

NEW PERIODICAL PROPOSAL APPROVAL PHASE ONE FORM

PERIODICAL TITLE: This is IT: IEEE Information Theory Magazine
(exact title to be decided at BoG)

PROJECTED LAUNCH YEAR & MONTH: 2021, March

PERIODICAL FINANCIAL CO-SPONSORS:

List all co-sponsors (IEEE and non-IEEE) here and when their AdCom will (or had) approve(d) participation.

IEEE Information Theory Society (100%), July 2019

PERIODICAL TECHNICAL CO-SPONSORS:

List all technical co-sponsors here and when their AdCom will (or had) approve(d) participation. (Do not re-list financial cosponsors.) Once MOU is signed and completed, send to periodical@ieee.org.

None.

PERIODICAL OFFICIAL SCOPE:

Write the periodical's content coverage here. This should be the full, official scope.

The proposed **IEEE Information Theory Magazine** publishes content that spans from tutorials and review articles, to introductions to emerging topics, historical surveys and columns. The mission of the Magazine is to increase the visibility of the high quality content generated within the Information Theory Society, make it more accessible to a wide audience of scientists, engineers, researchers and educators, and highlight the rich interdisciplinary work of the community. The tutorial and review articles cover both traditional and emerging areas within the field of interest of the Society. The columns include topics such as perspectives from funding agencies, startups and industry developments, puzzles and cartoons, reporting on events, and community updates. interest of the Society.

PERIODICAL NEED:

Write here an explanation of why this periodical is needed.

The Information Theory (IT) Society does not have a Magazine. Many of our sister societies, such as Communications, Signal Processing and Computers, have very successful Magazines, which give us guidance and inspiration.

The IT Society has a very successful newsletter, which is celebrating its 68th year of publication. The newsletter is distributed quarterly to Society members in print form and is posted on the Society web site. In addition to tutorial papers based on plenary lectures given at information theory conferences (including the yearly Shannon lecture), the newsletter contains several popular regular columns, such as the President's column and the Student's Corner, alongside news and reports from various societal activities around the globe. While the newsletter is well-read by a core group of information theorists, the fact that it is not available on IEEE Xplore limits the readership and impact. It is also difficult to motivate authors to contribute content to the newsletter, as it is not citable or searchable.

The new Information Theory Magazine will build on the tradition of the newsletter and include technical, but accessible, content that is of interest to individuals both within and external to the society. However, it will differ in several significant aspects. Unlike the newsletter, the tutorial and review articles that appear in the Magazine will be peer reviewed. Also, the content will be available on Xplore, will be indexed by search engines, and citations will be counted by Science Citation Index and Google Scholar. This widespread availability will increase the readership significantly, and motivate researchers to submit high-quality contributions. The magazine will create a venue for sharing new breakthroughs in information theory with researchers who do not regularly read the IEEE Transactions on Information Theory. It will also allow researchers in emerging fields, who use information theoretic approaches in their work but do not normally publish in the Transactions, to share their methodologies and results with a broad audience. Overall, the magazine will help cross-fertilize ideas, increase access to information theoretic concepts, and enhance the value of Society membership.

• WAS THERE A POTENTIAL READERSHIP SURVEY CONDUCTED TO ASSESS THE NEED?

Yes, in June 2019. The results were encouraging:

- More than eight in ten (83%) of the responses said they were likely to read thus publication.
- More than four in ten (42%) said they were likely to submit.
- More than three quarters (78%) indicate that the subject will be important in 10 years.

ALTERNATIVE PUBLISHING MECHANISMS EXPLORED:

Before submitting this proposal, have you tried: (check all that apply)

The IT Society does not have another Magazine. The proposed content would not fit in the current publications of our Society.

	Special Issue(s)
	Special Section(s)
	Increased pages in existing Journal on this topic
	Increased frequency of existing title
	Modifications to IEEE <i>Xplore</i> Content to call attention to new content
	ALL of the above
	NONE of the above

OVERLAP WITH EXISTING IEEE PERIODICALS:

Write here about any overlap which exists between the envisioned scope of this periodical and any already-existing IEEE periodicals.

The IT Society currently has two publications: the IEEE Transactions on Information Theory and the IEEE Journal on Selected Areas in Information Theory (JSAIT), a new publication that will start in 2020. Neither of these has in its mission the publication of widely accessible content, and thus their scope does not overlap with that of the proposed Magazine.

Most other Societies have at least one Magazine, but these provide content generated and addressed to their community, and thus their scope is different than the proposed Magazine that will serve the IT Society.

VISUAL LANDSCAPE (ONLY NECESSARY WHEN A SCOPE SEEMS TO OVERLAP WITH EXISTING IEEE PERIODICALS YET THERE IS REALLY A DIFFERENCE IN THE CONTENT ENVISIONED.):

SAMPLE ONLY (click on image below, hit Delete on your keyboard and replace with your image)

PAPER SOURCE CHANNELS:

Include details about how papers will be attracted for this new periodical.

