2020-2024 STRATEGIC PLAN DOCUMENT

IEEE CIRCUITS AND SYSTEMS SOCIETY

IEEE

CAS

IEEE CIRCUITS AND SYSTEMS SOCIETY

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EXECUTIVE SUMMARY

This document summarizes the conclusions of a long process to develop a 5-year strategic plan. It is important and strongly recommended by IEEE governance that each IEEE Society should have a long-term strategic plan to stay the course regardless of the governance changes.

We started the process in March 2018 at our first meeting of the Executive Committee during which I presented the methodology to follow along with the timeline.

We organized five workshops, one meeting with the Long-Term Strategic Committee, a one-day workshop with all the members of the BoG. I also met regularly with an expert in strategic planning from the University of Geneva (UNIGE) who gave us much-appreciated methodological support.

At the end of all these events, we were able to agree on our new mission and vision which we aligned with the technical and societal objectives of the United Nations Sustainable Development Goals (UN SDGs). We have also developed values to which we must all refer as members of our Society.

We also defined global strategic areas due to the belief that our Society must go beyond its borders to be perceived as a Society with social responsibility in addition to scientific excellence.

Concerning the technical strategic areas and given the strong multidisciplinary of our Society which is illustrated through 14 Technical Committees, we have focused our technical strategy on i) encourage the emergence of new paradigms which govern the engineering of Circuits and Systems, ii) involvement in various Circuits and Systems applications such as the Internet of things, smart cities, health and livelihood, sustainable agriculture, sustainable energy, etc. iii) be active in the development of theoretical foundations which support these applications and the new paradigms.

To avoid starting from scratch, our five divisions were asked to brainstorm on how we are feeding so far, these strategic areas. The outcome is that our strategic plan is aligned with what has been done already at the Society level.

Each division then worked on the definition of three strategic initiatives and the definition of three long-term objectives, associated metrics, actions/projects and the resources necessary to implement them.

Finally, to facilitate the achievement of our overall objectives, we have defined three fundamental levers which are i) proximity to our members, ii) digital communication and marketing and iii) going beyond our borders.

This document simply summarizes our strategic plan which required a lot of sessions of brainstorming carried out collectively under my direction.

I extend my thanks for their support and valuable contributions to the Executive Committee, the Board of Governors, the Long-Term Strategic Committee, our operations management staff, and all those who directly or indirectly contributed to this work.

Prof. Amara Amara
CASS President, 2020-2021

OUR VISION

IEEE CASS will advance and promote Circuits and Systems knowledge framed in interdisciplinarity to be essential to the global and diverse technical community and be universally recognized for providing and leading solutions to the United Nation's Sustainable Development Goals.

OUR MISSION

IEEE CASS fosters technological innovation and excellence in fundamentals, emerging directions and application of circuits and systems for the benefit of humanity through an interdisciplinary community.

OUR VALUES

We value:

- Scientific excellence
- Leadership
- Global education and professional growth
- Inclusion and participation
- Integrity and ethical behavior
- Accountability and transparency
- Service to humanity

OUR GLOBAL STRATEGIC AREAS

- Technical excellence and inspiration
- Service to members
- Reach out, inspire, and empower

OUR TECHNICAL STRATEGIC AREAS

- New paradigms governing the engineering of Circuits and Systems encompassing interfacing, computation and connectivity.
- Applications of Circuits and Systems including food and agriculture, healthcare and livelihood, human-centric technology, mobility and smart cities and sustainable energy.
- Fundamental theory supporting emerging technologies.

OVERALL INITIATIVE LEVERS

- Proximity with members
- Digital communication and marketing
- Go beyond our frontiers

OUR DIVISIONS FEED THE GLOBAL STRATEGIC AREAS

CONFERENCE DIVISION

TECHNICAL EXCELLENCE AND INSPIRATION:

- Curation and awards
- Inviting quality speakers, panels, special sessions in emerging areas
- Education through Tutorials and short courses

SERVICE TO MEMBERS:

- Knowledge transfer
- Networking
- Recognition

REACH OUT, INSPIRE, AND EMPOWER:

- Industry engagement
- Publicity for conferences
- Student engagement (design contest, travel awards, etc.)

