Geoscience and Remote Sensing Society

Strategic Plan

November 2020

DRAFT

IEEE GRSS Mission, Vision, and Core Values (2020 – 2025)

Flow directly from our IEEE Geoscience and Remote Sensing core fields of interest:

OUR MISSION

We strive for advancement of the theory, concepts, and techniques of science and engineering as applied to remote sensing the earth, oceans, atmosphere and space, and the interpretation and dissemination of this information.

Simply put, our mission is to advance the state-of-the-art in Geoscience and Remote Sensing

OUR VISION

To be universally recognized for contributions within Geoscience and Remote Sensing and an essential enabler of its vibrant global community-of-communities.

OUR CORE VALUES

Scientific Integrity
Global Community Building
Trust
Inclusion
Growth and Nurturing

OUR GOALS:

Goal 1: Facilitate discovery and solutions to remote sensing problems aligned with societal challenges.

Goal 2: Create and maintain a diverse and inclusive collaborative culture by exemplifying and promoting these standards.

Goal 3: Effectively address global remote sensing information challenges by partnering broadly with other organizations and sectors.

Goal 4: Be a trusted source of educational services and resources for geoscience and remote sensing

Goal 5: Provide opportunities for career and professional development while empower the next generation of technical leaders in Geoscience and Remote Sensing

Goal 6: Inspire technical communities to advance remote sensing, inform public policy and expand our knowledge of the earth.

Executive Summary

This document describes the mission, vision, and goals of the IEEE Geoscience and Remote Sensing Society (GRSS) with a detailed description of the Society. Since the last in-person meeting of the Administrative Committee in Athens in November 2019, significant and still evolving impacts of the current COVID-19 pandemic require attention within the strategy adopted by GRSS. Due to the pandemic, the IGARSS 2020 conference was delayed and held virtually in the fall of 2020. Other conferences sponsored or co-sponsored by GRSS were delayed or cancelled. The pandemic has also impacted many of the funded projects and initiatives of GRSS as well as the planning for future IGARSS. As a result, we will combine the results of the November strategic planning with near term strategy to best determine the path forward for GRSS.

This document is expected to be updated annually and revised at five-year increments to document success of the implemented actions and update the GRSS strategic plan accordingly.

The main points of the plan are:

- **GRSS Society goals:** 1) Facilitate discovery and solutions to remote sensing problems aligned with societal challenges, 2) create and maintain a diverse and inclusive collaborative culture by exemplifying and promoting these standards, 3) Effectively address global remote sensing information challenges by partnering broadly with other organizations and sectors, 4) Be a trusted source of educational services and resources for geoscience and remote sensing, 5) Provide opportunities for career and professional development while empowering the next generation of technical leaders in Geoscience and Remote Sensing, and 6) Inspire technical communities to advance remote sensing, inform public policy and expand our knowledge of the earth.
- **Updated SWOT analysis:** 1) Strengths: GRSS and IEEE reputation, 2) Weaknesses: limited industry and student involvement, limited Geospatial Information processing activities, local presence, and strategy and coordination in educational activities, 3) Opportunities: global activities, increased visibility and online presence, expansion of GRSS technical interests and 4) Threats: open-access and for-profit publications, offering lower cost and shorter review periods.
- **Key Performance Indicators (KPI):** 1) The number of IEEE GRSS members and Affiliate members, 2) the Impact Factor of our journals, 3) attendance at our flagship and co-sponsored conferences, and 4) the GRSS economic balance.
- **Summary plan forward:** We will assign resources to**:** 1) Improve our on-line presence, 2) tackle technical areas of emerging importance including multi-disciplinary topics, 3) address the role of technology in future conferences and publications, 4) increase membership base, expand the scope of the IDEA program, and develop ways to improve membership through chapters and 5) generally improve services and value to GRSS members – our 'customers.'

Finally, we point out that our strategic **initiatives** are managed by key individuals designated ad hoc, under the supervision of the GRSS Vice Presidents or Directors of the relevant portfolio using IEEE 50% surplus and 3% reserve funds. The Society continues to improve the process of planning, implementation of resources for strategic initiatives, and transitioning successful projects into Society operations. This focus will help ensure Society operations will remain transparent, responsive and efficient in our rapidly evolving environment while providing added value for our membership.

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1. IEEE GRSS Overview

The IEEE GRSS is the world's leading professional society in Geoscience and Remote Sensing, Geospatial Solutions, Sensors and Platforms. It connects academicians, industry professionals, students, and decision makers through its journals, technical committees, conferences, and social networks. The IEEE GRS Society has been expanding its activities, membership base and global involvement by providing value-added services and resources. The Society plans to continue to provide activities to underserved and developing regions and advance our publications portfolio to address the changing landscape of technical publications driven by Open Access (OA), for profit and on-line only publishers, phasing-out of hardcopy and the changing focus resulting from emerging technology and techniques.

2. Mission Statement

The IEEE Geoscience and Remote Sensing Society "shall strive for advancement of the theory, concepts, and techniques of science and engineering as applied to remote sensing the earth, oceans, atmosphere and space, and the interpretation and dissemination of this information."

3. Strategic Planning Process

This Section describes the process of portfolio review, 3% and 50% rule projects and process of transitioning to operational budgets.

Strategic planning meetings are day long meetings involving the AdCom occurring once every year typically immediately prior to the November AdCom meeting. During the past three years a subset of the GRSS Vice President's portfolios have been highlighted considering the changing competitive landscape of the community and SWOT's aligned with the selected portfolios. The review consists comments and discussion on selected points relevant for the select portfolio with an out brief, summary and way forward provided by the relevant VP or designated representative. For the past three years the strategic planning meeting has addressed the following portfolios:

- 2017: Publications and Conferences (Meetings and Symposia)
- 2018: Membership (Professional Activities) and Information Resources
- 2019: Technical Committees, Publications and Conferences (Meetings and Symposia)
- 2020: GRSS 2030 (long term planning), Information Resources and Conferences

Archives from past strategic planning meetings are available for review on the box.[1] Summary points from discussion at the annual strategic planning are then used to guide GRSS policy, operations and investments. One of the primary paths to implement new activities and services is through IEEE 50%-rule and 3%-rule initiatives that allow GRSS to supplement the annual operational budget to improve agility to respond to opportunities to better serve our members in a changing environment. The 3%-rule projects utilize funds made available to GRSS based on 3% of the consolidated reserves of the Society but may be limited to 1% of the reserves at the IEEE level. Topics are aligned with the latest strategic meeting(s) and are renewable for up to three years. Successful 3% initiatives may then be transitioned to operations, evolved, or retired depending on their individual success. The 50%-rule projects utilize funds based on 50% of the budget surplus from the previous year as made available to GRSS from IEEE and complement existing initiatives or provide a convenient method to start new initiatives when opportunities may be present. For purposed of GRSS strategic planning we will make connections between the outcomes of annual strategic planning meetings and emergence of new 3%-rule projects. A flow chart summarizing this process in shown in Figure 1 below.

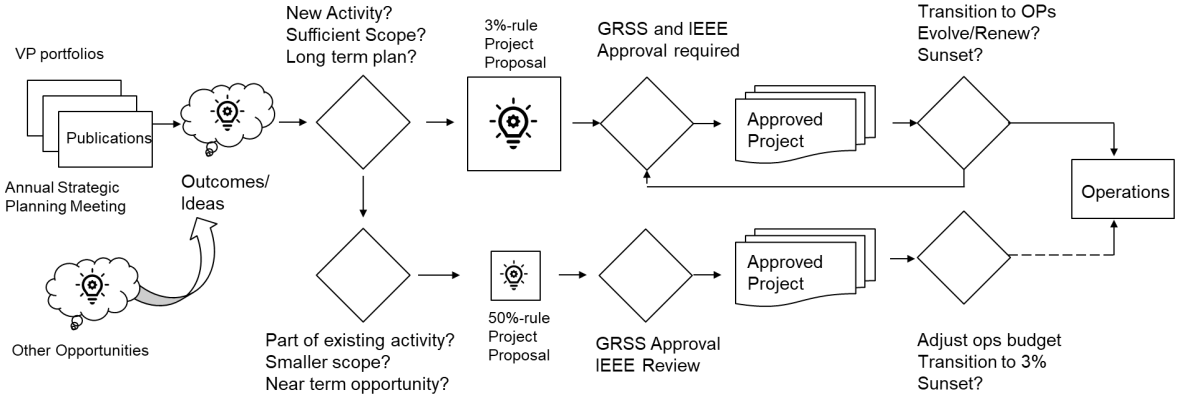

Figure 1. Flow chart showing strategic planning process and development of new initiatives from trial to operations.

A 3%-rule project may generally be renewed up to 3 years while continuing to evolve the initiative. After 3 years, financial support may need to be transitioned into the operational budget or discontinued if the project has not had the intended impact. For 50%-rule projects there is no anticipation of a new budget line item, however, 50%-rule activities may serve to guide adjustments to the yearly budget proposal. A list of current 3%-rule projects that have been approved by GRSS and IEEE appear in Section 12.

[1] http://m.box.com/browse/90765641662

4. SWOT Summary

The SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis presented below is structured to help GRSS to determine the best opportunities to pursue to achieve its growth goals, and to identify which strengths should be developed in the near future to improve the Society.

Table 1. GRSS and Competing Societies: Questions to address the Strengths, Weaknesses, Opportunities and Threats.

	S **Strengths**	**W** **Weaknesses**	**O** **Opportunities**	**T** **Threats**
GRSS	What is GRSS particularly good at?	What does GRSS need to improve?	What is happening / changing that GRSS can benefit from?	Which are the new competitors?
Competing Societies	What can the other societies do that GRSS cannot?	What other societies need to improve? Is there any evidence?	Are other societies better positioned? What do they tell potential members?	Are other societies growing faster? Are they more flexible? Are they more innovative?

