

October 15, 2018



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

**Strategic and Operation Plans
for years 2019-2023**

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 AdCom approved the following mission and vision of the Society:

Mission: AP-S's core purpose is to foster antennas, propagation and electromagnetics theory, technology, and 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 (Fol) of the IEEE Antennas and Propagation Society

2.1 Current Fol

The current field of interest (Fol) 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 the following: antennas, including analysis, design, development, measurement, 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 sub-millimeter-wave techniques, antenna signal processing and control, radio astronomy, and propagation and radiation aspects of terrestrial and space-based communication, including wireless, mobile, satellite, and telecommunications. (72 words)

The Fol 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 Fol published in IEEE TAB Operations Manual, Section 4.12 (https://ta.ieee.org/images/files/ta_ops_manual.pdf).

A more detailed Fol 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).

2.2 Revised Fol

In July 2018, at the request of the AP-S Strategic Planning Committee, the AP-S AdCom approved the following modified Fol with the intention of emphasizing the work that the Society has been doing on Standards as well as the relevance of the Society's Fol at all frequencies. The new Fol has been sent to TAB for approval. It reads as follows (modifications in red):

The field of interest of the Society includes ~~the following~~: 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 sub-millimeter-wave techniques, antenna signal processing and control, radio astronomy, and propagation and radiation aspects of terrestrial and space-based communication, including wireless, mobile, satellite, and telecommunications at all frequencies. (74 words)

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.

3. Tag Line

In July 2018, 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 a tag line 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 tag line reads as follows:

Advancing Electromagnetics for Humanity

The tagline shall 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.

4. Strategic Goals for Years 2019-2023

In this section, the goals that conform to the Strategic Plan of the Antennas and Propagation Society for years 2019-2023 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 2019-2023, will be described. The Strategic and Operation Plans for years 2019-2023 were proposed by the AP-S Strategic Planning Committee during the July 2018 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 overall goals are:

1^o. Globalization of the Antennas and Propagation Society.

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, in agreement with its tag line ("Advancing Technology for Humanity"), AP-S strives to advance electromagnetics for humanity as its tag line indicates ("Advancing Electromagnetics for Humanity").

2^o. Inclusion of under-represented groups

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.

3^o. Advancing technology for a clean and green environment.

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. The Antennas and Propagation Society can be supportive of the areas of using renewable energy and resources, the use of recyclable technologies, and avoiding relentless economic growth by lop-sided indicators such as per-capita income.

4^o. Enhance interactions with IEEE sister Societies and with other organizations/associations in our field

Collaborations with some IEEE societies have been established in recent years. Those efforts have increased AP-S's visibility and have provided smoother operation of the Society together with increased outreach opportunities. Efforts along the same line should be continued and extended to other IEEE Societies and other organizations and associations that share interests in the AP-S field.

Goals in concrete areas are:

5^o. Motivate active participation of members in AP-S committees and leadership, and possibly also at the IEEE level

This goal intends to motivate IEEE AP-S members to actively participate in the Society's operation (and eventually in the IEEE's operation) by providing them complete information. This will contribute to enlarge the pool of volunteers and to enhance IEEE's and AP-S's visibility to members.

6^o. Rotation of AP-S flagship conference and of AP-S topical conferences around the world

During the previous five-year period, the decisions of rotating the AP-S flagship conference around the world as well as the establishment of AP-S topical conferences were made in order to better serve all AP-S members. The goal for the incoming five-year period is to improve this service by synchronizing the rotation of all these conferences so that in a given year AP-S conferences are held in most regions.

7^o. Initiate a cycle of workshops/conferences in South America (Region 9)

AP-S members and potential members in most countries of South America have reduced income, which makes it difficult for them to attend the AP-S flagship conference and topical conferences. On the other hand, AP-S has already experienced the interest of members in these countries in attending AP-S events, since ICEAA - IEEE APWC has already been held

twice in Region 9. The goal is to better serve this community by starting a series of workshops that could eventually evolve into conferences. This plan could be later extended to Africa (Region 8).

