

Broadcast Technology Society Newsletter

The technologies to deliver information and entertainment to audiences worldwide, at home and on the go.

From the President

Bill Hayes, President, IEEE Broadcast Society



Greetings BTS Members:

Last August I was in Seattle to attend a Board of Governors meeting for the IEEE Technology Management Council (TMC).

BTS is one of the TMC founding member societies. I have served as the BTS representative on the TMC Board of Governors since it began in 2008.

I actually arrived in Seattle a few days early, in part to celebrate my grandson's fifth birthday, but also to attend a meeting at Boeing at which a number of TMC officers gave presentations related to technical management. This meeting was one of an on-going series of meetings that IEEE presents as part of a memorandum of understanding (MOU) shared between IEEE and Boeing.

The audience was made up primarily of Boeing engineers with a wide variety of disciplines. The group was also fairly diverse as to where they were in their career paths ranging from young engineers just out of school through to engineers preparing for retirement.

Looking around the room, observing the various members of the audience and listening to their questions, I found the question and answer dialogue interesting because this diverse group had many common interests. The questions ranged from very fundamental to highly complex. Responses covered the gambit from simple yes/no answers through sage wisdom and comments on life. It was an especially eye opening event for me on several fronts.

I recently finished reading a book called *The Big Sort* by author Bill Bishop who offered observations regarding the
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From the Editor

William Meintel, BTS Newsletter Editor



You are receiving this issue a bit late and your editor takes full responsibility for the delay. The press of my day job that has included a great deal of travel, a little unusual for me, is the reason. I expect things to get back on track and future issues on time.

Since our last issue the Fall Symposium, was held at the Westin Hotel in Alexandria, VA. This was the 60th Annual IEEE Broadcast Symposium

and thanks to the chairs Tom Silliman and Eric Wandel it was outstanding. I hope you were there, if not a full report can be found inside. In addition, this newsletter includes an impressive photo essay of 31 pictures provided by our Senior Administrator, Kathy Colabaugh. Her photographs present an excellent overview of the various technical and social activities taking place during the Symposium.

After putting together a great event, Tom and Eric have decided that they will step aside and turn next year's Symposium over to the
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clustering of like minded people into homogeneous communities. He illustrated several of the strengths and weaknesses that these groups have. One of the weaknesses that the author observes is that these groups can spend so much time talking with each other from the same point of view that they cease to consider or even talk with others that might have a different point of view.

During the Boeing meeting I heard a number of exchanges with conflicting view points regarding technology and management. What made the discussions work appeared to be that the focus was on sharing of information and reaching a shared understanding rather than on proving someone right or wrong. This may seem like a pretty simple and basic observation but I would challenge you to analyze some of the discussions that take place around you and see if they are focused on sharing understanding versus proving a point. The environment at this meeting seemed to create a forum where dialogs could happen without fear (which may be too strong a word) of judgment. Whether this open environment is typical of Boeing or the result of the people conducting the meeting, I don't know – but I do know that it takes a concerted effort to develop and maintain an open discussion.

Early in my position at Iowa Public Television I gave a presentation to our

staff on digital television technologies and what they would mean to our operations. After the questions and answers, I was walking down the hall to my office when one of our producers stopped me to ask a question. The question was absolutely brilliant from my point of view because it gave me an insight, that I did not have, into how the producers were viewing the digital conversion. When I asked the producer why he didn't ask it during the Q&A, the response was that he thought everyone else probably knew the answer and he didn't want to look ignorant or uninformed.

So even among colleagues and friends, there can be unseen barriers

to communication. I made a deal with the producer to feel free to ask me any question before or after and I would answer it without disclosing the source. That only happened a few times before it became apparent that many others had the same or similar questions, so asking questions in the open forum is now the norm.

I have taken this a step further when moderating panels or presentation sessions in that I will make a point of having a question ready to ask of each presenter if the Q&A is slow to start. It serves as an ice breaker and

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very capable hands of David Layer (NAB) and Paul Shulins (Greater Media). Many of you may remember that David has chaired the event in the past and did a great job so we expect he and Paul will keep up the high level we have come to expect. However, these guys cannot do it alone and need the help of the entire organization especially in contributing to the program content. Please keep a lookout for the request for abstracts and consider contributing.

Also remember that BTS sponsors the annual Broadband Multimedia Systems and Broadcasting Symposium.

