

Broadcast Technology Society Newsletter

The technologies to deliver information and entertainment over the air, cable, satellite and Internet to audiences worldwide, at home and on the go.

From the President



Dear BTS Members:

It's hard to believe we've reached the midpoint of the "new year" 2005 – and with so many resolutions yet to keep! The NAB Convention is now behind us, BroadcastAsia2005 convened in Singapore in June, and IBC and our annual Broadcast Symposium are coming up in a few short months.

We enjoyed a prime, high-traffic location for our membership booth at NAB again this year – on the Grand Concourse near the entrance to the session rooms. We welcomed some

twenty new members to BTS and, sharing the space with representatives from IEEE Press, offered a selection of titles of interest to broadcasters – including a set of four on wireless network standards, especially relevant to our Wednesday afternoon tutorial topic. We counted about a hundred attendees in the tutorial session room at one time, but more than 200 copies of the handout were distributed, so there were probably an equal number of "floaters."

A new and interesting experience for us this year was observing the pair of focus-group sessions conducted by the IEEE Strategic Research people. With our help, and the cooperation of NAB, they held two ses-

sions on Monday morning, having a total of 17 participants. The diverse group included manufacturers, edu-
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From the Editor

This issue is late because your editor's day job has gotten a bit too hectic and because I have a problem with just saying no when asked to take on other non-work related projects. I always believe there will be enough hours in the day to get it all done but this time it just didn't work out that way. Fortunately I have had some great help from April Monroe (formerly Nakamura congratulations April) our Society Administrator and from Ted Kuligowski who is filling in for April while she is honeymoon-

ing. If it was not for April and Ted this would have likely been a fall rather than a summer edition – Many thanks to both of you.

I expect to get things back on track soon so the next Newsletter should arrive on time and before our Fall Symposium. Speaking of the Symposium, it looks like it is shaping up to be another must attend event. Each year the Symposium seems to get better and better and this year should be no different.

continued on page 2

From the Editor continued

After putting on some really great programs in the past few years we are sad to report that David Layer has had to step down as chairman due the pressures of his job at the NAB. We all owe David a huge thank you for all that hard work and hope he is able to attend this year and just enjoy the Symposium for a change.

Although we are not happy about losing David, the Symposium will be in good hands as Guy Bouchard from the Canadian Broadcasting Corporation has agreed to take over as Symposium chair and is already busy putting this year's event together. The BTS and Guy are also fortunate that Ed Williams will once again be the Technical Program Chair. Keep tuned for more details and make plans to attend the Symposium at the Hotel Washington in Washington, DC October 12-14, 2005.

After several years of watching our membership decline due mainly to changes in the broadcast industry and our inability to adapt to those changes, the BTS will be launching some major new initiatives to reverse that trend. For more details read Tom Gurley's column and also look for more details in the next issue. The BTS AdCom has held two two-day strategic planning

meeting with more to follow and these initiatives are likely to be just the beginning of some major changes that will greatly improve and insure the survival of our Society. For more insight into what's going on read the articles THE REST OF THE STORY and IEEE GROUPS FOCUS ON HOT TECHNOLOGIES in this issue.

As always – let me hear from you – comments, suggestions and criticism are all welcome and once again I encourage you to share your knowledge and experiences with our readers by taking the time to submit a brief article or even a long one if you have the time.

Bill Meintel
wmeintel@computer.org

From the President continued

cators, editors, an IS manager, and post-production and operations people. This was part of the IEEE Membership Development Committee's initiative targeting technical professionals in the Broadcasting, Multimedia, and Entertainment segment. We've just received a report on their findings, and we'll pass the highlights on to you next time. Another set of focus groups is in the works for IBC.

Also at IBC, we will again be presenting a joint tutorial with our friends at SMPTE. This year's session, on Saturday, will deal with HDTV implementation issues, with international speakers relating their real-world experiences. Check our website for links to the program details. We hope to see many of you there – look for our stand in the Partnership Village.

BTS is involved in several other projects this year, too – many of them directed toward strategic planning, membership development, educational services, and broadening the range of

our activities to keep pace with our changing industry. While these are less visible to our members right now, we'll be sharing the details as they unfold.

