Field of Interest

The current field of interest (FoI) of the Society is described in the Society's Constitution, Art. II, Section 1, and reads as follows:

The field of interest of the Society includes antennas, including analysis, design, development, measurement, standards, and testing; radiation, propagation, and the interaction of electromagnetic waves with discrete and continuous media; and applications and systems pertinent to antennas, propagation, and sensing, such as applied optics, millimeter-and submillimeter-wave techniques, antenna signal processing and control, radio astronomy, bioelectromagnetics, and propagation and radiation aspects of terrestrial and space-based communication, including wireless, mobile, satellite, and telecommunications at all frequencies. (75 words)

This FOI was approved by the AP-S AdCom in July 2019. The FoI is available also in the Society's Web page <https://www.ieeeaps.org/15-homepage/423-our-field-of-interest>, and is in agreement with the FoI published in IEEE TAB Operations Manual, Section 4.12 (https://ta.ieee.org/images/files/ta_ops_manual.pdf).

A more detailed FoI can be found on the AP-S Bylaws, Section 2, and is reported in Appendix A of this document.

Both the Constitution and the Bylaws are posted in the Society's Web page (<https://www.ieeeaps.org/membership/constitution>, and <https://www.ieeeaps.org/membership/bylaws>, respectively).

Over the term of this Plan there will be periodic assessments of this FoI to ensure that technical advances and new challenges are incorporated and old ones removed, if necessary.

2.2. Tag Line

In July 2019, at the proposal of the *ad hoc* Committee formed to analyze how to emphasize AP-S work in all its field of interest for the benefit of humanity, the AP-S AdCom approved the tag line

“Advancing Electromagnetics Frontiers”

to be used together with the Society’s logo. It is believed that the use of the tag line will enhance the visibility of the Society.

The tagline could be used with the Antennas and Propagation Society name (IEEE Antennas and Propagation Society) in the same way and according to the same IEEE guidelines as the IEEE’s tagline is used with the IEEE’s name.

3. Strategic Goals for Years 2024-2028

In this section, the goals that conform the Strategic Plan of the Antennas and Propagation Society for years 2024-2028 are listed together with the rationale behind each goal. In the next section, the action plan for each goal will be described together with the metrics that will be used in order to assess the success in achieving the goal, and the corresponding timeline, i.e., the Operation Plan for years 2024-2028, will be described. This set of Strategic and Operation Plans were proposed by the AP-S Strategic Planning Committee during a meeting of the committee held in July 2023 in conjunction with the AP-S AdCom meeting.

The viability of the Strategic and Operation Plans is granted because the different goals and actions are under the purview of the AP-S leadership and the various AP-S committees. In the Operation Plan (section 5), the committees responsible for each goal are mentioned.

AP-S goals for the 2024-2028 period can be summarized in the following sections.

3.1. Global Outreach

AP-S should serve the global community and humanity at large. This is in line with the IEEE overall goal. Just as IEEE strives to advance technology for humanity, AP-S strives to advance electromagnetics for humanity.

3.2. Diversity and Inclusion

Although our Society shows a reasonably diverse balance in its membership it is advisable to focus on those groups that could be further included as members and as part of the Society’s leadership. Diversity here stands for ethnic, gender, geographic, profession, and race. In order to bring in membership from regions of the world where the standards of living are much lower, our Society should first help in elevating the standards of living in those regions of the world. This goal ties in well with the first goal: dissemination and sharing of knowledge will engender equalization of wealth around the world. Equalization of wealth allows the larger parts of the world to participate in growing the global economy, and also to participate in its leadership. Goal 1 and Goal 2 should work in synergy with each other. While we recognize this as an altruistic goal whose scope may be unrealistically large for the AP Society to achieve by itself, we strive to play our part by providing educational opportunities, information sharing opportunities, and specific mechanisms for mentoring and enabling under-represented populations to participate in the activities of our Society.