This year it will be held 8–10 June in Nuremberg, Germany. The Multimedia Symposium has also grown into a great event while providing BTS significant visibility around the world as it alternates between Asia and Europe after its initial years in the United States. This is another great opportunity to gain knowledge in areas not typically covered in our Fall Symposium and at the same time meet with colleagues from around the world.

In this issue, you will find interesting articles about BTS activities

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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
Summer, 2011	04 May 2011
Fall, 2011	20 July 2011
Winter	07 November 2011
Spring	20 January 2012

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DTV Mobile/Handheld, FM-IBOC and Tutorials Star at the 60th Annual IEEE Broadcast Symposium

By Ed Williams, BTS AdCom Member and Broadcast Symposium Technical Program Co-Chair

With a higher registration than has been seen in several years, a heightened interest in new broadcast technologies, and a well attended tutorial day, the 60th Annual Broadcast Symposium held this year on 20–22 October at the Westin Alexandria hotel in Alexandria Virginia was, by all measures, a huge success.

By the middle of August we knew the event would be a success. Registration was up to 165. We had a record number of abstracts for papers and broadcasters were looking at mobile and portable reception to enhance their over-the-air audience through new digital transmission techniques and real-world demonstrations. Finding enough slots for some of these outstanding papers led to a longer tutorial day with six presentations and starting the technical sessions on Thursday and Friday a half-hour earlier to allow for more papers and a panel discussion.

Significant technical reports by broadcast engineers from six countries – Brazil, Canada, Korea, Japan, Spain, and the United States – presented their papers to an audience of engineers, consultants, manufacturers, scientists, and representatives from academia and regulatory agencies from around the world. Under the guidance of Broadcast Symposium co-chairs Tom Silliman and Eric Wandel, the technical program placed continued emphasis on radio and TV broadcast transmission issues as well as timely new tutorials and a panel on dealing with the FCC's proposals for wireless broadband spectrum.

Tutorials Feature Mobile/Handheld & FM-IBOC

To start the symposium, the Wednesday tutorials covered emission measurements, coverage models and a single frequency network (SFN) booster for FM-IBOC radio transmission. And, that was just the morning. The afternoon tutorials included mobile

and handheld (M/H) practice, robust reception modes of operation, and audio processing for the ATSC DTV broadcast television system. During the box lunch a special presentation from Lt. Col. Douglas A. Williams about the US Air Force Aerial Radio & TV Broadcasting using EC-130J aircraft, commanded the audience's attention.

After the tutorials, which achieved a record attendance, registrants met at the annual and popular and well attended Welcome Reception that featured fine food, beverages, music, and conversation.

Radio Engineering Technical Session

On Thursday morning, the Radio Engineering technical session included three papers on AM antenna design reviews, plus presentations on HD Radio data applications, and FM IBOC power level and coverage issues.

Joint BTS and AFCCE Luncheon

During the Joint BTS and AFCCE Luncheon, keynote speaker James R. Martin of the U. S. Department of Defense spoke of how their information broadcast system helps provide assistance to people in areas hit by natural and manmade disasters world-wide with timely news of where to find help, food, water, medical assistance, and to quell rumors.

ATSC Technical Session

Thursday afternoon featured a technical session on ATSC Systems concentrating on DTV single frequency networks, adding low-rate data in watermarking signals, location finding systems using DTV, and design issues for mobile and handheld DTV receivers.

Following the technical session was the popular Manufacturer's Reception sponsored by a record ten broadcast

antenna, tower, and transmitter manufacturers. This reception provides an excellent and relaxing opportunity for participants to meet each other, discuss common issues, make plans for future activities, and enjoy the camaraderie of fellow broadcast engineers.

DTV Technical Sessions

The Friday technical sessions on DTV brought out issues in digital broadcast implementation, including a study of DTV signal distortion by wind turbines in Spain, a variable polarization technique for broadcast antennas, experiences with the post-analog cutoff process in the USA, converting the Brazilian Public TV network to digital, handling HD on IP networks in Japan, and dealing with mixed formats in satellite news gathering systems in Canada.

Awards Luncheon

At the Broadcast Technology Society Awards Luncheon, keynote speaker James O'Neal, noted broadcast historian and Technology Editor for TV Technology magazine, provided a memorable and reminiscent presentation of "Making and Modulating RF: A Brief Look at 100 years of Transmitter Design."