For example, this issue of the Newsletter includes an article about new technologies being addressed by the IEEE. BTS is part of the new group on "portable information devices" and will be co-sponsoring a conference with other societies next year. We are also proposing to hold our own, more industry-focused, conference on Mobile and Multimedia Broadcasting. This year's annual Broadcast Symposium will include a session on this topic, as a prelude to next year's events.

As always, we welcome your comments and ideas, and we earnestly solicit your active participation in BTS. Please let us know how we can serve you better.

Tom Gurley
President
IEEE Broadcast Technology Society
tgurley@ieee.org

Newsletter Deadlines

The BTS Newsletter welcomes contributions from every member. Please forward materials you would like included to the editor at wmeintel@computer.org. Here are our deadlines for upcoming issues:

Issue	Due Date
Fall, 2005	July 20, 2005
Winter, 2005	October 20, 2005
Spring, 2006	January 20, 2006
Summer, 2006	April 20, 2006

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IEEE Groups Focus on Hot Technologies

BTS Playing an Active Role

Wanting to keep abreast of technologies that will be hot in the next few years, members have asked the IEEE to improve its coverage of so-called emerging technologies in its publications and conferences. But making such predictions is not so easy, which is why, in November of 2003, the IEEE Technical Activities Board (TAB) started an initiative called the IEEE Focus on Technologies.

“Emerging technologies often cut across the boundaries of many of the IEEE’s societies’ traditional fields,” says Leah Jamieson, chair of the New Technologies Directions Committee (NTDC), also under TAB, which is responsible for carrying out the initiative. “One of the key goals of the Focus on Technologies initiative is to identify opportunities for collaboration, so that the IEEE can quickly build new communities and hold workshops and conferences on emerging areas.”

One of the more difficult tasks was to pick which technologies to focus on. Starting with a list of 35 fields to consider, the committee narrowed it down to six: biotechnology and bio-engineering, digital intellectual property, display technologies and information interaction, distributed intelligent networks and systems, future power and alternative energy technologies, and security for public and personal safety.

“These technologies were selected because of the importance they will have to the engineering profession in the future,” Jamieson says. “They also represent great opportunities to build bridges between areas where IEEE has leading-edge expertise.”

Some of the groups are further along than others. The display technologies group received approval in June 2004 to start a new publication and, this September, will launch the IEEE/Optical Society of America Journal of Display Technology. This publication will cover the theory, design, manufacturing, and reliability of information displays used in consumer and commercial electronics. Included are such devices as televisions, computers, projectors, and personal digital assistants.

BTS is one of seven IEEE societies co-sponsoring the Journal. The others are Lasers and Electro-Optics; Electron Devices; Components, Packaging, and Manufacturing Technology; Instrumentation and Measurement; Industry Applications; and Solid-State Circuits.

Members of the digital intellectual property group are considering the best methods for protecting intellectual property rights over digital information. Digital information includes not only software and computerized text but also audio (music and speech), video (still and moving pictures), and even shape (like the forms found in computer-aided design).

But the NTDC hasn’t stopped with these six areas. The initiative calls for one or two new groups to be formed each year. After considering more than 80 fields, in February the committee picked two more: portable information devices and organic electronics. Portable information devices include cell phones and personal music players such as iPods. Organic electronics covers low-cost circuits that can be found, for example, in multicolor automobile stereo displays. Meanwhile, the IEEE Committee on Earth Observations is joining NTDC to form another new group focusing on global earth observation systems that are designed to link millions of national, regional, and international sources into a single network able to track environmental changes in oceans, land, the atmosphere, and ecosystems.

BTS is taking a leadership role in the portable information devices group, with a seat on its executive committee. The rapid convergence of broadcast, telecommunications, and consumer electronics technologies to deliver broadcast content to mobile platforms, such as cell phones, presents an opportunity for BTS to collaborate with other societies and to enhance its value and relevance to its members. The group is considering holding a workshop and starting a newsletter next year.

[Adapted from an article in The Institute, 17 May 2005, entitled “Groups Focus on Nine Hot Technologies,” by Kathy Kowalenko.]