This year the IEEE carried out a detailed survey of its members that attempted to cover all aspects of member services provided by IEEE and the satisfaction of members with the services. The results of the survey were available for several subcategories of the Society membership demographics including level, age, region and industry vs. non-industry affiliation. Within the survey results, ranking of 9 Key Performance Indictors (KPI's) and a ranking of 20 Society Attributes (SA's) of GRSS were made avaialble to Society leadership. The results could be further sub-divided based on members demographics as noted above. Results from this survey that show indication of strong satisfaction or dis-satisfaction related to GRSS are reported and utilized for this SWOT analysis.

Updates to SWOT analysis herein are also based on feedback received from the most recent series of strategic planning meetings which were held in November 2018 and 2019. Collectively, these two meetings addressed all five of the IEEE GRSS Vice President's portfolios over the two-year period dating from November 2018. Input from these strategic planning meetings addressing Membership (Professional Activities), and Information Resources portfolios in November 2018, and the Publications, Meetings and Symposia and the Technical Committees portfolios in November 2019 are included in the following updated SWOT analysis as well as later within the 'Goals' section of this document.

4.1 Strengths

From the 2020 IEEE survey, the best performing KPIs of the Society over all membership categories and with respect to the overall IEEE norm show that our members feel a connection to the Society and show satisfaction with their membership overall. Another KPI showing strengths for GRSS are that our members indicate GRSS is importance for their technical growth. Within the Society Attributes (SA's) that show strengths for GRSS are global reach and membership, research-orientation, technically specialized in relevant areas, is of high value, and excellent quality.

As a result, GRSS continues to be seen as a well-respected professional society, and this may be our most significant asset. Our priority should be to continue to work hard to preserve our quality is our publications and conferences in our work to continue to improve the Society. Additional strengths of

GRSS as part of IEEE overall, is our relatively diverse and international membership. While IEEE membership has generally held steady through a variety of competing forces including local economic activity, IEEE GRSS membership has continued to rise, exceeding 4000 members for the first time in 2019. Feedback from our recent November strategic planning sessions also suggest strengths originating from our highly engaged volunteers allowing the Society to cover a wide variety of topics.

4.2 Weaknesses

Over the past five years, our perspective on "What does GRSS need to improve?" has been summarized with the major themes of: "lack of industry and student involvement," "limited (involvement with) geospatial information and hyperspectral," "initiatives are too dependent on a particular person." The current IEEE survey indicates that our most significant weaknesses with respect to the IEEE norm are related to local activities, membership is too expensive, and we are not industry oriented. Other areas that are not really weaknesses but that we may improve, concern being more approachable and responsive to members. Some of these areas are reinforced with feedback from our November strategic planning meetings which includes questions about reaching the majoring of scientists in climate related topics, and concerns about needing greater outreach.

Over the past five years, the Society has focused additional resources on increasing student and YP involvement through a variety of initiatives including the GRSS Student Grand Challenge, YP events at IGARSS, and increased scope of GR4S. For this year GRSS has also continued its focus on YP, industry, and Chapter activities through our 35-initiative portfolio. However, COVID-19 related restrictions have made progress more difficult for in-person activities but at the same has provided opportunities using the current focus on expanding on-line activities and materials. We will discuss opportunities in the next section.

4.3 Opportunities

Over the next five years we also need to consider "What is happening and changing that GRSS can benefit from?" The recent IEEE survey offers two results that can help identify opportunities for improvement that are provided in the form of "importance vs. benefit" graphs. The first relates four categories: 1) helps career, 2) Impact in the field, 3) Networking, and 4) Technical resources. The second graph includes six categories relating the opportunity the Society offers members to: 1) Acquire content, 2) develop career competencies, 3) make connections, 4) curate information to meet needs, 5) Remain current and 6) share content. Within the results for GRSS the importance and performance align very well except for a need to improve network opportunities to align with their importance to our members.

These are also reinforced from the November strategic planning sessions which include feedback that "Building a unique forum for networking and exchange" is needed. Other opportunities include addressing the need for increase Geospatial information topics related research within the scope of the Society and aggressively tackle areas of emerging interest such as smart cities, artificial intelingence and distributed sensing and computing as the next technological frontier. Finally, as of the beginning of the COVID-19 travel restrictions, it has been of primary importance to increase the online presence of GRSS in order to enable virtual meetings but also to reach members and potential members whose participation in these events may have been limited due to cost and travel barriers.

Online presence and continued attention to global activities is a path to achieve some of the fundamental goals of the Society such as increased membership, visibility, increased GRSS local

presence, potential broadening of the GRSS field of interest and other opportunities. Improved online presence may also facilitate participation from members working in industry positions with ever decreasing research-related travel budgets. Finally, from the IEEE survey there is an opportunity for GRSS to improve member satisfaction by increasing our visibility at the local level, even considering our significant growth in Chapters over the past 5 years.

4.4 Threats

This section evaluates, "Who are the new competitors" and "what are the new circumstances." We need to continuously evaluate our value and understand how to respond to ensure GRSS' value to the Earth remote sensing and geophysical communities continues to be viewed favorably. There are two major themes in this area which address threats to 1) publications due to competitors and 2) conferences due to the significant impacts of the current COVID-19 global pandemic.

For Publications:

One of two primary competitors to GRSS flagship journals is Remote Sensing of Environment (RSE), an academic journal published by Elsevier. Over the past five years, RSE has continued its success and strengthened its impact factor which has increased by ~30% over the past 5 years. Our second primary competitor is the International Society for Photogrammetry and Remote Sensing (ISPRS) Journal of Photogrammetry and Remote Sensing. This official publication of the ISPRS has risen from an impact factor of ~4.3 in 2015 to 7.3 in 2019, or an increase of ~70% in the last 4 years.

Finally, MDPI Remote Sensing which started publishing in 2009 and received its first impact factor in 2012. Since then it has always been above GRSL and in 2014 surpassed JSTARS and now is close but slightly behind TGRS. The MDPI Remote Sensing follows a full OA model and its publication fee (OA included) is 1400 CHF (US$1455), offering discounts to Universities and Research Centers. The journal also includes the possibility of adding supplementary material such as data tables and spreadsheets, test documents, images, videos, executables, and even software source code. In comparison to IEEE journals, the full OA fee is US$1750 above the regular publication fees, with very limited ability to add even a simple animation to the standard pdf. This year, MDPI was a co-sponsor of IGARSS, and have proactivtely recruiting authors to broaden their scope and offerings of special issues.

A key development within the competitive landscape for GRSS since 2015, occurred in September 2018 with the 'Plan S' initiative for open-access science publishing. This initiative was launched by Science Europe a consortium of major national research agencies and research funding organizations from twelve European countries. Along with the change, IEEE required that their OA journals to work towards 42-day submission to publication, as in almost all cases a significant improvement in the time allowed to review and decide on rejection or acceptance. Much of the improvement is expected to come from the duration allocated to the Associate Editor for decision making which, through the use of personal rather than automated reminders, has led to tangible benefits with TGRS as well.

In November 2018 GRSS voted to endorse the general IEEE strategy to promote more OA content through incentives to Organizational Units based on Key Performance Indicators. These KPIs involve submission-to-publication times, number of submissions, number of accepted articles, usage, and multidisciplinary (more than two sponsoring OUs and impact factor related incentives in the form of discounts for publications.

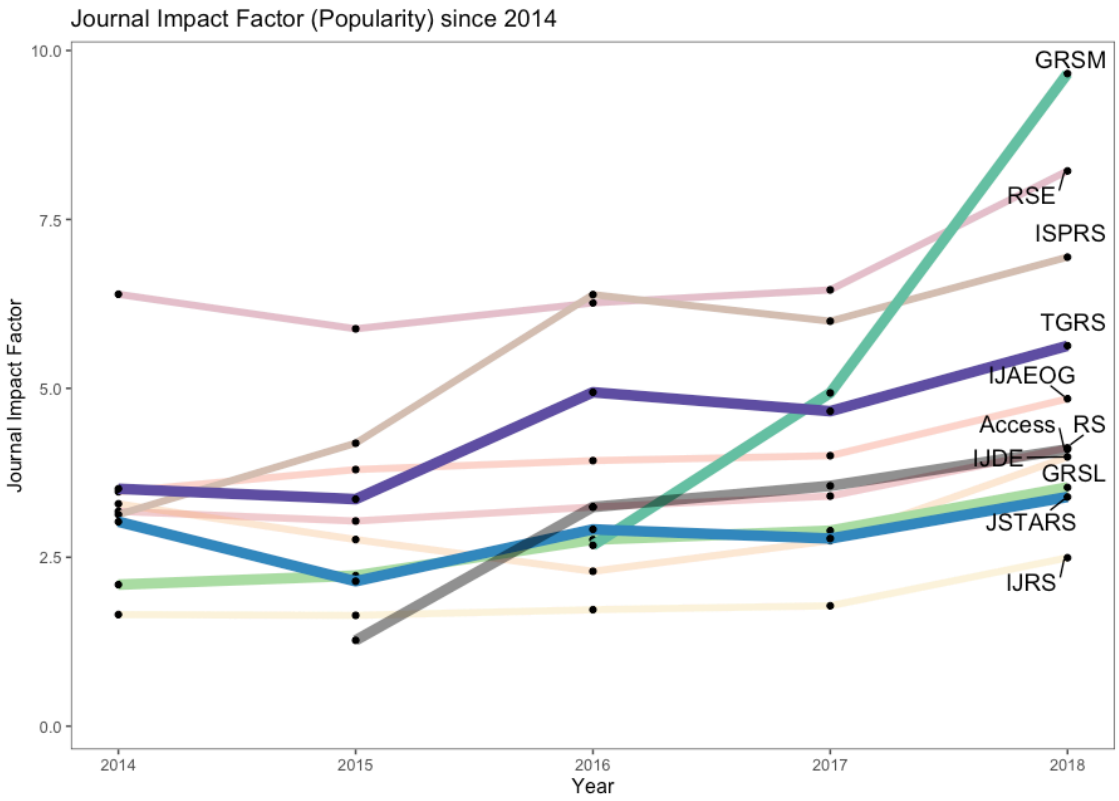

Figure 2. Evolution of Impact Factor of peer reviewed GRSS journals and main competitors.