The mechanisms we will use include the following: (1) we will widely advertise an open call for submission of content (2) we will encourage colleagues who present tutorial or plenary lectures to submit an associated article to the magazine (3) we will invite winners of best paper awards to submit an associated tutorial article (4) we will advertise and accept submissions for special issues, where a set of special issue editors will collect and publish content focused around a common theme.

WOULD YOU LIKE THIS NEW PUBLICATION TO BE INCLUDED WITH YOUR DIGITAL LIBRARY? A digital library gives electronic subscription access to a specific list of periodicals, conference publications, or online content provided to members.

N/A we do not have a Digital Library.

	YES. ONLITDL IEEE Information Theory Society Digital Library
	NO
	N/A

Example [YES-ONL469, IEEE Aerospace and Electronic Systems Society Conference Digital Library]

TECHNOLOGY FOCUS AREA COVERED BY THIS NEW PUBLICATION:

*Please indicate which Technology Focus Area that pertains to this new publication
(please check all that apply)*

	Aerospace
X	Bioengineering
X	Communication, Networking and Broadcasting
	Components, Circuits, Devices and Systems
X	Computing and Processing (Hardware and Software)
	Engineered Materials, Dielectrics and Plasmas
	Engineering Profession
	Fields, Waves and Electromagnetics
X	General Topics for Engineers (Math, Science and Engineering)
	Geoscience
	Nuclear Engineering
	Photonics and Electro-optics
	Power, Energy and Industry Applications
X	Robotics and Control Systems
X	Signal Processing and Analysis
X	Transportation

IDENTIFYING POTENTIAL VARIANCE FROM CURRENT NORMS:

This section will be completed by IEEE staff.

WORKSHEET AND BACKGROUND INFORMATION APPROVAL PHASE ONE FORM

IS THERE VARIANCE FROM IEEE'S PERIODICAL NORMS?

(This information will help the Periodicals Product Manager determine if there are any important departures from standard operating procedure requiring communication during the early stages of the periodical approval process.)

No

PAGE COUNTS:

(Aggressive page growth planning has been historically problematic, particularly in topic areas with no existing paper flow channel being utilized. During Approval Phase One, these page counts are only estimations. During Approval Phase Two, they are final counts for the proposal. The Year Two and Year Three counts may be adjusted post-proposal, based on actual experiences. Advertising pages may not be known in Approval Phase One.)

	Editorial Pages	Article Page Count	Estimated # of Articles	Ad Pages (Magazine only)	Estimated # of Submissions
Year One	10	170	8		10
Year Two	10	200	10		20
Year Three	15	275	15		30

Reasoning

Each tutorial article will have a length of approx. 15 pages. We plan to have on average 10 columns per year, divided among the issues, each column of 3-5 pages. During the first two years, we will publish two issues per year, while in the third year we hope to have sufficient submissions to go to three issues per year.

During the first few years, we expect most of the content to come through invitations, for instance invitations extended to popular tutorials and to award-winning papers. Additionally, we will solicit special issues, where the

submitted proposal would not be in terms of specific articles, but rather a description of the topic to be covered.

MEDIA SELECTIONS:

Please write “FREE” in the boxes for those who will receive the journal for free and mark “X” in boxes for those who can purchase a subscription to the journal. Mark N/A in boxes for those media types that will not be offered (detailed explanations of media types provided below.)

	Sponsoring Society Members	Other IEEE/ GI Members	Non-Members
Print	FREE	X	
Electronic (IEEE Xplore Delivery)	FREE	X	
Print + Electronic	NA	X	

We would like all members of the IEEE Information Theory Society to receive the digital and electronic formats and the print version of this publication as part of their membership fee. Members of other IEEE Societies will be offered only the print media option. If electronic access is desired, they are encouraged to join the IEEE Information Theory Society.

SPONSORING SOCIETY MEMBER MEDIA SELECTIONS

(PLEASE CHECK ALL THAT APPLY) – for example, if you plan to offer the title as print, electronic and print & electronic for a subscription price, all 3 options should be checked.

	Sponsoring Society Members
Print	X
Electronic (IEEE Xplore Delivery)	X
Print + Electronic	X

PLEASE LIST SPONSORING SOCIETIES THAT WILL BE OFFERED THESE OPTIONS:

Please list all sponsoring societies that will be allowed to subscribe to the media options noted above.

None

SPONSORING SOCIETY THAT WILL RECEIVE THE ABOVE MEDIA OPTION FOR FREE

Please list the sponsoring society that will receive the above media option for free.