Early Radio Transmission Recognized as Milestone

BY ERICA VONDERHEID

(Information about the celebration in St. Petersburg— by Dmitry Tkachenko)

It was in 1895 that Alexander Popov first demonstrated the same principle that irks so many of us today in restaurants and movie theaters: that a wireless device can detect an electromagnetic signal flowing through the air and ring a bell. In recognition of that experiment with wire-

less communication, which less than 100 years later brought us the cell-phone, the IEEE Board of Directors named Popov’s demonstration an IEEE Milestone in Electrical and Computer Engineering.

In Russia, Popov is regarded as the inventor of radio communica-

tion, though in the rest of the world, the Italian Guglielmo Marconi is generally recognized to have been the first to demonstrate the practical application of electromagnetic waves. Evidence shows that Popov was actually first, but he was required to sign a nondisclosure



Opening of IEEE Milestone Memorial Plaque in St.Petersburg State Electrotechnical University. From left to right – Vice-Rector of Electrotechnical University Valentin Afanasiev, IEEE President W. Cleon Anderson, Chairman of IEEE Russia Northwest Section Dmitry Puzankov and IEEE Region 8 Director Baldomir Zajc.

statement because he taught at the Marine Engineering School, part of the Russian navy. In 1896, Marconi applied for a patent for his wireless work, which gained him the credit for the invention of radio.

In the year before Marconi's patent application, Popov had expanded on earlier work in electromagnetics done by Henry Hertz and Oliver Lodge. On 7 May 1895, Popov demonstrated a wireless receiver consisting of a metal "coherer"—a device that detects electromagnetic waves—an antenna, a relay, and a bell to signal the presence of these waves. Popov could send and then detect them up to 64 meters away. Although not initially intended as a means of transmitting information, Popov's device proved that radio communication was feasible.

Every year, Russians celebrate Popov's successful demonstration of wireless transmission on 7 May—so-called Radio Day, which was established in 1945. Radio workers get this day off from work.

Regarded as a national hero, Popov came from humble beginnings as the son of a priest in a mining village in the Ural Mountains. He attended seminary before studying engineering at the Univer-

sity of St. Petersburg. Upon graduation, he joined the Russian Navy's Torpedo School and later the Marine Engineering School as an instructor. In 1901, Popov was named director of the Electrotechnical Institute in St. Petersburg.

The IEEE Russia Northwest Section celebrated the anniversary of Popov's demonstration at the International Scientific Conference on the 110th Anniversary of Radio Invention, that was held 18—21 May in St. Petersburg. The conference examined the history of radio and electrotechnology, as well as new advances in telecommunications, electronics and electrical engineering.

Opening of the Memorial Plaque dedicated to the demonstration of radio transmission by Popov started the conference. The IEEE History Center issued this plaque according to the IEEE Milestone Program to indicate the recognition of Popov's demonstration as an IEEE Milestone. IEEE President W. Cleon Anderson opened the Plaque in St.Petersburg State Electrotechnical University (former Electrotechnical Institute) together with Chairman of IEEE Russia Northwest Section Dmitry Puzankov who is also the Rector of this University. The IEEE Plaque is provided with an additional plaque

containing the translation of the IEEE Plaque text into Russian. Both Plaques are installed near Popov's office, which is a Memorial Museum now demonstrating original equipment used by Popov for his first experiments with radio.

The plenary session of the conference and press conference were held in A.S. Popov Central Museum of Communications located in downtown St.Petersburg. This museum is supported by Russian Ministry of Communications and it contains a plenty of big halls with very interesting expositions of communications equipment starting from telegraph equipment of XIX century and up to modern mobile phones. The following sessions of the conference were held both in St.Petersburg Electrotechnical University and in St.Petersburg University of Telecommunications. The conference contained a History-Scientific Section examining the history of Radio and Communications, an Applied-Science Section concentrated on current trends in telecommunications and a number of technical sessions organized by St.Petersburg IEEE Chapters, such as Broadcast Technology/Communications/Consumer Electronics, Computers, Circuits and Systems, etc.

About 70 papers were delivered at the conference and more than 100 participants from different countries attended the conference. Much more people came to the opening ceremony and to some other events with free public access. At the weekend of May 21-22 the conference was followed by the Social Program with visiting of Popov's memorial places in Kronstadt (a former base of the Russian Navy located on an island near St.Petersburg), sightseeing tours of St.Petersburg and palaces of Russian tsars in St.Petersburg suburbs, visiting museums, theaters, etc. so that guests of St.Petersburg could obtain the general impression of the city where Alexander Popov made his first experiments of radio transmission.