After the speaker, the Matti M. Siukola Memorial Award, presented annually for the best paper at the previous year's Broadcast Symposium, was presented to Pascal Marcoux of the CBC/Radio-Canada for his paper "Revisiting the Field Strength Requirements for DTV in the Canadian Context." A special service award was presented to Bill Hayes "for exceptional service during his four-year tenure as President, his leadership in navigating the Society into a promising future, and for his ability to continuously think "out-of-the box." A second special service award was presented to Yiyuan Wu and his Broadcast Transactions team "for fostering excellence in the IEEE Transactions on



The Symposium Committee and Session Chairs have created a flawless program. 1st row (l-r): Paul Shulins (Session Chair), Tom Silliman (Symposium co-Chair), John Reiser (Sound Expert), Christine Di Lapi (Session Chair), Doug McCabe (Session Chair); 2nd row (l-r): Ed Williams (Technical Program co-Chair), Roz Clark (Session Chair), Eric Wandel (Symposium co-Chair), James Fang (Technical Program co-Chair), David Layer (Session Chair)



Coffee breaks also provided time for social networking (l-r) Bill Hayes, Dave Siegler, Tim Carroll, Rich Friedel and Bob Siedel



Renato Maroja and Fujio Yamada traveled all the way from Brazil to attend our Symposium



The Wednesday evening Welcome Reception provided time to relax with good food and friends



What's not to like about chips and cookies?



Wednesday's luncheon speaker, Lt. Col. Douglas Williams, US Air Force, talks about *Aerial Radio & TV Broadcasting*



Ed Williams and James Fang make sure technical systems are working



Ben Dawson opens the show on Thursday morning with a rousing talk on antennas



Bob Seidel knows the right people to have fun...



There was a full house each day



Even guests of the registrants enjoy our Welcome reception!



Everyone likes cookies!



Pascal Marcoux accepts the 2011 Matti Siukola Award for the best paper presented at the 2009 Broadcast Symposium, entitled “Revisiting the Field Strength Requirements for DTV in the Canadian Context”



James O'Neal was Keynote Speaker at the Friday Awards Luncheon



Yiyuan Wu accepts a Special Service Award, on behalf of the Transactions on Broadcasting team, for significantly increasing the impact factor and ranking of this journal



A highlight of the Broadcast Symposium was a Panel Discussion on the National Broadband Plan. Here, Charles Cooper moderates the discussion



Luncheon head table (l-r) Steve Lockwood, Robert Montgomery, Bill Hayes, Bill Meintel, Bob Weller, Tom Silliman, John George, Lanny Nass



Entertainment was provided by the always popular “DaVinci Strings”



Tom Silliman and Eric Wandel accept awards for their hard work on this year's Broadcast Symposium



Bill Hayes, Tom Silliman, and Eric Wandel thank Dan Carpenter and Robert Montgomery (US Intelligence) for the very interesting luncheon program “DoD Info Broadcasts”



Coffee breaks provided time to discuss new industry developments, (l-r) Ralph Hogan, Geoff Mendenhall, John Reiser, Gordon Godfrey and Bill Meintel



Joe Giardina (r) Session Chair and Reception Sponsor welcomes guests



Reception Sponsors (l-r) Joe Zuba (Dielectric), John George (LBA Technology) and Bob Surette (Shively) enjoy good food and better conversation.



Tino Trainotti was celebrated for his recent elevation to IEEE Fellow (shown here with his wife Stella)



The lunch audience listens intently to the talk “100 Years of transmitter Evolution”



Panelists (l-r) Bill Meintel, Doug Hyslop, Rick Engelman, Bob Weller and Bruce Franca attempt to answer audience questions



Guy Bouchard (BTS Awards Chair) presents the Special Service Award to Bill Hayes, for "Four Awesome Years as BTS President"



We had a yummy lunch!



The Manufacturers Reception got off to a great start, thanks to Kerry Cozad (r) with Ron Rackley (l)



Steve Lockwood welcomes registrants to the joint AFCCE/BTS Luncheon



Our lunchroom was full to capacity

Broadcasting, and for significantly increasing the impact factor and ranking of this publication world-wide.”

In addition, Valentino Trainotti was recognized for his lifetime devotion to broadcast antenna system design by being elected to membership status of IEEE Fellow.

It was also announced that David Layer of the NAB and Paul Shulins of Greater Media will succeed (beginning in 2011) current co-chairs of the Broadcast Symposium Tom Silliman and Eric Wandel.

DTV Technical Session and Spectrum Panel

Winding up Friday afternoon were papers on 3DTV broadcasting in Korea

and an update on advanced TV system platforms in the USA. These were followed by a panel of government and broadcast engineers and consultants discussing spectrum issues facing television broadcasters as the FCC begins to implement their wireless broadband plans in the near future.