8^o. Evaluate the creation of a common platform for all AP-S financially sponsored or co-sponsored conferences

The Antennas and Propagation Society fully owns and solely sponsors several conferences around the world. The work of our volunteers acting in the Local Organizing Committee (LOC) and Technical Program Committee (TPC) to manage the paper submission, the review process, the organization of the sessions, and the registration process for our various conferences and workshops, is based on the use of different platforms. Scientists registering and attending our conferences and workshops may appreciate seeing a standardization of these processes while at the same time the use of a common platform for all our conferences may reduce the workload of members serving in the LOC and TPC committees as well as the cost sustained by each of our conferences. At the same time, a common platform could guarantee a common database for all the Society conferences.

9^o. That the timeliness, 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*) will be maintained or improved at their current high levels

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.

10^o. Develop an online platform for hosting, curating, and exchanging educational materials for electromagnetics, antennas, and propagation.

AP-S activities in the field of education should be enhanced in order to better serve all of the AP-S constituency and other possible members: students, academicians, industry practitioners, etc. The goal is to provide better venues for e-learning. The online platform could also be enhanced by collaborations with universities with online courses.

11^o. To increase industry membership and industry participation in the Society

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.

12^o. Continue the outreach initiatives in Regions 8-10 with a focus on education and training through projects related to humanitarian technologies

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. 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.

13^o. Expand AP-S presence in social media (Facebook, LinkedIn, Twitter, IEEE Collabratec, Research Gate, etc.)

AP-S currently has Facebook and LinkedIn accounts, with a modest activity. In order to increase AP-S visibility among the younger generations, the presence in social media should be expanded.

14^o. Aggressive recruitment of new members and retention of members with focus on students, young professionals and industry practitioners

This goal addresses the need to recruit and retain members all over the world with a focus on students, young professionals, and industry practitioners through a variety of actions.

15^o. Promote harmonious wireless coexistence as new technology direction

Identify and promote the theory and development of improved/new antenna technologies and propagation modeling for harmonious wireless coexistence, where wireless broadly includes any RF system (communications, imaging, radio and television broadcasting, radar, radio astronomy, radio navigation, remote sensing, etc.). Establishing spectral harmony is a decades-long endeavor. This plan addresses the five-year near term period. Establishment of possible new AP-S technical committees is included in the Operation Plan.

5. Operation Plan for Years 2019-2023

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 2019-2023.

1^o. Globalization of the Antennas and Propagation Society

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.
- Globalization of our flagship conference, organizing it not only in Regions 1-7, but also in Regions 8 and 10. This has been already approved by AdCom. This again will enable many participants from overseas to come to our annual symposia and enable the more efficient global sharing of knowledge.

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.
- The flagship conference will be held in Singapore in 2021. We hope to hold another AP-S flagship conference outside Regions 1-7 in 2024 and will begin the planning within the next year.

2^o. Inclusion of under-represented groups

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

Actions to achieve this goal include:

- Explore ways to encourage enrollment of women engineers, supporting more Women in Engineering (WIE) activities, and activities to include under-represented minorities.
- Organization of short courses and knowledge sharing via local Chapter activities that could bring in participants from the under-developed parts of the world.

Metrics and timeline:

- By 2023, each AP-S financially sponsored conference will have at least one WIE event as part of the program.
- 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.

3^o. Advancing technology for a clean and green environment

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

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.

Metrics and timeline:

- By 2023, the number of SIGHT activities will increase by 30%.

- By 2023, every SIGHT 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.

4^o. Enhance interactions with IEEE sister Societies and with other organizations/associations in our field

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.