MARK YOUR CALENDAR!

 **IEEE** Broadcast Technology Society

presents

The 55th Annual IEEE Broadcast Symposium

to be held

12-14 October 2005

Hotel Washington – Washington D.C. USA

The 55th Annual Broadcast Symposium returns for another year at the Hotel Washington, in Washington, DC, USA.

This newly-renovated landmark venue is located directly across the street from the White House. Your visit will include the opportunity to visit downtown Washington DC, just a few steps away.



Sessions

Mobile & Multimedia Broadcasting
Technical Regulatory Issues
Audio Broadcasting
DTV: System Performance & Measurements
Satellite Broadcasting
Distributed Transmission

Registration

Registration information and program are at: <http://www.ieee.org/bts>



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IEEE 55th Annual IEEE Broadcast
Symposium Chair
Guy Bouchard
Canadian Broadcasting Corp.

Exciting New Changes for the IEEE Transactions on Broadcasting

You may have noticed the new color scheme of the IEEE Transactions on Broadcasting, but this is the least of the changes the Transactions has undergone recently. The Transactions is now in the IEEE "Rapid Post" System. This means that manuscripts which are accepted for an upcoming issue of the Transactions are posted on IEEE Xplore well in advance of the actual print date! You can see new technical works earlier than ever!

Right now, twenty papers have been accepted for future publication and are available to read Online right now! Simply log into IEEE Xplore, (<http://www.ieee.org/ieeexplore>), navigate to the IEEE Transactions on Broadcasting, and click on the link "View Articles" next to "Forthcoming"

Along with the enhanced and rapid posting of papers, the BTS AdCom also voted to increase the page count of the Transactions. We expect to print over 550 pages of technical content in the coming year, all at no extra cost to Members. This increase in pages is enabled by the increased number of paper submissions we have received in recent years. We have been able to increase our rejection rate to ensure improving quality, while also increasing the number of pages that are printed!

Who handles all of these new papers? We extend a warm welcome to a group of dedicated volunteers, our newest Transactions Associate Editors: Georgios I. Papadimitriou, Aristotle University, Greece
Lap-Pui Chau, Nanyang Technical University, Singapore

Hsiao-Chun Wu, Louisiana State University, USA
Markus Kampmann, Ericsson, Germany
Pablo Angueira Buceta, Bilbao Engineering College, Spain
Jinyun Zhang (Woman), Mitsubishi Electric Research Labs, USA
Ralph Brown, CableLabs, USA
Seung Won Kim, ETRI, Korea
Hui-Ling Lou (Woman), Marvell Semiconductor, USA
Valentine Trainotti, Argentina

It is the work of the Editor, Associate Editors and Reviewers that makes the Transactions successful. Join this outstanding group of engineers and agree to review two papers this year. To volunteer contact: Kathy Colabaugh at: k.colabaugh@ieee.org or Dr. Yiyang Wu, Editor-in-Chief at yiyang.wu@crc.ca

Papers forthcoming in issues of the IEEE Transactions on Broadcasting – Available on-line NOW!

To see these papers now, log onto IEEE Xplore, (<http://www.ieee.org/ieeexplore>), navigate to the IEEE Transactions on Broadcasting, and click on the link "View Articles" next to the word "Forthcoming"

Identification of Co-Channel Transmitters in a DVB-T Network

Amor R. M. ; Masse D. ; Schaffhuber D.

Joint Bandwidth Allocation for User-Required Picture Quality Ratio Among Multiple Video Sources

Kwon S. ; Rao K. R. ; Kwon O.-J. ; Kim T.-S.

On Fading Margin in Ultrawideband Communications Over Multipath Channels

Bastidas-Puga E. R. ; Ramirez-Mireles F. ; Munoz-Rodriguez D.

ACE With Frame Interleaving Scheme to Reduce Peak-to-Average Power Ratio in OFDM Systems

Yang Z. ; Fang H. ; Pan C.

Design and Implementation of an End-to-End System for DTV Multicasting to Home Over Broadband IP Access Network

Luo C. ; Sun J. ; Xiong H.