3.3. Advancing technology for a clean and green environment and sustainability.

The Antennas and Propagation Society should contribute to save the Earth from destruction by advancing technologies in the right direction. Advancing technologies have helped to elevate our quality of life and our standards of living. However, relentless growth of the technological economies in some countries has given rise to the destruction of our environment. The Antennas and Propagation Society should look for ways to have a symbiotic co-existence with our environment and to promote sustainability. The Antennas and Propagation Society can be supportive of the areas of research that enables environmental observations via satellite, airborne, and in-situ sensors, using renewable energy and resources, the use of recyclable technologies, and avoiding relentless economic growth by lop-sided indicators such as per-capita income.

3.4. Enhance interactions with IEEE Societies/Councils and with other associations

Collaborations with some IEEE societies have been established in recent years. We have signed MOUs with IEEE society (GRSS, EMC, MTT) and with Councils (i.e., Sensor, RFID, Nanotechnologies) Those efforts have increased AP-S's visibility and have provided smoother operation of the Society together with increased outreach opportunities. MoU have been signed with other organizations and associations that share interests in the AP-S field, like AMTA (Antennas and Measurement Techniques Association); EurAAP (European Association on Antennas and Propagation), METAMORPHOSE VI (Metamaterial Association). Efforts along the same line should be continued and extended to other Societies. Furthermore, more concrete joint efforts with such sister societies will be planned, as for instance common membership recruitment and common Distinguished Lecturer program, common financially sponsored conferences, common Chapters.

3.5. Improve Publications

It consists in improve the timeliness, high quality, and usage of our four major publications (Transactions on Antennas and Propagation, Antennas and Wireless Propagation Letters, Antennas and Propagation Magazine, and Journal of Selected Topics on Antennas and Propagation), and in creating new publications jointly with sister societies AP-S periodicals are well appreciated by researchers and practitioners in the field for their timeliness and quality and are therefore a source of knowledge for members of the community. The goal is to maintain and improve the current high levels of AP-S periodicals in all possible aspects.

3.6. Improve Online Platforms

We will take advantage of the recently expanded online platform for hosting, curating, and exchanging educational materials for electromagnetics, antennas, and propagation. AP-S activities in the field of education should continue to expand to better serve all of the AP-S constituency and other possible members: students, academicians, industry practitioners, etc. AP-S has recently appointed a new Electronic Communications EiC. Under the leadership of the new EiC and much enhanced electronic platform, we will focus on educational content creation, possibly leveraging existing online content created by many AP-S prominent educators at their universities. The goal is to provide better venues for e-learning. The online platform could also be enhanced by collaborations with universities with online courses.

3.7. Increase industry membership and participation

The goal of AP-S is not only to increase the number of members from industry but to also facilitate their participation in the Society activities and recognize their achievements- Potentiate the exhibition of the flagship conference is another goal.

3.8. Increase initiatives in Regions 8-10

The outreach initiatives are concerning with recruiting memberships, education and training, humanitarian technologies, YP and Industry practitioners in Region 8-10.

During the past five-year period, AP-S has developed a number of successful outreach initiatives in given areas of Regions 8-10. The approach was to provide information about IEEE and AP-S together with technical presentations while visiting local Chapters or areas where local Chapters could be newly formed, even jointly with other societies. During these years, AP-S has developed a better understanding of the situation of members and potential members in the geographical areas that have been visited. In most cases the need of educating and training members and potential members on how to do research, develop, and successfully conduct projects (namely, how to define a problem, how to set it up, and how to solve it) has become apparent. To address these issues, AP-S plans to implement these activities in the frame of humanitarian projects. The education and training provided will help the targeted groups to submit good proposals for these types of projects for which AP-S has obtained external funds. The achievement of this goal will not only contribute to membership increase and education, but also to advance humanity through electromagnetics.

Recruiting and retaining members from Region 8-10 and consolidating the members of Region 1-7 is an additional goal; focus will be on students, young professionals, and industry practitioners through a variety of actions. One of this action, implemented already in 2023, is the reduction of the membership fee for student members to one dollar and the planning of “recruitment travels” in Africa and South America jointly with MTT.