Metrics and timeline:

- Within the next five years, one member of AdCom will attend one Board of Governance meeting of each sister Society per year and vice versa as a guest. AP-S will also have a booth at every sister Society or organization flagship conference to highlight the activities of AP-S.
- By 2023, AP-S will have MoUs or agreements with all identified sister Societies and organizations.
- By 2023, AP-S will have offered to hold at least one joint symposium, workshop, or session at a conference with each sister Society and identified organization.

5^o. Motivate active participation of members in AP-S committees and leadership, and possibly also at the IEEE level

Goal under the purview of: AP-S leadership, AdCom, Constitution and Bylaws Committee.

Actions to achieve this goal include:

- Establishment of a special session at the AP-S flagship conference to instruct members about:
 - AP-S governing documents: Constitution, Bylaws, Operating Manual.
 - AdCom decisions during the previous year.
 - Charter of standing committees.
 - Opportunities to be a volunteer in AP-S.
 - Opportunities to be a volunteer at the IEEE level, to enhance AP-S visibility.
- AdCom members and committee chairs as instructors together with Society officers and Past Presidents.

- Members of various IEEE committees to be invited to show the opportunities to be a volunteer at the IEEE level.

Metrics and timeline:

- Active participation of new members in the composition of standing committees, reducing about 20% after five years the average total numbers of years that people are serving as member of standing committees.
- 50% increase of presence of AP-S members in IEEE committees and IEEE TAB volunteer positions after five years.

6^o. Rotation of our flagship Conference and of our Topical Conferences around the world

Goal under the purview of: Meetings Committee.

Actions to achieve this goal include:

- Plan the rotation of topical conferences (CAMA, APWC, or ICCEM) in Regions 1-7 in order to serve members on the years that the flagship conference is held in Regions 8 or 10.
- Establish an agreement with URSI USNC to join these topical conferences when held in Regions 1-7.
- Conduct a survey over three years of the level of satisfaction of AP-S membership with AP-S financially sponsored conferences and, in particular, with the rotation of the flagship and topical conferences, and the South America workshop (see next goal).

Metrics and timeline:

- By 2019, selection of a topical conference to be held in North America in the first year after 2021 in which the flagship AP-S symposium is again held outside North America.
- Based on the feedback from the 2021 flagship conference in Singapore (number of attendees, distribution by countries, etc.), ensure that the flagship conference will be held outside of Regions 1-7 no more often that once every 3 years.
- Use as metrics the number of attendees of the flagship conference when held in North America (averaging on the last two or three North America events), and the number of attendees of the topical conference when held in North America.
- Use as metrics the data from the survey regarding level of satisfaction with the newly implemented conference system.

7^o. Initiate a cycle of workshops/conferences in South America (Region 9)

Goal under the purview of: Meetings Committee.

Actions to achieve this goal include:

- Plan an annual financially sponsored workshop to be held in South America.
- Involve Region 9 members working in our fields of interest as well as in fields of interest close to ours.
- Involve local Chapters in the organization of the meeting/workshop.
- Invite speakers from other IEEE Regions.

- Plan the evolution of this workshop into a conference.
- If goal is achieved, extend this plan to Africa (Region 8).

Metrics and timeline:

- In 2019, a topical workshop will be organized in Region 9 involving local Chapters.
- Use as metrics the positive results of the survey, the increase in the number of IEEE members in Region 9, the increase of the profit (or decrease of the loss) of the meeting, to naturally transform the workshop into a conference.
- By 2022, an annual conference to be organized in Region 9.
- By 2023, based on feedback, start a similar strategy for Africa (Region 8).

8^o. Evaluate the creation of a common platform for all the conferences financially sponsored or cosponsored by the IEEE Antennas and Propagation Society

Goal under the purview of: Meetings Committee.

Actions to achieve this goal include:

- Estimate the total workload (man-hours) currently spent by LOC and TPC members and compare this with the workload required from a staff person, comparing also the relative costs of volunteer and paid labor.
- Evaluate the convenience of using a common platform for AP-S conferences and workshops including the cost of possible staff persons.
- Explore possible platforms on the market provided by private companies that could provide this service at reduced costs for serving more than one conference/workshop.
- Implement the common platform (if found to be appropriate) by starting with the conferences fully owned by the AP-Society. The common platform will be offered to the various financially co-sponsored conferences and not mandated.