In a proactive decision regarding OA, GRSS voted to move JSTARS to full OA in November 2019. This decision was not without risk, however, as of the fall of 2020 submission to JSTARS remains high. As a result, GRSS appears to be well-positioned considering recent changes to OA requirements imposed by the current environment. However, for fundamental research that traditionally been handled by TGRS, there is a bit of imbalance. There is intended to be a clear difference between JSTARS – addressing remote sensing applications and TGRS addressing fundamental research. There is concern that this line has been blurred somewhat to separate JSTARS and TGRS by only the impact of the work. Currently, TGARS also faces the problem of excess growth of published page count which has been impacting the editorial staff.

One area that needs attention is the Society's role in the IEEE Journal on Miniaturization for Air and Space Systems (J-MASS) which is co-sponsored by the IEEE Sensor's Council, GRSS, Aerospace and Electronic Systems Society (AESS), and the Instrumentation and Measurement Society (IMS). The Journal has had a very slow start and is not attracting submissions from its target audience even though work in the field of Small Satellites in Remote Sensing is exploding. As a point of reference, the small satellite conference held every year by Utah State University attracts thousands of attendees and small satellite sessions continue to grow.

For Conferences:

Conferences and meetings have been significantly impacted by the COVID-19 pandemic and nearly all GRSS sponsored or co-sponsored conferences scheduled for 2020 have been altered to virtual format, delayed or cancelled outright due to the pandemic. IGARSS 2020 was held virtually *and* delayed yet enjoyed the largest number of registered attendees ever with the virtual format. Due to the impacts of COVID, application of technology to enable virtual conferences is a critical element going forward. It is noteworthy that, although virtual conferences have been possible for quite some time, these capabilities have not been in demand due in part to the ease and availability of global travel. The Society embraces further development if on-line technology and applications for enhancing the experience of virtual conference attendees and to ensure continued success of the Society's conference portfolio.

Prior to the COVID pandemic GRSS conferences were reviewed in Athens in November 2019. The main points concerning evolution of the GRSS conference portfolio are summarized below:

- Increase frequency in China (once every 6 years)
- Two Regional-GARSS (i.e. in two non-IGARSS world regions) per year
- Regional-GARSS should address local issues
- Strategy to ensure R-GARSS quality

There was also a need for:

- Working more closely with TCs
- Continuous updates to technical topics
- Opportunities to take advantage of emerging technologies

For regional Geoscience and Remote Sensing Symposia

- IGARSS is held annually in the summer of northern hemisphere (typically in July) in America, Europe, and Asia with a 3-year rotation cycle
- Regional-GARSS (R-GARSS), which will be piloted starting in 2020, is designed to facilitate regular engagement (at least annually) between GRSS and regional constituents including GRSS members, government agencies, and local industries
- R-GARSS is scheduled during non-summer months in the northern hemisphere.

Notes (pre-COVID):

- Current set up: too many parallel sessions
- Need to improve poster interaction sessions
- Need more one-on-one interactions
- Idea: Keynotes with poster sessions only
- Idea: Oral sessions only
- Idea: New oral session with poster discussion

This year GRSS will support YP conferences and activities that include small satellites with an additional goal of directing publications to JMASS. One example for 2020 is GRSS sponsorship and support of student travel to the Federated Satellite Systems Conference (FSS), an IEEE Young Professionals activity, which attendees are encouraged to submit to J-MASS Special Issue.

5. Goals

In this section we attempt to define long term goals (e.g. at least 5 years from now) but also suggest more near-term activities to achieve the long-term outcomes. These descriptionss should be used to generally guide 3%-project initiative construction and for near term opportunities can influence 50%-rule project activities as the mechanism to realize many of the plans and activities outlined in the section. The following goals are identified at the Society but are typically implemented through the Vice Presidents or Directors. In this way, GRSS activities can continuous and incrementally evolve to match the changing landscape of the community that GRSS serves.

Goal 1: Facilitate discovery and solutions to remote sensing problems aligned with societal challenges.

The Geoscience and Remote Sensing Society sponsors or co-sponsors 5 peer-reviewed publications including the Geoscience and Remote Sensing Magazine (GRSM) that currently enjoys the highest impact factor in our related field. Our publication and conference portfolios, including the International Geoscience and Remote Sensing Symposium (IGARSS), establish GRSS technical excellence and leadership in Remote Sensing and Geoscience. GRSS supports regional activities and capacity building in remote sensing around the globe and through our continued involvement with the Group on Earth Observation.

Goal 2: Create and maintain a diverse and inclusive collaborative culture by exemplifying and promoting these standards.

Networking and professional connections are one of the most significant benefits of IEEE and GRSS membership and participation. The Society understands that fundamental problems we face in Remote Sensing are too big to be solved individually and require collaboration to make effective progress for everyone. Recently GRSS undertook an initiative to create regional versions for IGARSS in support of international collaboration and development of a community of communities in Remote Sensing. We also foster collaboration between academia, companies and governmental institutions

Goal 3: Effectively address global remote sensing information challenges by partnering broadly with other organizations and sectors.

Following our well-known publication and conference portfolios, GRSS embraces collaboration and working together with organizations active in related fields. Examples include new co-sponsored regional conferences, expanded offerings of GRSS Summer School (GR4S) and on-line webinars. GRSS also sponsors regional activities around the globe including workshops, forums, student competitons and Young Professional and networking events. These events help engage the local research community and industry as a global partnership.

Goal 4: Be a trusted source of educational services and resources for geoscience and remote sensing

GRSS has significantly expanded our online webinars and resources. The Society has also recently expanded our distinguish lecturer series to include a separate thread on Industry-Centered topics and workshops including hands on coding workshops at our flagship meetings. If you are a GRSS member, you will also have access to our GRSS resource center which includes peer-reviewed specialized and tutorial material on a wide range of current topics on Remote Sensing.

Goal 5: Provide opportunities for career and professional development while empowering the next generation of technical leaders in Geoscience and Remote Sensing

GRSS-sponsored technical activities and are key to providing and wide variety of opportunities for collaboration and leadership. The GRSS, Young Professionals activities, IDEA, Student Grand Challenge, regional and local activities, and recognition from the many professional awards GRSS offers are examples of ways GRSS can contribute to an individual's professional, technical, and leadership development.

Goal 6: Inspire technical communities to advance remote sensing, inform public policy and expand our knowledge of the earth.

The technical community of GRSS includes over 70 Chapters worldwide as well as joint activities and collaborations with international organizations to further our mutual interests. The Society also contains several Technical Committees, each providing leadership to address key topics in Geoscience and Remote Sensing and working to ensure our technical activities are robust, relevant and continue to grow to meet the needs of the community. The Society aims to continue developing activities and relationships that facilitate and advance the state of the art in Geoscience and Remote Sensing.

6. Key Performance Indicators

As stated earlier in Section 4 the 2020 IEEE survey assessed 9 Key Performance Indicators (KPI's). These are:

Overall Satisfaction

Likelihood to recommend the IEEE or the Society to others

Value for the price

Likely to renew

Importance to the profession

Has the resources they need

Is their primary technical community

Important part of their who they are professionally

Feel connected to the Society

Of note is that in comparison of the normalized response across all of IEEE, GRSS performance was above the average in all indicators. The two areas that GRSS scored most above the norm were in "feeling connected to the Society" and "Important to the profession." The two areas that GRSS performance was closest to the IEEE norm (but still above) were in "Likely to renew," and "Has the resources I need."

The 2020 IEEE survey also included a summary from responses showing how members viewed the correlation between specific Society attributes and their overall level of membership satisfaction. Are these attributes present in the Society and do they matter to you? There are 20 Society Attributes (SA's) included and they are listed below in the order of satisfaction as scored from the survey:

Table 2. Society attributes from the IEEE 2020 survey as scored by the survey. Colored boxes indicate the relative importance of the attribute: important (red); moderate (orange); less important (clear)

1. Global	2. Research Oriented	3. Technically Specific	4. Up-to-date
5. Relevant	6. Excellent Quality	7. Academic	8. Valuable
9. Innovative	10. Cutting-edge	11. Prestigious	12. Well-known
13. Thought leader	14. Practical	15. Responsive	16. Approachable
17. Industry-oriented	18. Exclusive	19. Expensive	20. Local

These results in sum indicate that we should continue to do everything we can to ensure the quality of our products. Areas of improvement are to improve our responsiveness to our members and make our Society more approachable. The SA's are scored on a relative basis with each other, not with an average response at the IEEE level or between Societies.

The Society has also defined specific Key Performance Indicator's (KPI's) that can be quantified to assess how we are doing. For GRSS we consider four specialized Key Performance Indicators (KPIs):

KPI 1: Number of IEEE GRSS members and Affiliate members. Recall that Affiliate members are not IEEE members and, therefore, they do not pay the IEEE fees, which is the largest fraction of the annual membership fee. This may be critical when looking for growth in some regions of the world.

KPI 2: The Impact Factor of our journals, as a single indicator metrics. However, we have to be careful, because trends cannot be evident after 3 years, and then it may be too late.