4. Operation Plan for Years 2024-2028

In the following the actions, the metrics to assess success, and the timeline to implement the actions for each of the goals mentioned before are given. The committees responsible for each goal are mentioned. These constitute the AP-S Operation Plan for years 2024-2028.

4.1. Global Outreach

Goal under the purview of: AP-S leadership, AdCom, Chapter Activities Committee, Distinguished Lecturer Committee, MGA Committee, SIGHT Committee, Meetings Committee.

Actions to achieve this goal include:

- Increase and enhancement of local Chapter activities, which will further extend our global network and will help the global dissemination and sharing of knowledge.
- Continuation of the initiatives of the Members and Geographic Activities (MGA) Committee and the Special Interest Group on Humanitarian Technologies (SIGHT) Committee, which are good platforms to achieve the overall goal.
- Consider creating grants program for equipment and research facilities in under-represented regions
- Create and consolidate regional conference in region 9, which may start as a workshop.
- Create and consolidate regional conference in Africa; the action has been implemented in 2023 with the creation of the International Conference on Microwave and Antennas

(IMAS), 50% financially sponsored by AP-S and 50% by MTT-S. (first edition in February 2023 in Cairo, second edition foreseen in Morocco in February 2023).

- Create and consolidate regional conference in region 10. the action has been implemented in 2022 with the creation of the Microwave and Antennas and Propagation Conference (MAPCON) 50% financially sponsored by AP-S and 50% by MTT-S. (first edition in December 2022 in Bangalore, India, second edition foreseen in Ahmedabad, India, in February 2023).
- Continuing to hold our flagship conference in Regions 8 and 10 as frequently as once every three years. This has been already approved by AdCom and we have the 2024 flagship conference scheduled in Italy and the 2027 conference scheduled in Japan. This again will enable many participants from overseas to come to our annual symposia and enable the more efficient global sharing of knowledge. Our first flagship conference outside of Regions 1-7 took place in Singapore in 2021 in a hybrid format due to the COVID-19 pandemic.

Metrics and timeline:

- Increase the rate of establishing local Chapters over the next five years as well as increase in the number of local Chapter events by 20%. Activities will include industry related seminars, YP activities, and WIE events.
- Increase in the number of MGA and SIGHT initiatives by 30% over the next five years. These will include creating grant mechanisms for equipment and reasonably scoped research facilities.
- While the first flagship conference not in region 1-7 (Singapore) was successful, it did not take place in a fully in-person mode and therefore the effect of this global outreach activity could not be properly assessed. We look forward to successful outcomes of the upcoming conferences in Italy, Japan, and others in the future.
- At least one topical workshop will be organized once every other year in Region 9 involving local Chapters.
- By 2025, an annual conference to be organized in Region 9.

4.2. Diversity and Inclusion

Goal under the purview of: AP-S leadership, AdCom, DEIB Committee, COPE, MGA Committee, WIE Representative, Chapter Activities Committee.

Actions to achieve this goal include:

We note that in 2020, the AP-S created an Adhoc committee titled the Diversity, Equity, and Inclusion (DEI) committee, which subsequently became a standing committee in 2022 and renamed Diversity, Equity, Inclusion, and Belonging (DEIB) committee in 2023. The Society intends to fully continue the operations of this committee and enhance its reach in all regions served by IEEE. We have also established the Committee on Promoting Equality (COPE). Along with other Society entities that oversee the purview of this goal, and in addition to the actions already stated in the charter of these committees, the following are some specific actions that will be undertaken:

- Work on increasing nominations of women and other under-represented populations for awards, Senior & Fellow grade memberships
- Work on increasing AdCom nominations and committee memberships among women and other under-represented populations, as well as generate a larger pool of nominations from underrepresented regions
- Make a special effort to ensure flagship conference special sessions provide invitations to women and other under-represented populations