Metrics and timeline:

- By mid-2019, an estimate of the workload currently encountered by LOC and TPC members and costs compared to a staff person must be finished.
- By mid-2019, an estimate of the workload currently encountered by LOC and TPC members and costs compared to a staff person must be finished.
- By 2021, depending on the decision to implement it or not, a new platform for financially sponsored conferences must be adopted.
- By 2022, use results of the survey to measure satisfaction with the newly implemented submission and registration platform to assess the platform.
- By 2023, use the conclusions from the comparison of total cost of the service sustained by AP-S major conferences with the cost in using the possible common platform for all our conferences (including also the cost to hire a staff person tasked to manage the service for all conferences), and eventually extend the platform to all financially sponsored or cosponsored conferences.

9^o. That the timeliness, 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*) will have maintained or improved their current high levels

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.
- *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).
- *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.
- *JSTAP:*
 - Establish a good 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.

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.

10^o. Develop an online platform for hosting, curating, and exchanging educational materials for electromagnetics, antennas, and propagation

Goal under the purview of: Education Committee.

Actions to achieve this goal include:

- Form a subcommittee to specify the features needed for an online resources site.

October 15, 2018

- Contract the site development and beta testing to the Society.
- Roll out the site for public access for contributions of material and downloading material.
- Contact universities with online courses to establish possible collaborations.

Metrics and timeline:

- Subcommittee operational by 2019.
- Based on the discussions between universities and AP-S a strategy for online educational material will be developed by 2020.
- By 2021 the site development will be contracted and content will be added.
- By 2022, site will be beta tested.
- By 2023 success will be measured by the availability of the online platform, and by the number of accesses per year by the Society membership.

11^o. To increase industry membership and industry participation in the Society

Goal under the purview of: Industry Initiatives Committee.

Actions to achieve this goal include:

- AP-S financially sponsored conferences: we plan to have industry-related awards for papers, as well as industry special sessions at the flag-ship conference.
- Distinguished Lecturers: we plan to have DLs with an industry/entrepreneurial background.
- Chapter level: we plan to organize local industry/entrepreneurial seminars/events for our members.
- A new Society award for industry leadership or entrepreneurship
- A focus on recognition for industry members to get them elevated to Senior Member and also to Fellow.

Metrics and timeline:

- Every AP-S financially sponsored conference to have an industry-related award by 2023.
- Industry related sessions at the International Antennas and Propagation Symposium to be a regular event by 2023.
- At least one DL/year with an industry/entrepreneurial background by 2020.
- Every active Chapter to have at least one industry focused event by 2023.
- An annual award for industry leadership or entrepreneurship by 2020.
- Industry membership double in five years.

12^o. Continue the Regions 8-10 outreach initiatives with a focus on education and training through projects related to humanitarian technologies

Goal under the purview of: MGA Committee, SIGHT 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.

Metrics and timeline:

- A mentoring strategy will be established for these developing regions by 2019.
- Annual outreach initiatives that will include workshops in these regions to be held during the duration of this plan, starting in 2019.
- At least 10 good quality project proposals by 2021.
- Use of the external funds for at least 10 projects by 2022.
- Increase in the number of members in these regions by 30% in 2023.

13^o. Expand our presence in social media (Facebook, LinkedIn, Twitter, IEEE Collabratec, Research Gate, etc.).

Goal under the purview of: Editor in Chief (EiC) of Electronic Publication.

Actions to achieve this goal include:

- Establish the position of one (or more) Associate Editor (AE) to the AP-S Editor in Chief (EiC) of the Electronic Publication (Web page).
- This person, possibly a Young Professional, to be in charge of Social Media (Facebook, LinkedIn, Twitter) and other research and technical networking media (Research Gate, IEEE Collabratec).
- Design a project to synchronize and post the information of the Web page to these media, which will reach more people than a passive Web site.