For a detailed listing of the program and speakers, please see the IEEE/BTS Broadcast Symposium website at: www.ieee.org/bts/symposium.

Technical program co-chairs Ed Williams and James Fang managed the paper selection process and session participant presentations. Overall, the 60th Annual IEEE Broadcast Symposium proved to be as interesting and as well attended as ever.

Next year, the 61st Annual IEEE Broadcast Symposium will be held October 19–21, 2011 again at the Westin Alexandria hotel, Alexandria, VA USA. Mark your calendars for what surely will be a significant event given the rate at which the broadcast digital transitions and new developments are taking place in the broadcast industry throughout the world. David Layer of the NAB and Paul Shulins of Greater Media will be the new co-chairs of the Broadcast Symposium for 2011.

For more information see the Broadcast Technology Society website www.ieee.org/bts.

IEEE BTS and Me: 60 Years

Mark G. Fehlig, P.E., BTS Senior Member

The big 60 on this year's IEEE Broadcast Symposium gives this 60 year old pause.

My first one was 1974 – unlike my first NAB that same year I have not made them all (–1), but have enjoyed being in the broadcast business since high school.

The transition to DTV was truly a highlight in my career. The preceding and following decades have been rewarding. Unlike IBOC AM & FM radio which will most likely remain “same spectrum bandwidth” anchored by a majority mobile application and overwhelming mega-consumer receiver base, analog into the future, DTV had the benefit of leaping to a next generation transmission system with loaner spectrum to allow such. Yet the 6 MHz TV channel bandwidth assignments remained. That analog channel based bandwidth survived and has never been challenged. I've heard that perhaps legacy cable TV plants enjoyed this constant as well? Can you name any other RF spectrum based services whose upgrade to all-digital has not benefitted or

adopted economies of spectrum usage? Public Safety, mobile & smart phones could not survive with mid-last century bandwidth assignments.

HDTV MPEG2 requirements of the day aside and now shown obsolete, the existing TV licensees certainly defended their numbers by not allowing smaller bandwidth for more services as did others. So now, with the apparently only all digital RF bandwidth based service occupying old band plans it may be time for a diet?

Television Broadcasting's competition (Cable, DBS, Mobile Media) has the benefit of controlling the customer “set top” and will eventually be able to leave MPEG2 (8VSB, ATSC main service) behind as their “diet.” As TV Broadcasting solely relies on consumer purchased TV sets this is not a realistic option and will eventually be TV Broadcasting's handicap. A less than 6MHz band plan does not appear to be a practical future option.

Television Broadcasting greatly benefits from the federal “must carry” and “retransmission consent” laws

in place. I suspect that most of the TV Broadcasters in service today are significantly benefited from these decades' old statutes. Some may perish without these laws. This is so ingrained in our TV Broadcasting DNA that the RF transmitter plants of today will be forever operated for this alone. This is not a defensible spectrum usage plan.

Nielsen tells us now that over 90% of all viewers do not watch TV transmitters directly, but via secondary providers such as cable, DBS, IPTV, Mobile Media, etc. This percentage is growing in an increasing fiber optics and mobile media world. But yet the case for FREE TV for all citizens is a cause to support, as has the US Supreme Court repeatedly on the subject.

Ah for a win-win!!

As we all know DTV does not mandate HDTV.

Don't let this complicate TV Broadcasters responsibilities or rights to RF spectrum!!

FREE TV for all has never had HDTV roots.

These thoughts and points above all lead to a requirement for a transmitted signal but with an overall reduced TV Broadcast spectrum need. Multi-station “CONDO” DTV transmitters, (where DMA practical) consolidating present DTV stations on to a common channel perhaps with up to 6 ATSC SD services (or a mixture of ATSC mobile as business opportunities may prove) would easily allow reduction in existing ATSC transmitters/spectrum needs. HDTV or multiplex service, never guaranteed by the FCC DTV rules can be IP distributed to the 90% of noted Nielsen watchers, or accommodated by those who can afford to buy more “TV CONDOS.” If you can’t afford such can you expect the FCC to forever grant it? Common “TV CONDO” operations will surely bring a multitude of cost savings to the broadcasters.

Many broadcast operations, community tower sites included grew from the DTV transition itself.

American and Richland Towers (and others) have always had a plan to accommodate such!

Perhaps this next step is a “win-win?”