Metrics and timeline:

- During each year starting 2024, ensure each AP-S financially sponsored conference will have at least one DEIB event as part of the program.
- During each year of the current plan, ensure each AP-S financially sponsored conference includes women and members of other underrepresented populations in the organizing and/or steering committees of the conference in substantive roles
- During each year of the current plan, ensure each AP-S financially sponsored conference includes a meaningful number of women and members of other underrepresented populations as session chairs, special session invitees, discussion panel members, etc.
- Over the next five years, AP-S will monitor local Chapter activities in under-developed areas and encourage that focused technical events be undertaken, with emphasis on visits by AP-S Distinguished Lecturers.

4.3. Advance technology for a clean and green environment and sustainability

Goal under the purview of: AP-S leadership, AdCom, SIGHT Committee, NTDC.

Actions to achieve this goal include:

- Increase the activities of the SIGHT (Special Interest Group on Humanitarian Technologies) Committee that have oversight over improving people's livelihood on the planet Earth without destroying our environment.
- Organize workshops to raise conscientiousness in this area.
- Enhance collaboration with sister societies such as GRSS
- Consider IP protection support for members who engage in the development of green and environment/climate focused technologies
- Enhance communication around role of AP-S in relevant technologies

Metrics and timeline:

- By 2028, the number of SIGHT and COPE activities will increase by 30%.
- By 2028, every SIGHT and COPE activity conducted in our Society will have as part of its program an outreach session, which will include workshops at local Chapters to help socialize the activities being undertaken.
- Each year during the current planning period, propose initiative to include IP protection competitions for members

- Initiate joint initiative projects with GRSS and MTT. This will include travels in Africa of a joint MTT-S/ APP-S committee, foreseen for 2024

4.4. Enhance interactions with IEEE Societies/Councils and with other associations

Goal under the purview of: AP-S leadership, AdCom, Meetings Committee.

Actions to achieve this goal include:

- Ambassador program (dispatch an ambassador to a conference or AdCom meeting of a sister Society, organization, or association).
- Memorandum of Understanding (MoU) or agreement between AP-S and sister Societies, organizations, and associations.
- Joint/cascade/collocate symposia.
- Joint Distinguished lecturer program with MTT-S
- Joint Chapters mainly with MTT-S

Metrics and timeline:

- By end of each year, starting from 2023, the President of AP-S or its proxy will attend at least one AdCom meeting of MTT-S, GRR-S and EMC-S; and reciprocally, the President will invite President or its proxy to the Sister society in one of the AdCom meeting. AP-S will also have a booth at every sister Society or organization flagship conference to highlight the activities of AP-S.
- By end of 2023, AP-S MoUs or agreements shall be signed among sister Societies (MTT-S, EMC-S, GRSS) and other non-IEEE organizations, identified as EurAAP, AMTA, METAMORPHOSE.
- By end of 2023, AP-S will have organized at least one joint symposium, workshop, or session at a conference with each sister Society and identified organization.
- By end of 2023 a Joint Distinguished lecture program shall be implemented with MTT-S.

4.5. Improve Publications

Goal under the purview of: Publications Committee.

Actions to achieve this goal include:

- *Transactions:*
 - Continue to reduce the average time from submission to first decision, without reducing the review quality.
 - Continue to increase the bibliometric measures by attracting more citations with focused special issues that cover topics of broader interest.
 - By 2023 reaching impact factor larger than 5.5
- *AWPL:*