KPI 3: Attendance at our flagship conference averaged over the past three-years to account for the three-cycle geographical cycle we currently follow.

KPI 4: GRSS economic balance. Most GRSS revenue due to publications, and secondly from from conferences. Publications over length page charges are one of the primary sources of income for the Society and IGARSS surplus also contributes.

In addition, we may also look at secondary KPIs, that can give us insight about the health and vitality of the Society which include:

SPI 1. The number of GRSS Chapters
SPI 2. The number of reported activities per chapter per year on average
SPI 3. The number of papers and pages published per journal
SPI 4. Income from Xplore papers from our sponsored and co-sponsored conferences

These should be considered on an annual basis and reported during the strategic planning meeting in November.

7. Target Customers

Our customers are our members, to whom all efforts must be directed

The Society membership has stayed consistent in Regions 1 – 6 with perhaps a small but continuous decrease for the past few years, while growing in Regions 7 – 9. Membership and membership growth have been addressed in Sections IV.3 and V.6 of this document. The main ideas are summarized here:

- GRSS is mostly formed by members within academia and government, and by comparison has a smaller number of industry and student representation,
- GRSS needs to take advantage of global activities to increase the membership base, and in particular Asia (mainly China and India, where continued growth is expected in the next years, and GRSS has already invested significant efforts), Africa (where GRSS is revamping efforts since IGARSS 2009 was held in Cape Town, South Africa), and Latin America (where recently regional societies and teams have been approached by GRSS),
- GRSS might consider expanding the scope of their Minority Membership program to account for the global diversity, and
- GRSS needs to find ways to increase membership through the chapters themselves.

These points are reinforced by responses to the recent IEEE survey that are shown in Figure 3 below.

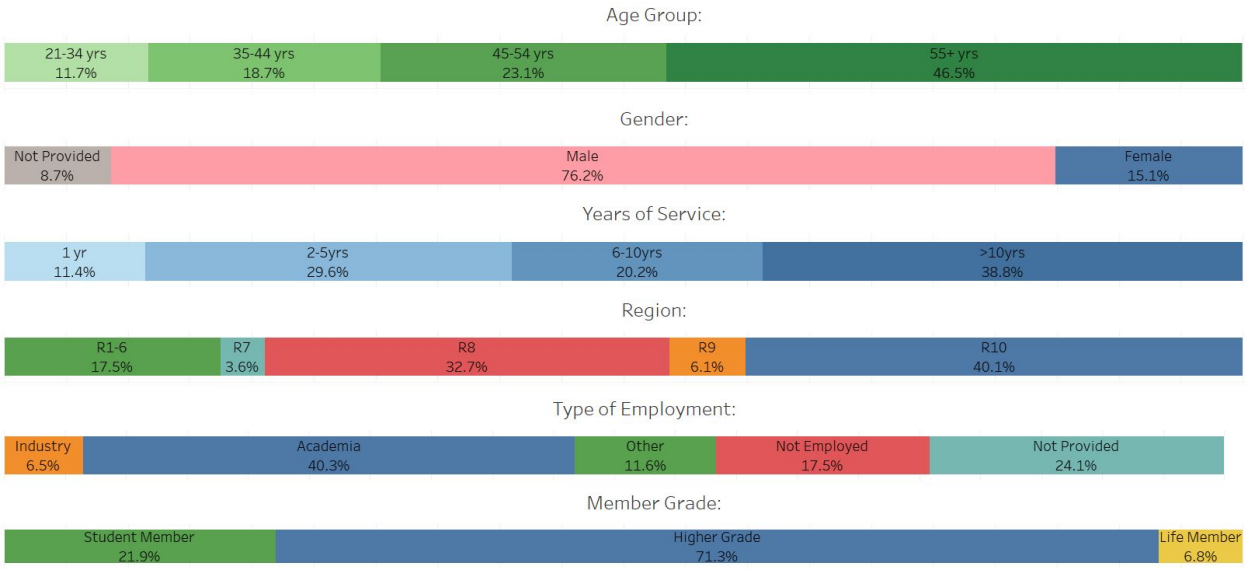

Figure 3. Graphic showing demographics of respondents to the IEEE survey that are members of the Geoscience and Remote sensing Society

Of note for GRSS is the relatively high percentage of membership responses from Region 8 and Region 10 which combined make up over 70% of the GRSS member responses. There is also a relatively low percentage of Industry members compared to members from academia. Considering the significant changes occurring in remote sensing with increased access to space and the burgeoning small satellite and data analysis industries, we need to continue to make our industry members and potential members a focus of our outreach and improve the value of GRSS membership to them.

8. Market Analysis

GRSS is a mid-size society within IEEE and it remains focused on recruitment, growth and member retention, particularly in Asia, Africa, Latin America and for industry members. Regional Chapter coordinators have been appointed for Europe, Asia, and South America, and North America to facilitate Chapter development. A focus also remains in Asia and recently with Southeastern Asia community. The number of GRSS members in China and India appears small compared to the overall Remote Sensing activities in these countries. Both countries have large research institutes, both countries have their own space program, including launchers, Earth observation programs (LEO and GEO satellites), and have even sent planetary probes. Both countries are opening, and willing to join and collaborate.

Of note, other professional societies are also working to develop activity in these markets, and more aggressively than we have been. We need to be aware of their activities as well as their competitive advantages such as group membership to encourage their membership in GRSS.

In 2019 GRSS members surpassed 4000 members for the first time. We feel this was driven collectively by growth in areas where our membership has been traditionally small but experiencing steady growth such as India and China. There is still much more opportunity for growth considering the overall level of remote sensing related activity within China, India and other developing regions.

Results from the recent IEEE survey suggest that areas GRSS has strengths are associated with technical excellence and engaged volunteers allow us to cover a variety of relevant topics in remote sensing. Indeed, our scope within remote sensing can be viewed to be an advantage. The Society's November strategic planning sessions suggest strengths originating from our highly engaged volunteers allowing the Society to cover a wide variety of topics. Particularly in an era where multidisciplinary collaborations have yielded new directions, our ability to 'find a home' for focus areas and activity related to remote sensing for mutual benefit should be considered a strength and applied where opportunities present.

An additional area to note is that TGARS has experienced sustained growth in manuscript submissions. A new and expanded reviewer structure has been proposed that allows us to continue to pursue growth in multidisciplinary activities in remote sensing without over stressing the EICs and reviewers. By its nature, remote sensing is itself multidisciplinary endeavor and the value GRSS brings in refereeing work over a broad range of topics and applying technical excellence and organization to that process is of significant for advancing the state of the art in Geoscience and Remote Sensing and bringing value from GRSS to our members.

Organizers of IGARSS have had similar decisions regarding expansion or contraction of the meeting tracks. A significant part of the success of IGARSS is that it brings a wide (full) range of remote sensing topics into one conference. On the other hand, every year there is discussion about 'too many parallel sessions.' Both quality and breath are considered strengths of the Society, as IGARSS has continued to growth, a focused effort has been to maintain technical excellence of presentations within IGARSS and adopt the format to allow improved networking and discussion. These changes also address an identified need to improve networking as noted from the recent results of the IEEE survey described in Section 4.3.

For the remainder of the section on market analysis a look at individual regions that GRSS serves will be discussed**.**

China: There was a boost in GRSS membership in China after IGARSS 2016 that was held in Beijing. Following the normal three-year cycle, the subsequent meeting in Asia was held this past year in Yokohama Japan. The next future meeting within this cycle will be held in Kuala Lumpur, Malaysia in 2022. Considering the steady growth in membership from China it is reasonable to assume a strong bid from at least one location within China for 2025. These pre-proposals would normally be received near then end of 2020 or early Spring 2021.

India: There has been significant growth in GRSS activities (Chapters) and membership during the past five years and productive engagement by the Society in leveraging an international collaboration between NASA and ISRO. There have many new Chapters, special issues focused on Indian contributions as well as increased participation by GRSS in IEEE Region 10 activities in general. In December 2021, GRSS is now planning to co-sponsor the a Regional IGARSS (InGARSS) in Ahmedabad that we hope will continue to leverage and build on our current successes.

Latin America: Within IEEE Region 9 which includes Central and South America, GRSS involvement has joined with the Internal Society of Photogrammetry and Remote Sensing (ISPRS) to host a regional symposium entitled the Latin American GRSS & ISPRS Remote Sensing Conference (LAGIRS). This collaboration with ISPRS is part of a larger plan to leverage individual strengths of Society to better serve the region. However, the planned co-sponsored conference in Spring of 2020 was not held due to impact of the COVID-19 pandemic.

Middle East North Africa (MENA): Within the past two years GRSS has supported activities of regional ambassadors to help shape and identify new opportunities and collaboration within this region. This has resulted in organization of MENA regional IGARSS entitled the Mediterranean and Middle East Geoscience and Remote Sensing Symposium 2020 (M2GRARSS 2020) to be held March 9 – 11, 2020. This is the current culmination of GRSS collaboration and regional involvement to date.

North America: Of note only slightly over 20% of the IEEE survey responses came from North America, however, our percentage of membership is higher by comparison suggesting that there is value for the Society to better engage members in the Regions 1 – 7.

Southeast Asia: GRSS activities in Southeast Asia have benefitted significantly from individual Society members and Regional coordination activities such as tutorial and instructional 'caravans' sponsored by GRSS. In 2019 GRSS was invited to participate in the regional congress International Working Group On Remote Sensing (IWGRS) and plans are underway for additional collaboration and possible regional conference(s) ahead of IGARSS 2022 which will be held at a central location within the region, Kuala Lumpur, Malaysia.

9. Competitive Analysis and Advantage

The section provides a brief analysis of competing organizations, publications and conferences.