A Simple Odd-Symmetric Filter for

Digital Broadcasting

Bank M. ; Bank M. ; Haridim M. ; Gavan J.

Subjective Assessment of the Quality-Oriented Adaptive Scheme

Muntean G.-M. ; Perry P. ; Murphy L.

Practical Channel Transition for Near-VOD Services

Chien W.-D. ; Yeh Y.-S. ; Wang J.-S.

Digital Signal Disturbed by Impulsive Noise

Bedicks, Jr. G. ; Dantas C. E. S. ; Sukys F. ; Yamada F. ; Raunheite L. T. M. ; Akamine C.

Low-Complexity Equalization for TDS-OFDM Systems Over Doubly Selective Channels

Fu J. ; Pan C.-Y. ; Yang Z.-X. ; Yang L.

A New Data Rotation Based CP Synchronization Scheme for OFDM Systems

Ko C. C. ; Mo R. ; Shi M

OFDMA Uplink Performance for Interactive Wireless Broadcasting

You Y.-H. ; Jeon W.-G. ; Wee J.-W. ; Kim S.-T. ; Hwang I. ; Song H.-K.

Adaptive Hybrid Beamformer for Mobile Reception of ATSC DTV

Ahn J. H. ; Lim C.-H. ; Han D. S. ;

Oh H.-S.

Objective Quality Monitoring Issues in Digital Broadcasting Networks

Montard N. ; Bretillon P.

Joint Frame Synchronization and Frequency Offset Estimation in OFDM Systems

Zhang Z. ; Long K. ; Zhao M. ; Liu Y.

An Improved ICI Reduction Method in OFDM Communication System

Ryu H.-G. ; Li Y. ; Park J.-S.

Timing Synchronization for ATSC DTV Receivers Using the Nyquist Sidebands

Xiong J. ; Sun J. ; Qin L. Generalized Greedy Broadcasting for Efficient Media-on-Demand Transmissions

Nikolaus B. ; Ott J. ; Bormann C. ; Bormann U.

A New ICI Matrices Estimation Scheme Using Hadamard Sequence for OFDM Systems

Wu H.-C. ; Wu Y.

An Adaptive Differentiated Service Multicast Gateway

Huang C.-M. ; Yu Y.-T. ; Liau G.-S.

A Spectrally Efficient PMR System Utilizing Broadcast Service

Sengul E. ; Koymen H. ; Ider Y. Z.

Memories of NAB2005

BTS had another successful year at the NAB2005 booth. Outstanding volunteer support and a wonderful gathering of old and new friends highlighted this year's NAB2005 gathering



A gathering of BTS Presidents; Current President Tom Gurley meets for dinner with Past Presidents Bruce Hunter and Jerry Berman and their families. Also pictured is AdCom member Valentino Trainotti.



Much missed booth veterans Jerry and Florence Berman returned this year.



The AdCom meeting was well attended.

The IEEE History of Radio Exhibit

Featured in the IEEE Operations Center, the exhibit, titled "History of Radio," traces the history of radio from the early 1900s to the 1950s. Dozens of radios and related items are on display. The radios were used for both entertainment and military use. Artifacts are courtesy of the New Jersey Antique Radio Club.

If you're interested in reading more about the history of electricity and engineering, try the IEEE virtual museum at: <http://www.ieee-virtual-museum.org>



Made in 1939, the world's first consumer wireless remote control is the size of a volleyball.



The IEEE History of Radio Exhibit

THE REST OF THE STORY

BTS Strategic Planning and Membership Development Activities

The Sidebar article in the Spring 2005 issue, which presented an Overview of BTS Strategic Planning and Membership Development Activities, was not printed in its entirety. The following is the rest of the story.

Gleanings from IBC 2004

Various speakers from around the world assessed the state of the industry and its direction from their perspective. They covered the three aspects of Content

- Creation
- Management (or Aggregation)
- Delivery (or Distribution)

Of these three, BTS has traditionally focused on delivery or distribution. However, in the opinion of several industry leaders who spoke at IBC:

“Broadcasting is not about distribution any more.”