- Attract more authors of high-quality papers by revising the overlength page charge structure.
- Continue to reduce the number of papers with unusually long submission to first decision times (more than two months).
- By 2023 reaching impact factor larger than 4
- Consider making AWPL fully Open Access
- *Magazine:*
 - Continue to reduce the submission to first decision time for feature articles, without reducing the review quality.
 - Continue to improve the bibliometric measures by using special sections and issues devoted to topics of current high interest in the field.
 - By 2023 reaching impact factor large than 3.5
- *OJAP:*
 - Continue on current path for high impact factor and other bibliometrics by maintaining fast submission to first decision and submission to publication times.
 - Attract sufficient high-quality submissions to support the new journal by carefully choosing exciting special topics and competent guest editors.
 - Obtaining first impact factor large than 3.5.
- Consider creation of Selected Topics multi-disciplinary journals (“selected topics” taken as model the one of COMSOC); add focus on systems aspect; vigilance about new state-of-the-art multidisciplinary topics; look into ACCESS track.
- Keep vigilant about potential competition from non-IEEE publications and from non-US publications, for example those in China
- Create fundamental strategies for enhanced industry engagement and participation in publications

Metrics and timeline:

- For timeliness, the submission to first decision and submission to publication times are the best metric. We will ensure that timeliness will not slip for each journal in the next five years.
- For quality, metrics such as impact factor and related bibliometric measures will be used. We will ensure the impact factor will not fall for each of our publications.
- For usage, the number of downloads per year from Xplore is the appropriate metric. We will ensure our downloads per year will not drop in the next five years.

4.6. Improve Online Platforms

Goal under the purview of: Education Committee, Publications Committee, Electronic Communications EiC.

Actions to achieve this goal include:

- Form a subcommittee to specify the features needed for an online resources site with participation of EiC of Electronic Communications and Education Committee.
- Leverage DL and existing Education Committee resources
- Inquire with our universities about sharing class/lecture videos and other resources

Metrics and timeline:

- Subcommittee operational by 2024.
- Based on the discussions between universities and AP-S a strategy for online educational material will be developed by 2025.
- By 2026 the site development will be contracted and content will be added.
- By 2026, site will be beta tested.
- By 2028 success will be measured by the availability of the online platform, and by the number of accesses per year by the Society membership.

4.7. Increase industry membership and participation

Goal under the purview of: Industry Initiatives Committee.

Actions to achieve this goal include:

- AP-S financially sponsored conferences: continue and expand industry-related awards for papers, as well as industry special sessions at the flag-ship conference.
- Distinguished Lecturers: recruit more DLs with an industry/entrepreneurial background.
- Chapter level: increase local industry/entrepreneurial seminars/events for our members.
- Increase YP and Industry collaborations
- Nominate industry members for Senior and Fellow grades
- Work with Membership Committee on recruiting industry members
- Ensure Fellow Evaluation committee includes industry members
- Increase the dimension of the exhibitions in our Flagship Conference

Metrics and timeline:

- Every AP-S financially sponsored conference to have an industry-related award by 2025.
- Industry related sessions at the International Antennas and Propagation Symposium to continue/increase as a regular event.
- At least one DL/year with an industry/entrepreneurial background by 2024.
- Every active Chapter to have at least one industry focused event by 2024.
- Industry membership double in five years.
- In 2026 duplicate the dimension of the exhibition in our Flagship conference

4.8. Increase initiatives in Regions 8-10

Goal under the purview of: MGA Committee, SIGHT Committee Membership Committee, Education Committee, Young Professionals Committee.

Actions to achieve this goal include:

- Establish a number of outreach initiatives in IEEE Sections or/and countries of Africa (Region 8), South America (Region 9) and Asia (Region 10), with a focus on education and training on how to propose and develop humanitarian projects.
- Stimulate the submission of proposals to the program externally funded.
- Evaluate the quality of the proposals.
- Recruiting:
 - Recruit non-IEEE/AP members who publish in *AP-S Transactions*.
 - Work with IEEE towards reductions of IEEE fees for members of third-world countries.
 - Outreach initiatives for undergraduates, e.g., through informative sessions organized by local Chapters.
 - Design manuals for interaction with industry.
 - Publish articles on membership benefits.
 - Improve the networking capabilities of new graduates through, for example, technical forum on electromagnetics/antennas.
 - Have selected talks from the conference up on the Web—members only access.
- Retention:
 - Organize several free luncheons during the flagship conference to demonstrate AP-S appreciation of long-time members, new members, and student members.
 - Include presentations about AP-S during those luncheons.
 - Offer life-time AP-S membership for 10-year long membership.
 - Encourage and facilitate elevation to Senior Member grade.
 - Enhance network opportunities (Web site, twitter).
 - Offer long-time members free short courses/workshops every three years.
 - Improve financial benefits of membership such as reduced conference fees for AP-S members.
 - E-mails to members containing table of contents of AP-S periodicals
 - Increase the size of the trade show of the flagship conference and other financially sponsored or cosponsored conferences.
 - Articles on reviews of major advances to be published in the *Magazine*.
 - Build cross-Society networking.
- Education and publications:
 - Continue to increase the archive of available videos on the Web available to AP-S members: special sessions, short courses and invited talks of the flagship conference.
 - Web site for shared results, computer codes etc.

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- Networking and job placement forum for graduate students on the Web and in the *Magazine*.
- Help students to attend the flagship conferences through registration reduction for those who use volunteering opportunities.
- Encourage feature articles from the flagship conference special sessions.
- Set up web based forums on the flagship conference special sessions.
- Set up networking to help graduating engineers

Metrics and timeline:

- A mentoring strategy will be established for these developing regions by 2024.
- Annual outreach initiatives that will include workshops in these regions to be held during the duration of this plan, starting in 2024.
- At least 10 good quality project proposals by 2025.
- Use of the external funds for at least 10 projects by 2025.
- Increase in the number of members in these regions by 30% in 2025.
- The main metrics are the year-by-year membership data and retention in all categories: undergraduate students, graduate students, and higher-grade members.

5. Conclusion

The AP-S Strategic Goals and the corresponding Operation Plan for their achievement, for the period 2024-2028, have been presented in the previous sections. The feasibility of the Plan is granted because the leadership of the Society and various Committees are in charge of achieving each goal in a coordinated effort to improve the service that AP-S is bringing to its membership. Also, the Society financial resources allow the completion of the Plan.

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6. Appendix A – Detailed description of the Field of Interest

The following detailed description of the AP-S Fol is taken from the AP-S Bylaws, Section 2.

Detailed Field of Interest

1. General Information

The Society's field of interest, outlined in Article II of the Constitution, includes the theory, analysis, computation, measurement, design, development, test, and standards in all of the relevant areas described in detail in the following sections 2-6.

2. Electromagnetics

This includes basic theory and computational methods; diffraction and scattering, inverse scattering, target identification, radiation, radar cross sections, propagation, and interaction with all continuous and discrete media, including random and complex media, geophysical media, biological media, metamaterials, and electromagnetic bandgap structures; polarization; novel electromagnetic materials; and computational electromagnetics, including methods for and applications of numerical solutions of Maxwell's and other equations of electromagnetics, in all scales, nano to astronomical.

3. Antennas

This includes analysis, design, and development; empirical, theoretical, and computational models and experimental verification; material properties and selection; beam control and steering; signal processing for antennas, including digital beamforming, adaptive arrays, pattern synthesis, and pattern nulling.

4. Propagation

This includes theoretical and computational methods of predicting propagation and sensing; propagation and sensing measurements in all media, including Earth; and the characterization of propagation media, both natural and artificial; and applications of propagation, including wireless communication, multipath interference, smart, reconfigurable, and adaptive antennas, and multiple antenna systems for spatial, polarization, pattern, and other diversity applications.

5. Related Electromagnetic Measurements

This includes measurement, specification, and standards of all quantities and techniques related to antennas, electromagnetic radiation, propagation, and scattering; display and visualization of electromagnetic fields and related results of analyses, computations, and measurements; near-field and compact-range measurements and the development of new measurement techniques; and imaging and sensing using electromagnetic fields.

6. Education

This includes teaching, training, and education related to all topics within the field of interest, including their history.