PUBLICATIONS DIVISION

TECHNICAL EXCELLENCE AND INSPIRATION:

- Journals
- Editorial boards
- Paper awards

SERVICE TO MEMBERS:

- CAS Magazine
- Monthly Journals Tables of Contents
- Open Access on selected tutorial/review papers
- Editors Awards/Reviewers recognition

REACH OUT, INSPIRE, AND EMPOWER:

- Training
- Education
- *IEEE Open Journal of Circuits and Systems* (OJCAS)

TECHNICAL ACTIVITIES DIVISION

TECHNICAL EXCELLENCE AND INSPIRATION:

- TC Endorsing Emerging Topics for Special Sessions and Issues of CASS Publications
- Agile Conference Technical Tracks
- EDICS defined collectively by TA Division

SERVICE TO MEMBERS:

- Technical Committee (TC) Belonging and meetings
- Annual TC reports for technical cross-awareness
- Defining Emerging Topics for eBooks

REACH OUT, INSPIRE, AND EMPOWER:

- Cross-TC activities
- Student CASS contests
- Defining Emerging Topics for Seasonal Schools

REGIONAL ACTIVITIES AND MEMBERSHIP DIVISION

TECHNICAL EXCELLENCE AND INSPIRATION:

- Flagship conferences
- Technical schools
- Workshops and tutorials

SERVICE TO MEMBERS:

- Young Professionals and Women in CAS (WiCAS)
- Student travel and predoctoral grants
- Industry events

REACH OUT, INSPIRE, AND EMPOWER:

- Mentoring Young Professionals and WiCAS
- Regional tours
- Student design competitions

OUR DIVISIONS FEED THE TECHNICAL STRATEGIC AREAS

CONFERENCE DIVISION

NEW PARADIGMS GOVERNING THE ENGINEERING OF CIRCUITS AND SYSTEMS ENCOMPASSING INTERFACING, COMPUTATION AND CONNECTIVITY:

- Curation and dissemination of knowledge and concepts that enable the creation of new paradigms
- Special sessions, new conferences, special interest groups, and initiatives in emerging areas
- Expose our members to paradigms adopted by other communities to fertilize the growth of new paradigms within our community

APPLICATIONS OF CIRCUITS AND SYSTEMS INCLUDING FOOD AND AGRICULTURE, HEALTHCARE AND LIVELIHOOD, HUMAN-CENTRIC TECHNOLOGY, MOBILITY AND SMART CITIES AND SUSTAINABLE ENERGY:

- Special sessions, Innovation Themes, Conference focus, FoodCAS, new conferences bring together researchers focusing on specific applications.
- TCs and sessions bring together individuals working within the same application space to keep them appraised of the latest developments and concepts within that space.
- Expose members to innovative/new/emerging application space for CAS technical contribution.

FUNDAMENTAL THEORY SUPPORTING EMERGING TECHNOLOGIES:

- Curation and dissemination of theory that necessarily arises to address the application of CAS concepts to the emerging technologies.
- Within our curation process we encourage the dissemination of algorithm, proof and analysis.
- Reward system for the advances.

NEW PARADIGMS GOVERNING THE ENGINEERING OF CIRCUITS AND SYSTEMS ENCOMPASSING INTERFACING, COMPUTATION AND CONNECTIVITY:

- *IEEE Journal on Emerging and Selected Topics in Circuits and Systems* (JETCAS)
- Journal Special Issues
- *IEEE Open Journal of Circuits and Systems* (OJCAS)

APPLICATIONS OF CIRCUITS AND SYSTEMS INCLUDING FOOD AND AGRICULTURE, HEALTHCARE AND LIVELIHOOD, HUMAN-CENTRIC TECHNOLOGY, MOBILITY AND SMART CITIES AND SUSTAINABLE ENERGY:

- *IEEE Transactions on Biomedical Circuits and Systems* (TBioCAS)
- *IEEE Transactions on Circuits and Systems for Video Technology* (TCSVT)
- *IEEE Transactions on Multimedia* (TMM)

FUNDAMENTAL THEORY SUPPORTING EMERGING TECHNOLOGIES:

- *IEEE Transactions on Circuits and Systems I: Regular Papers* (TCAS-I)
- *IEEE Transactions on Circuits and Systems II: Express Briefs* (TCAS-II)
- *IEEE Transactions on VLSI Systems* (TVLSI)

NEW PARADIGMS GOVERNING THE ENGINEERING OF CIRCUITS AND SYSTEMS ENCOMPASSING INTERFACING, COMPUTATION AND CONNECTIVITY:

- Interdisciplinarity (e.g. cross-TC special sessions endorsed by TC's)
- CASS TA matrix
- Special Interest Group (SiG) Flexible Electronics

APPLICATIONS OF CIRCUITS AND SYSTEMS INCLUDING FOOD AND AGRICULTURE, HEALTHCARE AND LIVELIHOOD, HUMAN-CENTRIC TECHNOLOGY, MOBILITY AND SMART CITIES AND SUSTAINABLE ENERGY:

- CASS TA matrix
- Special Interest Group (SiG) Internet of Things
- Multidisciplinary (e.g. themes in conferences)

FUNDAMENTAL THEORY SUPPORTING EMERGING TECHNOLOGIES:

- TC endorsing CASS eBooks
- Special Interest Group (SiG) Electronic Design Automation and Modeling
- TC in Nonlinear Circuits and Systems

REGIONAL ACTIVITIES AND MEMBERSHIP DIVISION

NEW PARADIGMS GOVERNING THE ENGINEERING OF CIRCUITS AND SYSTEMS ENCOMPASSING INTERFACING, COMPUTATION AND CONNECTIVITY:

- Seasonal Schools
- Local Chapter workshops
- Industry events

APPLICATIONS OF CIRCUITS AND SYSTEMS INCLUDING FOOD AND AGRICULTURE, HEALTHCARE AND LIVELIHOOD, HUMAN-CENTRIC TECHNOLOGY, MOBILITY AND SMART CITIES AND SUSTAINABLE ENERGY:

- Technical schools
- Industry events
- Local Chapter workshops

FUNDAMENTAL THEORY SUPPORTING EMERGING TECHNOLOGIES:

- Technical schools
- Industry events
- Local Chapter workshops

STRATEGIC INITIATIVES BY DIVISION

CONFERENCE DIVISION

STRATEGIC INITIATIVE ONE: DRIVE EMERGING AREAS AND THEMES IN CONFERENCES AND CREATE MORE EMERGING AREA CONFERENCES

GOALS:

- Keep track of emerging areas through journals, industry, university research
- Establish feedback mechanism for conferences to initiate as emerging areas

METRICS

- Number of flagship conf. that provide data for comparison
- Feedback participation
- Review feedback metrics in the steering committee
- Number of attendees' vs number of authors analysis

ACTIONS/PROJECTS

- Establish a consistent online location and mechanism for database
- Establish a feedback form with review in the steering committee
- Deploy via webpage and conf application

RESOURCES

- CASS webpage
- Conference Steering Committees
- BoG
- Industry-University expert panel

STRATEGIC INITIATIVE TWO: PROMOTE INDUSTRY PARTICIPATION AND CONTRIBUTION IN CONFERENCES TO ATTRACT INDUSTRY RESEARCH

GOALS:

- Establish and assess industry engagement efforts, specifically focus on industry feedback
- Drive for Industry-CAS participation mechanism
- Modification in Award system
- Encourage short position papers from industry participants and panels

METRICS

- Increase awards related to industrial impact
- Increase number of industry participants
- Assess feedback from industry on the benefit of the conference
- Define an industry participation index (IPI)

ACTIONS/PROJECTS

- Distribute this recommendation to all flagship conferences as part of the review software
- Develop metrics (IPI) to assess the efficacy
- Conducting conferences near industries or on the industry premises
- Determine mechanism to support the publication of short industry papers

RESOURCES

- Add more tracking to the conference metrics
- List of industry CAS members and their feedback
- Paper review software modification

STRATEGIC INITIATIVE THREE: ENHANCEMENT IN THE KEY FLAGSHIP CONFERENCES TO ACHIEVE EXCELLENCE

GOALS:

- Establish feedback mechanism for conferences
- Establish social media chair
- Recognize reviewers (implement a voting system for RCMs)
- Solicit potential future members (GK-12) to participate

METRICS

- Track social media engagement and press releases for conference
- Track number of papers submitted vs accepted
- Conference citation statistics from previous years
- Feedback from the audience

ACTIONS/PROJECTS

- Communicate to all upcoming coferences
- Increase attendance, especially younger participants
- Collaboration between regional flagship conferences

RESOURCES

- Dedicated Industry and University professionals
- Financial support for open access publication of short papers