9.1 Competing Professional Societies

The International Society for Photogrammetry and Remote Sensing (ISPRS) is our closest competing Society. The following are some characteristics and strengths of ISPRS:

- Display other professional societies that they have MoUs with as regional members such as with the African Association of Remote Sensing of the Environment (AARSE), Sociedad Latinoamericana in Perceptión Remota y Systemas de Información (SELPER), and the European Association of Remote sensing Laboratories: http://www.isprs.org/members/regional.aspx
- Presents a structured and visible education program in partnership with space agencies: http://www.isprs.org/education/Default.aspx
- Has many topical publications
- Offers data sets for education and training
- Provides links to software used in remote sensing
- Competitive fee structure: http://www.isprs.org/structure/finances.aspx

In response to ISPRS successes in developing global activities, GRSS has also been more actively responding to global opportunities for collaboration and regional activities. The Society has developed Memorandums of Understanding (MoUs) with international organizations that have similar interests as GRSS and to the mutual benefit of both organizations. In a similar fashion we have developed a joint regional conference with ISPRS (Latin American GRSS and ISPRS Remote Sensing Conference - 2020) to further remote sensing science and regional development of the remote sensing community in Latin America although this conference was canceled for 2020 due to the COVID pandemic, joint activities with ISPRS continue including a joint session planned for IGARSS 2021. The Society has created an ad hoc position within the AdCom to aid in developing inter-Society MoUs.

Within the past five years, GRSS has focused development on educational materials, access to software (GRSS Remote Sensing Code Library), developed additional partnerships, and have initiated a project to address cost barriers to IEEE and GRSS membership in developing countries using IEEE's regional discounts supplemented with GRSS resources. These activities underscore GRSS as an inclusive Society that is responsive to needs of the diverse technical communities the Society serves. In general, we believe that GRSS provides a broader scope by including all techniques in remote sensing, particularly passive and microwave techniques.

9.2 Competing Publications

As shown in Section 4.4 the GRSM has recently attained the top spot in the evolution of the impact factor of a journal within our field of interest. As a result, we should consider GRSM result a significant success. We will remain diligent at identifying and addressing opportunities to improve our GRSS publications portfolio.

RSE: According to their own statement "*Remote Sensing of the Environment* serves the remote sensing community with the publications of results on theory, science, applications and technology of remote sensing of Earth resources and environment." The emphasis of the journal is on "biophysical and quantitative approaches to remote sensing" which is responsive to current trends on applications.

although GRSS has been criticized at times for forgetting its origins of sensor concepts and development, it is important to recognize value-added trends in and end-to-end sense of remote sensing value chain. Indeed, these have been areas of significant growth in the Society's field of interest for a significant time. It is an important aspect that GRSS can offer with its broader scope and focus on remote sensing techniques covering a broader portion of the EM spectrum as well as applications and data processing.

MDPI: It is important also be aware of what MDPI Remote Sensing is doing and the techniques they utilize. The MDPI Remote Sensing Journal is a fully Open Access (OA) publication that began in 2009. By 2014 its impact factor had surpassed JSTARS and was approaching TGRS, but recently has stabilized between JSTARS and TGRS. The journal has a very short revision and time to publication with the possibility to include multi-media materials at moderate fees. In addition, MDPI employs aggressive marketing techniques even to the point of handing out advertisement 'flyers' during the IGARSS poster sessions at Yokohama. Further, we have heard of GRSS members being offered significant opportunities as well as open invitations to publish within MDPI and MDPI was this year a silver sponsor of IGARSS 2020. We feel that the best response is to continue to focus on quality through relevant and timely reviews within the IEEE and GRSS publication structure reducing 'sub-to-pub' time of our competing Journals.

9.3 Competing Conferences

Competing or overlapping conferences with the GRSS flagship conference IGARSS, are difficult to categorize. On the one had we would consider the American Geophysical Union (AGU) conference and European Geophysical Union (EGU) conference to be 'competitors.' However, these two are both much larger overall and more comprehensive in Geophysics than IGARSS. So, we may consider also the American Meteorological Society (AMS) annual meeting with significant overlap to IGARSS that elucidates opportunities for consideration as improvements to IGARSS. Other meetings to learn from include the IEEE Antennas and Propagation Symposium and the International Microwave Symposium (IMS) annual conferences and the Society of Photographic Instrumentation Engineers (SPIE) conferences such as Remote sensing, and Defense and Security Symposium).

Referencing AMS, an annual meeting of roughly average 4000 attendees, some offerings include well attended Town hall meetings involving Government leaders and representatives of research and development funding sources. AMS offerings of town hall meetings of current topics of the day are extensive by comparison at IGARSS, and although we have begun to address this shortcoming, there remains a significant opportunity with our international forum to enhance opportunities for discussion on high interest topics of the day.

Another aspect of AMS is their archival of live presentations. Live presentations given at the annual meeting are recorded and archived along with the briefing slides and made available online after the meeting. For this year's virtual IGARSS, pre-recorded video presentations were required, so effectively we have realized this capability at least for registered IGARSS attendees.

GRSS conferences also need to respond to the needs of our industry and private sector members that value current topics and networking opportunities. Recent changes to the IGARSS oral presentation format and focus on Industry networking and presentations through the Technology Industry and Education (TIE) forum at IGARSS that develops the Synergy between these important elements focused

on Industry, are aspects of GRSS responsiveness to this exciting trend in remote sensing. More attention is needed in this area.

Virtual Conferences:

Improvements for the IGARSS app has been a topic of discussion for several years. This year's virtual IGARSS has effectively caused the process of converting tasks previously done using paper forms, to digital to happen in a few months rather than over several years. And, due to the enduring nature of the current pandemic, it now appears that nearly all conferences offered per annum will have to make the necessary conversion to a virtual format as well.

The success of IGARSS 2020 with respect to some of our competitors virtual events suggests that we succeeded this year in providing a valuable conference experience. Accordingly, GRSS needs to continue to build on the success of IGARSS and key aspects of our virtual format that offered advantages over our competitors approaches such as very low (but not zero) fees for non-presenting attendees, pre-recorded 5 minute videos and requiring the author's live presence at the session. The conference 'landscape' must be agile over the next year or two in order to best accommodate global and local restrictions in travel and in-person attendance at large events. One of the key aspects is to continue to develop web-based experience for virtual conferences, and to understand the best course fee structure for in-person and virtual attendance in order to optimize the reach of IGARSS, our regional GARSS and our co-sponsored conferences.

10. Marketing Plan

The marketing plan should address the goals as stated in Section 5 and the summary strategic plan. These are subdivided in to the current GRSS VP portfolios and directorates.

Publications

Open Access: Since 2015, the major GRSS Publications metrics have generally held steady with respect to competitors or, in the case of Geoscience and Remote Sensing Magazine (GRSM), which began having an impact factor in 2016, has notably increased, (see Figure 2) rising to near 10 within two years and eclipsing even Remote Sensing of the Environment (RSE). External factors have also influenced publications such as IEEE response to Open Access directives from Government sponsors of research in Europe as well as increased general support for OA. This resulted in moving J-STARS to full OA beginning in January 2020. It is noted that IEEE revenue projections for the next few years show decreasing revenue from publications and increasing revenue from conferences and networking events. As a result, GRSS will monitor the success of J-STARS and explore the consequences of moving TGRS and/or GRSL to OA in the future. Other trends include the final stages for hardcopy becoming obsolete except possibly for the Magazine and Newsletter.

J-MASS: Currently, J-MASS is at a critical point and the need for growth of submissions is essential. In response GRSS is proposing to connect more activities to J-MASS such as the YP FSS conference and GRSS Grand Challenges which last year focused on Launching Small Satellites and this year will involve data analysis from Small Satellites. Future activities to strengthen submissions to J-MASS should follow and GRSS should encourage other Societies to follow GRSS in this emphasis.

Reduce Submission-to-Publication Timelines: To continue to reduce "Sub-to-Pub" timeline, perhaps one of the best remaining opportunities may exist by reducing the time allowed for decision by the associate editors (AEs). A strategy was developed that involved personal reminders to AE to complete decisions was initially found to be very useful in reducing 'dwell time' in AE folder. This step accounts for several days that could be reduced from the overall review period. Additional resources to find and link qualified reviewers to submissions in support of all GRSS AEs is also currently under investigation. This tool could greatly accelerate the editorial process and reduce manuscript review time overall.

Ad Hoc Committee: A recommendation from the 2019 strategic planning sessions to form an ad hoc steering committee for GRSS publications in a time when significant change is occurring both in terms of OA and need to increase efficiency of review process. This group was formed and one of its first activities was to hold a virtual 'town-hall' meeting to obtain input from AE's as well as authors and potential authors. This activity was considered a success and received actionable feedback.

Conferences:

Multidisciplinary Research: This was a goal in 2015 and the IEEE survey and feedback from our November strategic planning meetings suggest a high payoff in for the next decade. In response, GRSS has proposed an Intersociety Relations Directorate that has been very active in establishing Memorandums of Agreement with other IEEE Societies. An MoU was signed with the IEEE Antennas and

Propagation Society (APS) in 2019 and GRSS is discussing areas of mutual interest with the IEEE Microwave Theory and Techniques Society (MTT-S). We will continue to nurture and expand this approach.

Infusing Technology into Conferences: There is also the opportunity to involve movies and further support to interactive presentations if the process could be made simple and easy to implement by attendees with diverse backgrounds. There is also the opportunity to create large displays to enhance the conference experience such as GRSS hyper-wall and showcasing our Technical Committees. Finally, the use of instant feedback and questions (crowd sourcing information) to the presenters that exist at competitors conferences need to be part of the GRSS conference experience through our conference app. In 2020 GRSS held the first virtual IGARSS which was a significant success. GRSS will continue to build on the advantages that virtual attendance provides for researchers that are prevented from attending in person due to a variety of reasons.