Several points were cited as evidence of this contention:

- Some broadcasters are spinning off, outsourcing delivery.
- Getting content into the consumer’s box, by any means, is what it’s all about.
- The consumer is in control.
 - “TIVO-zation” – Consumer has all the content in the box, and can watch whatever, whenever he wants.
- Branding is not an issue.
 - Consumer doesn’t care where the content comes from; doesn’t watch “NBC” or “Channel 4” – watches “Friends”
- Broadcasting has undergone a sea change.
- The model of 20 years ago, or even

5 years ago, doesn’t work any more. These points were bolstered by the comments of other industry leaders cited in the October 11, 2004, issue of Business Week (p158 et seq):

- “Great decoupling” between TV content and how it is delivered
- Content now being delivered via cell phones and the Internet
- Content providers becoming “platform neutral”

Potential Impact on BTS

In its strategic planning, BTS must consider that:

- If the mode of delivery doesn’t matter, then we must embrace all of them.
- If distribution is becoming a commodity, then it is not a growth opportunity.
- If content creation and management are “what it’s all about,” then that’s where the growth opportunity is.

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- See state-of-the-art technology from 1,000 exhibitors.
- Network with more than 40,000 key players from Europe and 120 countries.
- Take part in the world's best opinion forming conference.
- Take advantage of IBC's free visitor attractions including the Training, Displays and Content for Mobiles Zones.
- Be guided to hot topics and products by experts in our free 'what caught my eye' sessions.

Exhibition 9 - 13 September
Conference 8 - 12 September
RAI Amsterdam

ib
2005

is evolving fast
make sure you adapt and
develop by visiting IBC2005

IBC Aldwych House 51 Aldwych London WC2B 4EL United Kingdom
Tel: +44 (0) 20 7611 7500 Fax: +44 (0) 20 7611 7530 Email: show@ibc.org

Society Volunteer Positions Available

The BTS AdCom is actively seeking volunteers to help with the exciting new initiatives and activities of the Society. Broadcasters in all areas are invited to participate in the running of the Society. Those who do participate are contributing to the advancement of broadcasting and giving back to the industry while at the same time, making valuable industry contacts.

As with many professional societies, it is often the case that a small group of people end up working on independ-

ent initiatives, and the BTS is no exception. Our advancement as a Society is limited by the people available to work on projects. From Standards, Transactions and Conferences, to associations with other organizations, the Broadcast Technology Society has the resources to grow, we just need the people to guide us!

Of particular interest is increasing involvement from members outside of the U.S. These Members have historically had some difficulty partici-

pating due to the logistics of working with the Washington DC -based AdCom. Thanks to the proliferation of the Internet and through the availability of teleconferencing, it is entirely possible for a motivated Society Member to become a contributing member of the Society AdCom with minimal travel time!

If you would like to participate and contribute to your Society's growth, contact Society Administrator, April Monroe at a.nakamura@ieee.org.

Brain Teaser

Answers to questions in the last issue

- 1.) A man's sons are all blue-eyed except for two, all brown-eyed except for two, and all gray-eyed except for two. How many sons does he have? *He has 3 sons.*
- 2.) A house painter paints numbers on all of the houses in a new development starting with the number 1 and ending with 100. How many times does he paint the number 9 in the process? *20 times.*
- 3.) Where can you find a triangle with 3 right angles? *On the surface of a sphere.*

I had a few minutes this past weekend to reflect on the importance of keeping one's mind active and challenged. My weekend consisted of flying (as a private pilot) between Manassas, Virginia and Youngstown, Ohio in solid IFR (Instrument Flight Rules) weather conditions, spending some time with my 81 year old parents, and driving a sports car at a relatively high speed on a road course track in Indiana. All of the above items caused me to marvel at the human mind and what it is capable of doing for us. Flying and driv-

ing are learned skills and with a certain amount of regular practice we can usually maintain some level of proficiency. I threw mention of my 81 year old parents in there because I observed a couple who have managed to stay active both physically and mentally. Sometimes we do not have total control of physical activity capabilities but the mind can and should be exercised and challenged regularly. The folks have played bridge for 60 years. They work crossword puzzles and regularly participate in group discussions at their church and local clubs.

How often do we find ourselves complacent with our jobs and daily lives that we cease to challenge our minds. The brain works on a use it or lose it mode. Just as regular physical exercise is important to feeling good and having good health, mental exercise is equally important. If you haven't already, put that mind to work on something that is fun and interesting to you.