PUBLICATIONS DIVISION

STRATEGIC INITIATIVE ONE: LEVERAGE THE STRENGTH OF OUR PUBLICATION PORTFOLIO TO ADDRESS INDUSTRY PARTICIPATION ISSUE

GOALS

- Platform to publish papers on faced challenges
- Partner with academia to solve these challenges
- Special issues seeking papers offering solutions
- 'Perspective' short papers offering insight
- Speed up the review process
- Increase audience
- Improve quality

METRICS

- Number of involved industrial members
- Improve Impact Factor each year by X%

ACTIONS/PROJECTS

- Special Sessions at conferences
- Invite industrials to write such papers
- Incentives to reviewers
- Socialize Table of Contents on professional social media channels

RESOURCES

- CASS to cover fees of OA publications

STRATEGIC INITIATIVE TWO: INCREASE COLLABORATION WITH SISTER SOCIETIES USING STRENGTH IN INTER-DISCIPLINARITY AND CROSS-DISCIPLINARITY

GOALS

- Increase number or co-sponsored publications and special issues
- Increase audience

METRICS

- Impact Factor
- Citations

ACTIONS/PROJECTS

- Offer better training to all editorial volunteers

RESOURCES

- Editorial training materials

STRATEGIC INITIATIVE THREE: SET UP A GLOBAL ASSESSMENT MECHANISM TO RECOGNIZE AND CREDIT OUR PUBLICATION CONTRIBUTORS AT LARGE

GOALS

- Offer incentive and awards to volunteers
- Offer recognitions to reviewers, to Associate Editors and to Editors in Chiefs

METRICS

- Dedication to serve CASS

ACTIONS/PROJECTS

- AdHoc committees to collect data and select awardees
- Offer most downloaded paper list on our website – recognize authors this way
- Publon – anonymously acknowledge reviewer effort
- Consider de-anonymizing reviewer's identities once a paper is published – allows for reviewers to be recognized on successfully published papers

RESOURCES

- CASS to cover fees of these certificates and awards

STRATEGIC INITIATIVE ONE: DESIGN AND IMPROVE REGIONAL TECHNICAL ACTIVITIES (E.G. SEASONAL SCHOOL AND WORKSHOP)

GOALS

- Improve CASS Seasonal Schools
- Regional tours of CASS workshops
- Enhance iDLP

METRICS

- Number of seasonal schools supported by CASS
- Number of the tours and the workshops
- Number of lecturers/lectures

ACTIONS/PROJECTS

- Define different types of seasonal schools
- Organize a regional tour of CASS workshops in each region
- Visits to potential companies/lecturers

RESOURCES

- Funds for a variety of seasonal schools
- Funds for the tours
- Travel funds for region representatives

STRATEGIC INITIATIVE TWO: EMPOWERING THE LOCAL CHAPTER GOVERNANCE

GOALS

- No chapters without CASS Chapter Report
- Organization of chapter officers
- Feedback on the evaluation of chapter reports

METRICS

- Report rate (Number of received CASS Chapter reports) / (Number of CASS Chapters)
- Number of chairs with more than 4 years
- Number of the chapters by the feedback

ACTIONS/PROJECTS

- Improve web-based chapter report form
- Check vTools and send a notice
- Feedback of score and comments

RESOURCES

- None

STRATEGIC INITIATIVE THREE: REACH OUT GEOGRAPHICAL AREAS WITHOUT CASS CHAPTERS (E.G. AFRICA)

GOALS

- Increase CASS membership in Africa
- Cultivation of CASS leaders in Africa
- Create new CASS chapters

METRICS

- Number of CASS membership in Africa
- Number of cultivation events
- Number of new CASS chapters

ACTIONS/PROJECTS

- Organize CASS workshops in African Sections
- Organize cultivation events
- Visits to potential leaders

RESOURCES

- Funds for one workshop per year
- Funds for cultivation events
- Travel funds for region representatives

STRATEGIC INITIATIVE ONE: IMPROVE AND ADVOCATE INTERDISCIPLINARY RELATED TO NEW EMERGING FIELDS ALIGNED WITH SDGS

GOALS

- Achieve an open and working CASS disciplinary Atlas
- Map relationships of CASS papers in Flagship conferences to UN Agenda 2030 SDGs
- Establish CASS "lighthouse missions" representing collective multidisciplinary SDG-oriented CASS projects