Information Resources:

Website and Social Media Upgrade: This is an urgent activity for the Society that was well underway at the beginning of 2020 and made even critical due to the global COVID-19 pandemic. Significant opportunities to increase outreach can be created with updates to the website, platform and increases to the GRSS on-line presence overall. Increase use of social media is closely related and have been a focus of the Society for the past few years and will continue with the evolution and growth of Soil Media Ambassador (SMA) positions within the Society.

Professional Activities:

Attracting Students: The Society has notably increased activities involving Young Professionals (YP) over the last several years. These include YP mixers at IGARSS, YP conferences, and most recently the GRSS Student Grand Challenge series which started in 2018 with awards to six groups involved with Unmanned Aeronautical Vehicles (UAV) remote sensing. GRSS plans to continue development of the GRSS Student Grand Challenges through collaboration with other IEEE Societies to enable growth and broadening of the experiences that can be made available to IEEE YPs. Another aspect of YP and student engagement is active reporting and discussion of GRSS activities through Social Media which we will continue to build upon.

Increase Membership Base: We have enjoyed success in membership development where our limited GRSS investments have paid off with additional activities and engagement. This appears to be especially true for India and MENA. We should continue this effort for Malaysia (IGARSS 2022) and address the upcoming need to for continuing activity development in China through regional planning and engagement. Accordingly, GRSS will plan to continue supporting regional liaison China.

Minority and Disadvantaged Memberships – GRSS plans to implement a 2018 initiative that allows the Society to offer reduced cost IEEE memberships by applying GRSS funds to prospective members in disadvantaged countries. Potential members would fall into one of two categories of support based on the member's country.

IDEA Committee: This Committee Inspires, Develops, Empowers, and Advances (IDEA) the goals of all GRSS members and affiliates of accredited societies who are interested in the fields of interest of the Geoscience and Remote Sensing Society (GRSS). The committee works to inspire a future generation of engineers and scientists and works with students at all levels of academics and envisions a vibrant GRSS community collectively using their diverse talents to innovate for the benefit of humanity.

Chapters:
Funds available to GRSS Chapters has been increased over the past few years and additional. Also, since 2015 the Society has evolved to move ChapNet, 3%-rule Initiative that provide extra resources for regional level projects that involved GRSS Chapters partnering with other Chapters, into a yearly program with an annual operational budget. These changes have served to increase resources available to GRSS chapters and helps the Society support local activities which has been identified as an area to improve based on IEEE survey results.

Technical Activities:

Opportunities for Growth in Technical Scope: The Society should determine how to best leverage additional interest and submissions to our Journals in the area of Geospatial Science. This was identified as an opportunity during the strategic planning process in 2019.

Community Resource for Hot Topics: We believe that membership value can be enhanced by leveraging the technical depth and experience of the Society through our Technical Activities and Committees applied to emerging and hot topics. To effective address hot topics that may be transient in nature GRSS Technical Activities must be able to quickly organize and 'stand up' resources responsive to major questions.

Education:

GRSS Tutorials and Web/Education Content: We want to continue to broaden our audience for tutorials that explain the building blocks of our discipline. One aspect of this goal will be to make more of the GRSS tutorials available in multiple languages. Another aspect involves responding to new techniques in remote sensing, RFI, deep learning etc.

Industry Involvement:

Increase Industry and Private Sector activities: We aim to improve the value of our flagship and GRSS-owned conferences for our industry and private sector members and attendees. Conference experience continues to be one of the most valuable aspects to facilitate innovation and research. It is an increasingly dynamic environment and as our conferences continue to grow we can offer a greater diversity and broader depth of experiences. For the first time on a trial basis in 2020 the IGARSS oral format has been moved from 20-minute timeslots to 5 minutes summary and post presentation discussion for oral presentations. This decision was made before moving to the virtual format in 2020 and more closely follows the format of an industry meet-up or trade show compared to the traditional

approach for academic conferences. Also, for future in-person interactive presentations a three-minute summary presentation may be given within selected poster sessions to improve interactive sessions. For 2020 the Technical Industry and Education series of activity was offered as a series virtually before the conference. We will continue to develop the TIE program both virtually and in person for the future.

Space Agency Involvement:

Space Agency Involvement: Engagement of Government and Agency leadership brings a significant enhancement for attendees involved in the field. The American Meteorological Society (AMS) Annual meeting (held in the US in January every year) is effective at engaging agency leadership with a wide variety of town hall meetings and interactive forums throughout the conference week. Enhancing the conference experience for our space agency and industry members through continuing to build the Technical Industry and Education (TIE) forum and relevant Town Hall meetings will be a priority for GRSS over the next few years.

Global Activities:

Regional Planning: Continued growth in GRSS global activities remains a priority of GRSS. Not only does this provide a path to grow our technical community, it also enhances the value and opportunities for GRSS members for networking. We need to tailor our services and approach appropriately for each region, but in general this involves engaging regional leaders in our Society to help develop and carry out regional GRSS activities as well as for identifying and opening leadership opportunities within GRSS. GRSS will work to define regional strategies for GRSS involvement over the next few years.

11. Team

The current Advisory Committee (AdCom) structure is shown in Figure 4. The current structure reflects some of the new positions since July 2015, that are required to implement the new plan. Specifically, the Director of Global Activities, and Government Sector Relations were added, and two ad hoc committees were created to more effectively address GRSS emphasis on Multi-disciplinary problems and long-term strategic planning.

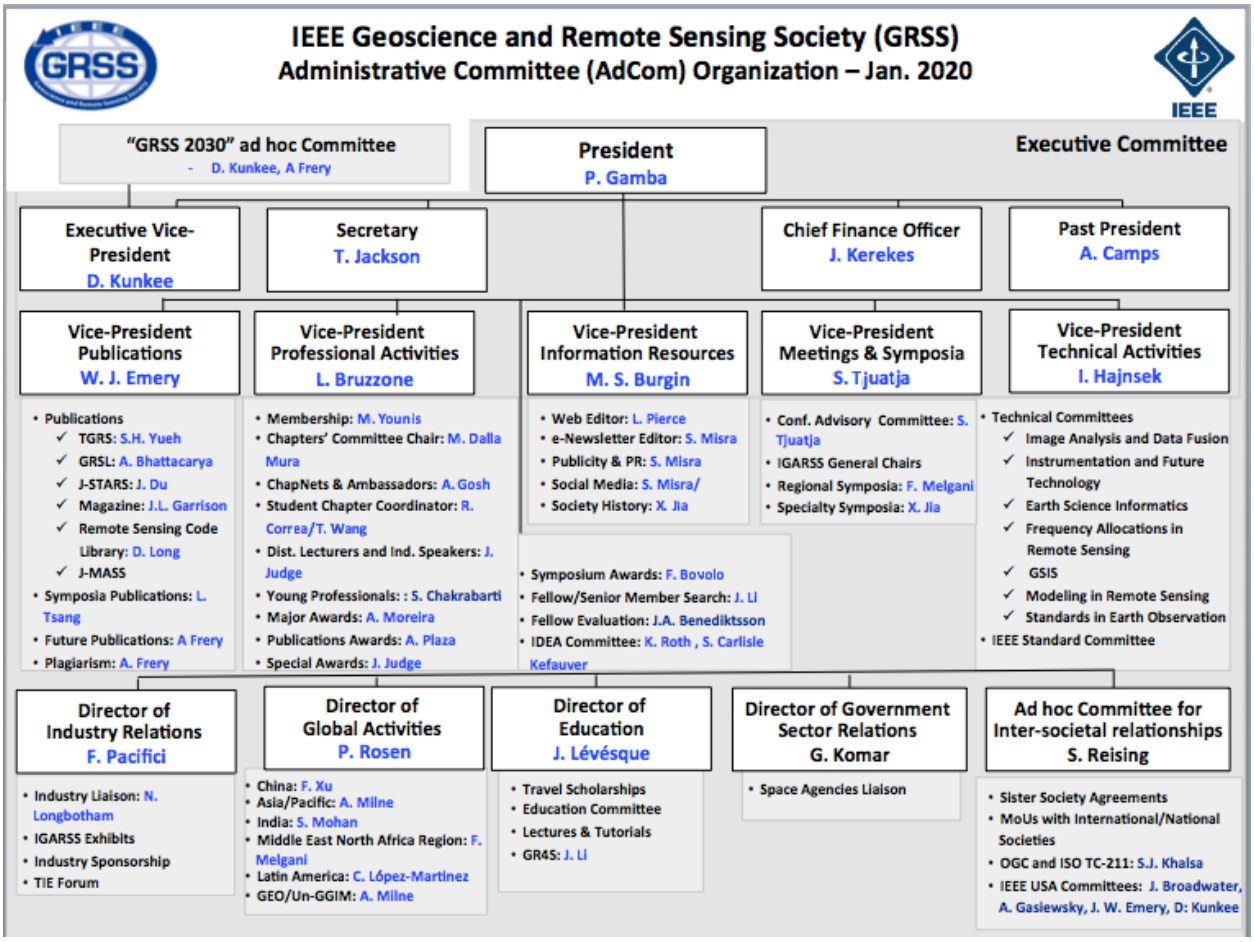

Figure 4. The current GRSS Advisory Committee (AdCom) structure as of January 2020.

12. Implementation Plan

This strategic plan is offered as guidance for the next year and beyond. The process to formalize initiatives for 2021 and beyond and began in May 2020 with submission and GRSS executive review of proposed 3%-rule projects for 2021. Of note was the difficulty associated with carrying out many of the planned 50%-rule projects and 3%-rule initiatives in 2020. As a result, many of the 3%-rule initiatives were forwarded for consideration in 2021 and review will continue in response to the current continuously changing environment of the pandemic.