IEEE Information Theory Society

Some periodicals are provided as a benefit of membership to a society. Societies have been eliminating the practice of “bundling” print or print-plus-electronic of transactions/journals, as the price of fulfilling print places a heavy burden on the society budget. Electronic access to a transactions/journal via “bundling” as a society membership benefit continues to be prevalent. However, this lowers the overall revenue of the periodical.

When giving print and/or online free with sponsoring-society membership, you have the option of allowing all IEEE members to purchase a subscription or not. Only with bundling is this option allowed. All new periodicals that are not bundled and must be purchased by Sponsoring Society members must also be offered to all IEEE members for purchase.

2007 BUSINESS RULES CHANGE (GENERAL INTEREST): Previously (2006 and earlier), Societies/Councils were given the choice of whether or not they wished to have their publications offered as general interest (available to all IEEE members, regardless of whether or not they are society members). Offering the periodicals as general interest could potentially increase revenue, but additional costs may offset this. Starting in 2007, due to changes in IEEE’s business management systems, all titles will need to be offered as general interest and have a general interest price created for at least the number of media options that are available to the sponsoring Society/Council. For example, if a title is offered to its sponsoring society, as print, electronic, and print-plus-electronic, then it must also be offered as general interest print, electronic, and print-plus-electronic. The only exception is if this title is not available for individual sale to members but is bundled with membership, then no general interest offering price is required.

NONMEMBER MEDIA SELECTIONS

(PLEASE CHECK ALL THAT APPLY) – for example, if you plan to offer the title as print, electronic and print & electronic, all 3 options should be checked):

	Non-Members
Print	X
Electronic (IEEE Xplore Delivery)	X
Print + Electronic	X

(The concept of an electronic-only periodical has been – and continues to be – a problematic business model. While members seem to be comfortable with electronic only access, there are librarians still demanding content be made available in print. For the moment, every periodical is required to provide at least enough print copies of content to service print All-Society Periodicals Package customers. This is approximately 100 copies. A quarterly CD-ROM is expected to be produced for a title that is only sold electronically.)

We are fine with the above suggestion.

FREQUENCY OF PRINT ISSUE:

There is nothing holding a publication to a typical quarterly, bi-monthly or monthly frequency. Five or eight issues per year are viable options when there is concern a quarterly is not frequent enough to keep coverage relevant or fresh.

	# of print issues
Year One	2
Year Two	2
Year Three	3

During the first two years, we will publish two issues per year, while in the third year we hope to have sufficient submissions to go to three issues per year.

FREQUENCY OF ONLINE POSTING:

When would you intend for an accepted manuscript to be made available online? For example, IEEE Publications Operation is capable of posting articles to IEEE Xplore

upon approval for publication, but discussions must begin early.

AVAILABLE WHEN THE FULL ISSUE IS COMPLETE

If online posting frequency will be different from print frequency, please provide the on-line issue frequency:

	# of online issues
Year One	2
Year Two	2
Year Three	3

WILL ONLINE ACCESS BE SERVICED THROUGH IEEE XPLORE?

YES

WILL ONLINE ACCESS BE SERVICED THROUGH ANY OTHER WEBSITE?

YES, we would like some of the columns to appear on the IEEE Information Theory Website as well.

If yes, please explain: We plan for the Magazine to have in common some columns with the IEEE IT Newsletter. The Newsletter will be published electronically on the IEEE Information Theory Website, and thus these common columns would also appear as part of the Newsletter.

WILL MANUSCRIPT CENTRAL OR SOME OTHER MANUSCRIPT PROCESSING SYSTEM BE USED FOR MANUSCRIPT PROCESSING?

MANUSCRIPT CENTRAL

DO YOU PLAN TO CHARGE VOLUNTARY PAGE CHARGES?

YES

IF YES, PLEASE NOTE WE WILL USE 6% OF YOUR PAGE COUNT.

 6 %

DO YOU PLAN TO CHARGE OVERLENGTH PAGE CHARGES?

YES

IF YES, PLEASE NOTE WE WILL USE 12% OF YOUR PAGE COUNT.

_____12_____ % \$ _____

FOR MAGAZINE PROPOSALS ONLY:

WILL IEEE MEDIA BE HANDLING THE ADVERTISING FOR YOUR MAGAZINE?

YES

WILL TECHNICAL ARTICLES IN THIS PERIODICAL COMPLY WITH IEEE'S PEER-REVIEW POLICIES AND PROCEDURES?

YES

During the proposal quotation process, IEEE staff will provide a quotation for production and fulfillment expenses associated with this publication. Mailing expense is dependent upon the geographic location of subscribers.

WHAT SINGLE IEEE PERIODICAL COMES CLOSEST TO REFLECTING THE POTENTIAL US/CANADA VERSUS REST-OF-WORLD PROFILE OF THIS PUBLICATION'S POTENTIAL SUBSCRIBERSHIP?