Metrics and timeline:

- AE(s) appointed by 2019.
- Effectiveness of engagement measured by the number of posts, likes, and so on, to assess if these additional engagement vehicles are working, by 2020.
- Significant increase in articles/alerts/Society advertisements by 2020.

14^o. Aggressive recruitment of new members and retention of members with focus on students, young professionals and industry practitioners

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

Actions to achieve this goal include:

- Recruiting:
 - Design a plan to invite students to AdCom meetings.

- 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.
 - 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:

- The main metrics are the year-by-year membership data and retention in all categories: undergraduate students, graduate students, and higher-grade members.
- With respect to the timeline: the first four actions of each group above are to be completed by 2020; the rest, by 2023.

15^a. Promote harmonious wireless coexistence as new technology direction

Goal under the purview of: New Technology Directions Committee, Standards Committee, Industry Initiatives Committee, SIGHT Committee, Meetings Committee.

Actions to achieve this goal include:

- Foster the design and development of innovative antenna elements and arrays and identify and foster RF coexistence and co-design approaches: for example, possibilities include:
 - Jointly optimize spatio-temporal energy distribution and channel capacity.
 - Include site and platform structure in concert with near-field scatterers.
 - Adaptable antenna technologies for active arrays that integrate electromagnetic theory and signal processing.
 - Integrating antenna into subsystems behind the aperture to increase control of parameters that affect radiated/receive system performance.
 - Incorporate antenna characteristics into transmitter as design parameters.
 - Consider alternate base-station placements for communications.
 - Design antennas that operate during natural and person-made disasters.
- Propose the establishment of one or more AP-S technical committees, if needed.
- Start establishing a standardized and codified general effort for: developing methodologies that simultaneously test mutual interactions among different spectrum users (*February 2021*), and recommending practices to measure in-band and adjacent band interference and coexistence (*February 2020*). Engage Standards committees from AP-S, MTT-S, EMC-S, etc. (*Winter 2018*).
- Generate a Science and Technology (S&T) roadmap to allow knowledge-based decisions on ways to improve legacy antenna systems and propagation modeling, on new areas for antenna research, to determine critical requirements for future antenna systems, and to guide government, industry, and academia in developing improved standards and approaches for future commercial products. (*Begin discussion now and provide a report and associated slide deck in July 2020*).
- Identify and engage collaborators (IEEE Internet of Things, IoT, initiative, IEEE 5G initiative, MTT-S, EMC-S, AP-S Industry Initiatives Committee, AP-S SIGHT Committee, and so on). (*Start now and continue throughout the five-year period*).
- Propose a special Issue in the AP-S *Magazine* to foster interest (*Fall 2019*), develop tutorials (*Fall 2019, Summer 2020/2021/2022/2023*), and propose special sessions (*Summer 2019-2023*) at AP-S conferences.

Metrics and timeline:

- Timeline:
 - For the first two bullets above, the span is from 2019 to 2023.

October 15, 2018

- For the rest, the timeline has been specifically mentioned (in italics).
- Metrics:
 - Involvement with IEEE 5G Initiative and other relevant activities.
 - Methodologies that simultaneously test mutual interactions among different spectrum users.
 - Recommended practices to measure in-band and adjacent band interference and coexistence.
 - S&T roadmap.
 - Projects with sister Societies and SIGHT.
 - Involvement with relevant IEEE Standards.
 - Approved AP-S seedlings.
 - Special session and tutorial at flagship conference and special issue in *AP Magazine*.

6. Conclusion

The AP-S Strategic Goals and the corresponding Operation Plan for their achievement, for the period 2019-2023, 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.

October 15, 2018

Appendix A – Detailed description of the IEEE Antennas and Propagation Society Field of Interest

The following detailed description of the AP-S FoI 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.