Approved 3%-rule projects as explained in Section 3 are generally renewable for three years and can be transitioned into operations. The 50%-rule projects are proposed at the beginning of the calendar year for same-year expenses. These projects are intended to generally be smaller in scope and provide a path for the Society to respond to more near-term opportunities. Current 3%-rule projects (proposed in 2020 to be expensed in 2021 are shown in Table 3.

Table 3. GRSS 3%-rule Projects Proposed in 2019 and Accepted for 2021 Calendar Year.

Proposal	Description	Outcome	Goal
GRSS Virtual Symposium (GRSSVS)	GRSS monthly virtual (online) symposium Objectives: 1. Promote GRSS activities and publications through monthly "live" virtual interaction with GRSS members 2. Foster and strengthen GRSS online community, focused on students and YPs 3. Publicize GRSS publications and activities; recorded sessions shall be made available to the public through GRSS website General Approach: Monthly 2-hrs online technical session with a. 5-min session introduction and news/message from GRSS, b. 5 paper presentations (20 min per paper; 15 min presentation follows by 5 min Q/A	Set up the GRSSVS team, processes, and infrastructure, Conduct at least 2 pilot GRSSVS during the first quarter of 2021 Refine the GRSSVS design	Improve online presence
GRSS Regional and Specialty Conferences in 2021	Starting from the current year (2020), GRSS has been experimenting new regional editions of its flagship conference IGARSS, including M2GARSS 2020, which was successfully held in March 2020, and InGARSS 2020 to be held at the end of the year. Another conference, LaGIRS 2020, has been postponed to next year due to the coronavirus pandemic. These conferences are effective instruments for GRSS outreach and membership growth. For instance, the organization of M2GARSS 2020 in Tunisia made possible the creation of the first two GRSS Chapters in Tunisia. The aim of this project is twofold: 1) consolidate these newborn initiatives in the forthcoming years; and 2) help creating new 100% GRSS financially sponsored conferences focused on trends and technologies of the future such as artificial intelligence and smallsats.	1) Consolidation of regional conferences 2) Creation of at least two new regional, specialty conferences 3) Increase GRSS presence and membership in target areas 4) Increase visibility in trendy topics	Improve online presence increase ability to address hot topics
AFRICA GRSS ROADSHOW - TRAINING AND OUTREACH	This project continues successful activities in 2018 and 2019 to bring relevant cutting-edge trainings that were initiated in Rwanda to a broader African audience, with the express intent of broadening GRSS visibility throughout Africa and building membership. The activity will be organized around a workshop/mini-symposium format that can be taken to a number of prominent African universities over a period of weeks. The workshops would have the following characteristics:1. 3-days in duration2. Topics that interest African students: modern computer vision and machine learning techniques applied to remote sensing3. Application/selection process for participants to generate interest and some sense of prestige4. Focus on open source software and open access data5. Recruit perhaps three international presenters to share the load and expertise6. Engage local presenters and organizers to seed long-term points of contact.7. Conduct a mini-symposium of posters for applications research to spark interest8. Create leave-behind materials tailored to the curriculum and the African community - brochures, t-shirts, other widgets that will create a brand in Africa. The workshop would be conducted in Kampala Uganda, Nairobi Kenya, and Dar es Salaam Tanzania over the course of 3 weeks. These locations have prominent universities and large population centers. Other venues can be considered, depending on costs.	Improved visibility in developing region as well as providing needed education to the local community.	New Audiences - Africa

TIE Education Activities	The director of education proposes to support the development of education content at the TIE track of IGARSS by inviting 3 to 5 speakers to participate in an academic panel as well as an additional seminar presenter. By providing travel support, the director will be able to search more broadly for invitees that would otherwise not attend IGARSS, and, therefore, extend the reach and the appeal of the conference content to areas previously underserved.	Entrepreneur related topics- including starting a business, being an entrepreneur, and working in industry.	New Audiences - Entrepreneurs
GRSS IDEA professional development grants for young minorities/ women pursuing advanced degrees	GRSS IDEA professional development grants for young minorities/women pursuing advanced degrees that would be generated specifically to benefit young minorities/women pursuing advanced degrees in a local or student GRSS chapter. Preference to attendance of IEEE GRSS sanctioned professional development activities, though will consider other suggested activities such as similar research conferences or initiatives that Inspire, Develop, Empower, and Advance under-represented members in the larger international scientific community (regional IGARSS but also open to other specific empowering, training, etc. activities). In order to focus on benefitting disadvantaged young minorities/women pursuing advanced degrees, including those in developing countries and enable the provision of these grants before incurring expenses, efforts will be made towards awarding as much as possible of the grant funds in advance, depending on the stated purpose of the funds and chapter disbursement rules in the local area, region, or country.	Proposed funds request description: In order to request grant funds for young minorities/women pursuing advanced degrees, proposals must be submitted to the IDEA committee by the member's local IEEE/GRSS chapter on behalf of the student.	IDEA Committee and disadvantage groups/ Minority membership development
Support for JMASS Page Charges	Although we have extended the voluntary pages to 9, our EIC is still getting papers that exceed 9 pages. We are in a "rescue" mode for this publication we would like to pay all page charges for the journal for the first 2 years. We will also seek some financial support from the Systems Council. We need to provide all possible incentives to increase the number of papers submitted to JMASS. We need a minimum of 20 papers per year to be counted by Clarivate which will lead to an impact factor after 3 years of successful operation. We have lost a full year on the operation with the past EiC. The expectation is that Kim Fowler will take over as EiC after Antonio steps down. By waiving all page charges, particularly for special issues JMASS becomes a much more attractive venue for publication for authors.	The outcome is that authors realize that publishing for free is a good idea and compensates for the fact that JMASS does not have an impact factor.	Develop JMASS GRSS pub.
Industry for Chapters	A series of actions to engage companies in the aerospace sector in Chapter activities1.A pool of experts from the space and EO industry are available to share their experience with GRSS Chapters. a WHAT: continue to provide an instrument to allow Chapters to engage with industry experts b. HOW: invitation proposals available budget geographical distribution, fund expert travels	Improved GRSS engagement with industry.	Improve Industry engagement
Activities for industry engagement	A series of actions to engage companies in the aerospace sector at conferences/workshops and AdCom meetings 1.Industrial actives at IGARSS a. WHAT: The TIE forum, conceived of at IGARSS 2017, is designed to facilitate conference participation beyond the foundational offering of academic lectures. Addressing the lackluster industry participation at IGARSS is a key component of the TIE forum. In addition, it is designed to increase awareness of GRSS resources available for remote sensing education and to create interaction between academic and industry professionals. We would like to make resources available to facilitate content creation at the IGARSS 2021 by inviting (1) speakers from private industry, (2) a moderator from a geospatial or remote sensing focused magazine, (3) code-workshop coordinator(s) by covering a major portion of their travel costs. b. WHY: to promote IGARSS as the leading gathering for industrial remote sensing and broaden the industry participation in IGARSS as an entry point into more general GRSS industry representation. c. HOW: By supporting the travel of key contributors to the TIE forum, we are able to invite people that have not been previously been exposed to IGARSS. By doing this, we tap their networks and expand the exposure of GRSS. The TIE forum industry panel moderator has not only organized and managed the industry panel, but has also organized and ran the education and WinGRSS forum as well as produced marketing content not previously available at IGARSS. Additionally, the code workshop organizer is actively creating hands-on content that puts IGARSS in a much more competitive space when compared to similar conferences. The code workshop is also working with tutorial organizers to create a more continuous education experience by providing hands-on learning experience than would not otherwise be available at IGARSS. These organizers and participants follow-up by writing articles and social media	Wider engagement of the industrial component of GRSS into the Society (AdCom, IGARSS, events, and membership).	Improve Industry engagement