The Brain Teaser column is intended to try and stimulate some interest in showing some attention to the mind. If you have a favorite one to share, please forward it to me and I will include it in the newsletter.

Welcome to the New Members of the IEEE Broadcast Technology Society who joined since 1 April 2005.

Regions 1-6 USA

GERRY FIELD
MARC NAGEL
KENNETH SMITH
RAJENDRA SINGH
CHRISTIAN VANG
FRANKLIN KENNEDY
STEPHANA PINEL
GUSTAVO FIGUEIREDO
STEVEN SNYDER
YUNUZ CAKMAK
AARON CREASY
BILL LAUMEISTER
RICHARD GAGNON
AARON WELLS
JOSH ARENSBERG
KENNETH MILNES
KEVIN GAUKEL
STEVEN SALARVAND

TEJINDER SINGH
TIANBING TENG

Region 7 Canada

ALEXANDER LAU
DAVID BACHAN

Region 8 Europe, Middle East & Africa

ALEXANDER PEREGUDOV
AMEEN AL-HULAIMI
FLIRON NICHULACHE
FLORIN NICULACHE
MESUD HADZIALIC
MOHAMMED AL-QAWAEEN
PATRICK AYIVOR
RARES GARDUS
STEPHAN HUNZIKER
THOMAS PLIAKAS
TUNDE AINA
ULRICH SPARRER

Region 9 Latin America

CLARITZEL CERRUD
EDER CERVANTES GALVAN
IGNACIO RAMIREZ TOBIAS
ROSANA ARRIECHE

Region 10 Asia & Pacific

BAMBANG SAMAJUDIN
BYEUNGWOO JEON
CHUN GUO HUANG SHIH
ISHITA SEN
KANDASAMY GUNASEKARAN
KUMAR PAUL
SAI PRASANNA GURU SUBRAMANIAM
YESUDAS ACHARY
YONG-TAE LEE
SAI PRASANNA GURU SUBRAMANIAM
YESUDAS ACHARY
YONG-TAE LEE

Coming Soon! IEEE Annual Elections

The IEEE Annual Elections will be held 1 September 2005, - 1 November 2005. BTS Members in good standing are permitted to vote in the general election and for a Division director. There are three candidates for IEEE President-elect and two candidates for Division IV Director-elect. IEEE President-elect is an official IEEE position which lasts one year. At the end of that year, the President-

elect becomes IEEE President, so the person who is elected this year will be IEEE President in 2007. The Division Director is a Society's representative on the IEEE Board of Directors. Each Division director represents one or more Societies. BTS is a member of Division IV, called "Electromagnetics and Radiation". Division IV consists of the IEEE: Antennas and Propagation

Society, Broadcast Technology Society, Consumer Electronics Society, Electromagnetic Compatibility Society, Magnetics Society, Microwave Theory and Techniques Society, Nuclear and Plasma Sciences Society, & Superconductivity Council. More information is available from the IEEE homepage (www.ieee.org), click on the link "IEEE Annual Elections"

Congratulations to the BTS Members who have been elevated to IEEE Senior Member Status!

MARK G. FELIG
RALPH L. HOGAN

KAZUO IMAI
WAYNE E. BRETL

RALPH H. JUSTUS
EDMUND A. WILLIAMS

HSIAO-CHUN WU

IEEE Senior Members are honored members of the IEEE organization. Consider joining the ranks of Senior Members. IEEE Bylaw I-105.3 sets forth the criteria for elevation to Senior Member Grade, as follows:

"... a candidate shall be an engineer, scientist, educator, technical executive or originator in IEEE-designated fields. The candidate shall have been in professional practice for at least ten years and shall have shown significant performance over a period of at least five of those years."

When you become a Senior Member, you will receive a bronze and wood plaque, a letter to your employer (upon request), \$25 towards a new Society Membership, the recognition of your peers, and the opportunity to become an executive IEEE volunteer. Visit <http://www.ieee.org/seniormember> for more information.

IEEE Broadcast Technology Society Organization

IEEE Broadcast Technology Society Administrative Committee

Society Officers

President: Thomas M. Gurley
Vice-President: Dr. Charles W. Einolf Jr.
Treasurer: E. Lanny Nass
Secretary: Thomas Silliman
Senior Past President: E. Bruce Hunter
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