METRICS

- Percentage of CASS users of the online CASS Atlas tool (KPI 33% during first year after deployment)
- Percentage of CASS flagship conferences explicitly mapping to SDGs (KPI 50%)
- Degree of engagement of CASS community in SDGs (KPI. 10 in first call, # of CASS lighthouse mission proposals)

ACTIONS/PROJECTS

- Develop CASS Atlas tool
- Extension of ePapers platform to map papers to SDGs (and a position paper of CASS leadership in CASS magazine on how CASS relates to SDGs -no resources)
- Open call for CASS missions, establishing "CASS lighthouse mission" committee

RESOURCES

- Contract with IT company for a deployable pilot of the CASS Atlas ($15K USD)
- Extension of ePapers platform to map to SDGs table down to subcategories ($5k USD)
- Grant to winner of Call for "CASS lighthouse missions" ($20k USD)

STRATEGIC INITIATIVE TWO: BETTER ALIGN TECHNICAL COMMITTEES WITH TECHNICAL STRATEGIC AREAS

GOALS

- Increase conference Special sessions in strategic areas (inter- and multidisciplinary topics)

- Establish and Award for the best inter-TC proposal (book, special session, JETCAS issue)

METRICS

- Percentage of conference special session in strategic areas (KPI: from current 40% to 75%)
- Degree of engagement of CASS community in SDGs (KPI. 10 in first call,
- # of "CASS lighthouse mission" proposals)

ACTIONS/PROJECTS

- Coordinating action of special sessions in flagship conferences with governance and Technical Committees (TC) on emergent topics
- Open Call for CASS award for inter-TC/cross-TC proposals

RESOURCES

- Establish a committee on emerging topics (VP Technical Activities (TA), TA division, JETCAS Editor in Chief, TC representatives)
- Establish a committee on best CASS proposal on emerging topics ($5K USD for the Award)

STRATEGIC INITIATIVE THREE: BETTER ALIGN INDUSTRIAL AND ACADEMIC MEMBERS ON IMPORTANT OPEN QUESTIONS AND RESEARCH PRIORITIES OF MUTUAL INTEREST, INCLUDING KNOWLEDGE TRANSFER, INNOVATION

GOALS

- Consolidate and grow the CASS Industrial Forum model (previous IBM, Intel fora) to other companies and topics
- Consolidate and grow "pitch your startup" special sessions in CASS conferences

METRICS

- One additional CASS Industrial Forum event every year for three years
- Increase the percentage of attendees from Academia to CASS Industry for a to foster bidirectional mutual interest (KPI from current 15% to 33%)
- Increase the # of "pitch your CASS startup" submissions (KPI from 5 to 25 submissions)

ACTIONS/PROJECTS

- Action to increase the community awareness (CASS magazine) and reach out to potential industry partners for CASS Industry Fora
- Organize "CASS pitch your startup sessions" in flagship conferences

RESOURCES

- Funds to kick off each CASSS Industry forum until they are self-sustained ($10k USD)
- Fund conference organizers to organize "Pitch your CASS startup session" ($3K USD)

CONCLUSION AND OPERATIONALIZATION

Despite the tragedy of the COVID-19 pandemic, we began the operationalization of our strategic plan by creating AdHoc committees to reflect on the operations necessary for the execution of the strategic plan while dealing with the most urgent matters to mitigate the impact of the outbreak.

Thus, we have created committees in the fields of global education, microlearning, a committee to define a strategy and an action plan for increased involvement in Africa, a committee for entrepreneurship, along with others. Initial very encouraging results are beginning to emerge from this work of reflection on operationalization.

2019 LONG TERM STRATEGY COMMITTEE

A special thanks to the 2019 appointed Long Term Strategy Committee for their guidance and support in developing this plan:

- Amara Amara (Chair)
- Yong Lian
- Guoxing Wang
- Mohamad Sawan
- Myung Hoon Sunwoo
- Yoshifumi Nishio
- Eduard Alarcon
- Dr. Rajiv V. Joshi, IBM Research Division
- Junjin Kong, Samsung Vice President

- Stefan Rusu, Senior Director at TSMC North America
- Giovanni de Micheli, Professor, EPFL, Former CASS President
- Franco Maloberti, Professor, University of Pavia, CASS Past-President
- Jan Rabaey, Professor, University of Berkeley, BWRC lab

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OPERATIONS MANAGEMENT STAFF

- Brittian Parkinson

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- Thomas Straub

OTHERS

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