	posts that appear in border content mediums than GRSS is typically exposed in. 2.Improving IGARSS exhibitors' networking a. WHAT: organize dinner/cocktail between vendors at IGARSS b. WHY: it will improve networking among them and incentivize them to come again next year c. HOW: this will be associated with other events (YP and WIE) and partially sponsored by a company. 3.Travel funds to AdCom meetings a. WHAT: invite 1 person from industry to participate at the March and November AdCom meetings. b. WHY: the value of GRSS may not be clear to large corporations, and inviting someone with a senior position may facilitate improved understanding of GRSS benefits for the private sector, and, industry members 'needs' or 'value-added' services the GRSS could provide. 4. Support to sponsorships and events a. WHAT: we would like to industry sponsored chapter activities such as: i. Organize industry night in San Francisco, Boston, and/or Denver ($2k - $3k per event) ii. CVPR booth (Both paid from 2020 cancelation, $5k for travel) iii. Support to ARD		
GRSS SOUTH - EAST ASIA AND PACIFIC ISLAND INITIATIVE	In 2019, GRSS began a concerted effort to engage in the SE Asia and Pacific Island region. Because of the sparse populations and large distances between areas, as well as other factors economic and political, it is challenging to build a critical number of members for GRSS chapters and identify sustainable programs. In 2019, efforts have been exploratory to understand the landscape and engage partners who are already working in the region to understand how best to engage. For this proposed initiative, the goals are to establish a value proposition that will draw scientists and engineers in geoscience and remote sensing to the society despite the geographic and logistical difficulties. Training is always popular and has proven to be a successful means of attracting members throughout the world. Therefore, in this initiative, we will offer workshops on career oriented activities, including "report writing", "journal article preparation", as well as topics such as "disaster management observation" with examples such as flood resilience ; fire assessment and sea level determination (or similar). We propose 3 workshops in 2020. In addition to the workshops, we will generate region specific promotional literature and booth material to display at regional conferences such as AARS. These will include brochures, pins, patches, lanyards, and t-shirts, all with GRSS branding.	Improved visibility of GRSS in developing region of the world.	Visibility through local engagement
Supporting GRSS Chapters activities for the creation of quality remote sensing data sets	The availability of data (e.g., raw images, reference information and ancillary data) is one of the main bottlenecks for doing good quality research. This proposal aims to foster the availability of data to the community leveraging upon the GRSS Chapters network. Specifically, the goal of this initiative is to support activities aiming at data gathering to build large open data sets for addressing GRS applications. A representative scenario is supervised land cover classification that requires accurate ground truth/reference data. Obtaining such reference data is usually one of the most critical operations, which explains why remote sensing data sets equipped with reference data are relatively scarce. Similar issues on reference data availability affect other popular applications in remote sensing such as land cover/use mapping, change detection, time series analysis, data fusion and target/anomaly/object detection. This project addresses local communities through GRSS Chapters. Chapters will coordinate local members for gathering raw data and generating reference data. In this way Chapters could easily involve students, generate data sets useful for their studies/applications and then at the end make these data sets freely available to all the community through GRSS. Open images, such as those provided by the Copernicus and USGS platforms can be used as base raw data for the data sets. Reference data could take several forms according to the application (e.g., manual interpretation, acquisition of higher resolution remote sensing images on selected areas and ground survey).	- Fostering research in remote sensing data processing by creating data sets with reference data - Contribute to the availability of quality data sets which could be shared at the level of GRSS or even to the international scientific community - Provide Chapters with another way to reach out members, organize activities and gain more visibility to their local community - Students (e.g., Student Chapters) and YP members could particularly benefit from this initiative (e.g.,	Improve local, YP , and student activities, hot topics

	The generated data sets (raw reference data) will be made available via GRSS. For example, data sets can equipped by a DOI (e.g., via RSCL) and made available through an archive. In this way, they could be referenced and become perennial. Expenses supported by this initiative would be the following: - costs related to data gathering/survey - manual interpretation - organization of events related to this initiative by Chapters - costs related to processing/storage (e.g., usage of computational facilities, if justified) - purchase of commercial images/data can be considered in some particular cases	training, education, mentoring by senior members)	
GRSS Chapter Participation in the Organization of GRSS and Local Conferences	This proposal aims to support several GRSS chapters to collaborate and organize activities and events at each year's IGARSS and regional GRSS conferences, including LAGIRS, M2GARSS, InGARSS, YP-GARSS (in plan), etc., as well as local conferences with the scope of GRSS. The following is a non-exhaustive set of examples of chapter involvement in GRSS conferences: • Participate in the organizing committee, technical program committee, etc. • Organize technical activities, including tutorials, summer school, special sessions, etc. • Organize student and YP events, for example, YP Mixer, mentorship program, etc. • Organize events addressing under represented groups (e.g., in coordination with Women in Engineering (WIE)) • Organize workshops for students and YPs, e.g. career development panel, science communication, scientific writing, etc. • Lead student competition or design contest, for example, 1-day competition to build a weather balloon with a payload, build a rocket and launch, etc. • Organize seminars or lab tours at local universities, national labs, companies, etc. • Organize networking events with the local research community and industry • Advertise the conferences in the local region and increase the conference participation • Run the GRSS booth and recruit more members at the conferences	A win-win situation for both the conference and the chapters. Chapters will increase their visibility with respect to local members and the community in general, while contributing to the organization of the conference.	Increase local presence Regional activities Improve network-ing and connec-tions
ML-Cubes Working Meetings on Integrating with Artificial Intelligence	Datacubes are an accepted means to provide spatio-temporal data in an analysis-ready manner, serving them homogenized and uniformly, optimally through open standards APIs; services have been built on dozens of Petabytes of SAR and optical satellite data. Artificial Intelligence and specifically Machine Learning, on the other hand, form a key technology for a better understanding of massive amounts of spatio-temporal data, typically based on the analysis long timeseries. In a nutshell, ML contributes intelligence whereas datacubes contribute scalability; we call such an integrated technology ML-Cubes. It has the potential of a quantum leap in the automatic analysis of Big Earth Data. To advance understanding of ML-Cubes two workshops are proposed, one at NASA / US and one at Jacobs University / Germany. Based on their joint work as co-chairs of GRSS ESI a joint interest in Big Data Advanced Analytics (BDAA) crystallized, and a research collaboration between the USA and Europe is emerging. The two workshops will foster this collaboration. NASA brings in their AI tool, Jacobs University is bringing in their rasdaman datacube engine. Both groups will prototypically combine their technologies while studying the challenges and opportunities of ML-Cubes.	The intended outcomes of the initiative are a public report for each workshop, and a demonstration service; based on these, a joint publication in IEEE JSTARS is foreseen.	Hot Topics
Imaging spectroscopy databases	GSIS TC proposes to collaborate with ESA CHIME (with NASA SBG partners) on their upcoming CHIME airborne campaign to support more participants in the campaign. NB. All data collected are open file so could be a useful resource for GSIS TC for future work. There is also potential for concurrent acquisitions from DESIS and PRISMA for some sites. These datasets can then be used to explore different applications (as requested by some respondents of the survey) as well as understanding calibration and cross calibration of sensors that are currently in orbit.	To build a database of airborne and spaceborne data for the purpose of investigating various applications and calibration	Hot topics / local activities
Imaging spectroscopy workshop	GSIS TC proposes to conduct a workshop using data collected as part of the datasets to be collected as part of the ESA CHIME campaign as well as other spaceborne datasets that GSIS TC chairs have been able to negotiate from current spaceborne providers to explore synergies between	To plan for future GSIS activities	Hot topics / local activities

	different applications areas and find commonalities that GSIS TC may take up as future activities.		
GNSS Data Processing and Analysis Training Workshop	Global Navigational Satellite Systems (GNSS) is widely used in the Pacific for positioning and most countries now have access to professional grade GNSS equipment. The technology is now being applied to an ever-increasing range of surveying and geospatial activities and this training will provide participants with an in-depth understanding of the full process of GNSS positioning from planning to operation to end-user application. Many Pacific national geodetic reference frames (GRF) are outdated and no longer fit for purpose. It is particularly important for GNSS data to be collected and processed accurately to allow the information to the integrated into the Global GRF. This will support the implementation of Goal 2 of the Pacific Geospatial and Surveying Council (PGSC) on standards and technology which is for 'countries across the region to adopt a modern GRF and technology underpinning geospatial systems and applications.'	•Increase the visibility of GRSS and promote its activities among South-East Asian and Pacific Island countries. •Establishment of a movable GRSS-branded annual training program in South-East Asia and the Pacific that will generate membership • Chapter formation in 2-3 locations in SE Asia and Pacific	Global Activites Expansion
Spectrum Management School for Remote Sensing Scientists and Engineers	The GRSS Frequency Allocations in Remote sensing (FARS) Technical Committee has just taken the first steps to organize a spectrum management school for remote sensing modeled after the recent radio-astronomy spectrum management school, <http://www.iucaf.org/sms2020/>. While the radio-astronomy school is at its 5th edition, a remote sensing counterpart has never been organized. The growing demand for spectrum by commercial telecommunication services has made spectrum management and dealing with radio frequency interference essential when planning remote sensing missions. The school would be held over approximately 4 days, and include lectures given by spectrum managers, scientists and engineers that have hands-on experience on the topics of spectrum management and radio frequency interference detection and mitigation. Expected Cost:	The Spectrum Management School for Remote Sensing Scientists and Engineers would accomplish the key goal of educating the remote sensing community, and the IEEE scientific community in general, about radio frequency spectrum issues.	Hot topics

13. Financial Projections

The GRSS Society remains financially sound. The Society's conferences and journals continue to show strong revenue generation, and this results in a yearly surplus for the Society that exceeds our annual expenses. The Society has a well-organized process (as described in Section 3) for managing its budget and developing new initiatives to support the near term (<5 year plan) as outlined in Sections 5 and 10.

We note that IEEE anticipates decreasing revenue from refereed publications over the next five to ten years for IEEE overall. In contrast, conference revenue was expected to increase. Expectations from GRSS based on performance to date is a bit of an outlier. We have continued to experience a steady income from publications over this period by which has provided ~2/3 of the Society's operating income. While our conference income has continued to supply the remaining ~1/3 of the Society's income. Although conference income this past year was affected by COVID, the relatively small loss of income was far exceeded by the savings from 3% and 50%-rule project spending. Although there is significant uncertainty about the future of conferences in the next few years, for 2021, hybrid conferences will be the baseline. Given the uncertainty in world travel restrictions amid the COVID pandemic, our best course appears to assume a slight or moderate decrease in conference related income for GRSS for the next few years.

As noted in the previous section the 2020 the global pandemic has led to significant limitations in our ability to carry out the 3%-initiatives leaving a significant surplus of funds. Many of the initiatives for 2020 have been reformulated or extended in to 2021 as note but still it may not be possible to carry out a significant portion of the planned activities. Further, IEEE has provided guidance that requires some reductions in scope of the overall portfolio proposed to be carried out in 2021. However, these restrictions are not likely to prevent activities that remain realistic to do within the current environment.

The GRSS leadership recognizes that the environment we operate in continues to change. There are new competitors and new outlets for creative and innovative material that will shape the future or remote sensing in both near term (<5 years) and long term (>5 years). The Society intends to efficiency utilize available resources to best position itself to address this changing environment while maintaining a strong financial foundation for the next generation of members.

14. Change Record

Adriano Camps (initial version), July 2015
David Kunkee (first revision), November 2020