IEEE Signal Processing Magazine

TO HELP WITH THE MARKETING ANALYSIS, PLEASE

PROVIDE AS MUCH RELEVANT INFORMATION AS POSSIBLE FOR THE FOLLOWING QUESTIONS:

1). Name specific industries, businesses and professions that will find your periodical of particular interest. Concentrate on the end-user rather than the librarian or other distributor. Include IEEE Societies other than yours as well as non-IEEE Societies (include size of membership if known). Please rank them from strongest interest to least interest.

Academic Fields (with Professions):

Communications and Networking (telecommunications), Signal Processing, Machine Learning and Data Science (cutting across many technology fields as well as finance and marketing), Computer Science (computing and software), Neuroscience (brain-machine interfaces, pharmaceuticals), Genomics (biotech, genetics), Statistics (finance).

2). What are the job titles or functions of individuals who will find your periodical of interest. List in order of importance.

Engineers

Scientists
 Researchers
 University Faculty Members
 PhD Students
 Postdoctoral Researchers
 Secondary School Teachers and College Level Teachers

3). *Please list any technology trends that will impact the sales of your periodical and/or lessen the impact of your competitors.*

Work within the information theory community connects with several well-established and emerging areas, both theoretical and applied. Some examples of areas where work in information theory can support emerging technology trends include:

- **Wireless:** as new wireless technologies emerge (mmWave, massive MIMO, energy harvesting), there is a clear need to understand fundamental limits as well as optimal strategies. Information theorists have traditionally contributed both fundamental limits and code designs for wireless, and several research areas in our community are aligned with these emerging new technologies.
- **Quantum Computers:** is a technology that is fast accelerating: for example, in June 2018, Intel began testing a silicon-based spin-qubit processor; in January 2019, IBM launched **IBM Q System One**, its first integrated quantum computing system for commercial use. Quantum error correction, quantum information theory, quantum communication, and quantum computation are all topics that our community helps advance.
- **Security:** with quantum computing increasingly attracting funding and attention from governments and large corporations, unconditional (information theoretic) security that does not depend on computational guarantees, becomes increasingly important. We are the core community with expertise in information theoretic security.
- **Cyber Physical Systems (CPS):** this includes critical infrastructure, such as the energy grid and self-driving vehicles, and is becoming increasingly important as we move towards a more technologically advanced society. Recent research has helped establish connections between CPS, control theory, and information theory.
- **Machine learning and Data Science:** is becoming wide spread, with deep learning penetrating applications that range from language processing to health monitoring. Information theorists have traditionally developed ideas and statistical tools that form the theoretical foundations of this area; more recent research has started addressing one of the “holy grails” in the area, providing a theoretical basis for deep learning.
- **Neuroscience:** with recent advances in devices that measure neural activity, understanding information transfer and processing in the brain can support a wealth of applications such as brain-computer interfaces for prosthetics. The Brain Initiative (<https://www.braininitiative.nih.gov>) is an example of a recent effort in understanding the human brain.
- **Genomics, Synthetic and Systems Biology:** as new methods to read DNA emerge, such as nanopore sequencing, and new applications emerge, such as information storage in DNA and molecular communication for biological circuits, researchers in information theory are contributing codes, algorithms and fundamental theoretical limits that help support this fast expanding area. Traditionally, information theorists have contributed to the computational and mathematical modeling of biological systems, and continue to do so.
- **Natural Language Processing (NLP):** this is an area to which information theory researchers as early as Shannon have contributed, and it has recently attracted significant new interest with the advance of automation and increased data availability.

4). *Please add any other information that will assist us in the market analysis.*

As discussed earlier, information theory connects with multiple areas and provides a fundamental framework that enables one to derive bounds and optimal strategies across a large range of fields. Results in information theory have offered many breakthroughs and had a deep impact on both theory and applications in these fields. Unfortunately, many papers published in the Information Theory Transactions are perceived as “hard- to- access” by non-experts in the specific subfield, even within our own community, which limits the potential impact of the results, as well as their visibility. The magazine will address this challenge, by taking significant and innovative content and making it accessible not only to researchers in other areas, but also to engineers and practitioners. The magazine can strengthen bridges across areas and will attract interest both from article contributors, who will want to make their work more widely accessible and impactful, and from readers, who will wish to stay abreast with current advances without necessarily investing the time to become experts. We thus believe that this Magazine will fill a significant gap and add value to the scientific community, both within and outside the Information Theory Society.

APPENDIX A: CO-SPONSORSHIP AGREEMENT(S)

Start thinking about this now as it is a required portion of the Phase 2 proposal

APPENDIX B: TAB PERIODICALS REVIEW AND ADVISORY COMMITTEE RECOMMENDATION FROM LATEST PRAC REPORT REGARDING THE PROPOSING SOCIETY/COUNCIL’S PUBLICATIONS