In summary – I continue to enjoy the 60 year old IEEE BTS (as well as the NAB, SBE, SMPTE, and ARRL).

Because I feel so young here!

Mark G. Fehlig, P.E.

Your comments are welcome. Mark can be contacted at Mfehlig@ieee.org

Biography

Mark G. Fehlig, P.E. joined the student chapter of IEEE at the University of Missouri – Rolla in 1971. After his graduation there with a BSEE in 1973 he went on to earn an MBA at Quincy University – Illinois in 1988. Being employed in

the Broadcast Industry since high school Fehlig has worked for Harris Corporation, Scientific Atlanta, Moseley Associates, Georgia Public Broadcasting, Pennsylvania Public Television Network and now Wavestream Corporation of San Dimas, CA. in various technical and product marketing/sales roles.

Mark is a member of the IEEE, SBE (Society of Broadcast Engineers), SMPTE (Society of Motion Picture and Television Engineers), SSPI (Society of Satellite Professionals International), AFCCE (Association of Federal Communications Consulting Engineers) and the ARRL (American Radio Relay League).

He is a Registered Professional Engineer in the States of Georgia, California, Missouri and Illinois as well as a Council Record holder with the NCEES (National Council of Engineering Examiners).

BTS AdCom Members Meet at 60th IEEE Broadcast Symposium

On 19 October 2010, prior to the start of the 60th annual IEEE Broadcast Symposium, the BTS AdCom held its third meeting of 2010 in Alexandria, VA USA. The meeting was one of the largest BTS AdCom meetings attended, with 30 members and five guests present. The guests were Peter Clout (Division Director), Randi Sumner (IEEE Staff Director), Jenn Barbato (BTS Publications Coordinator), Paul Shulins (BTS Chapter Chair), and Janet Gardner (Project Manager for “Bridging the Gap”).

The BTS AdCom meeting agenda covered a wide range of society activities and initiatives providing educational and professional services to BTS members.

The meeting started with the President’s report. It then went through the agenda items which included

“Bridging the Gap Project,” the Members at Large Election, Election of the BTS President and Vice President for the 2011–2012 term, the BTS Strategic Plan, IEEE Expert New Module – ATSC Mobile, Gold Future plans, IBC2010 Report, EBU Liaison, USTTI Report, NAB 2011 Tutorial, Women in Engineering, 2010 Broadcast Symposium, 2011 Broadband Multimedia Symposium in Germany, Publications Reports on the Transactions on Broadcasting, Journal of Display Technology, and Newsletter, 803.22 Standards, RF Standards, Membership Development, and BTS support to the Global Wireless Education Consortium (GWEC).

Summaries of the 2010 AdCom meetings and decisions will be available in the 2010 Winter Issue of the BTS Newsletter.

The next AdCom meeting will be held in Las Vegas, NV at CES, on January 9, 2011.

The BTS deeply appreciates and thanks all the AdCom members for volunteering their expertise, time and efforts to advance and manage the BTS goals serving the educational and professional career development of its members.

On the back page of each Newsletter issue you will find a BTS organizational listing of AdCom members and Committees. If you are interested in participating on any of the AdCom Committees or serving as an AdCom member at large, please contact Kathy Colabaugh, BTS Senior Administrator, kcolabaugh@ieee.org for more information.

On the next page is a photo of the BTS AdCom members attending the 19 October 2010 meeting.



BTS AdCom Meeting participants, 19 October 2010, Alexandria, Virginia 1st row (l-r): Tom Silliman, Rich Friedel, Bill Hayes, Kathy Colabaugh, Bill Meintel, Jerry Berman, Tino Trainotti; 2nd row (l-r): Peter Clout, Bob Plummer, Greg Best, Yiyang Wu, Lanny Nass; 3rd row (l-r): Merrill Weiss, Guy Bouchard, Jinyun Zhang, Wout Joseph, Rich Chernock, Ralph Hogan, Mike Simon, Christine Di Lapi; 4th row (l-r): James O'Neal, Shuji Hirakawa, Tom Gurley, Mike Bennett, James Fang, Steve Dukes, Brett Jenkins

London Calling....A Brief Report On IBC2010

By Mike Bennett, BTS AdCom Member and IEEE BTS Representative on IBC Board

Review of IBC2010

IBC2010, held at the RAI Convention Center, Amsterdam, Netherlands September 9–14, 2010 was undoubtedly a world class event. The second largest IBC of all time, the numbers alone are impressive. IBC2010 featured some 1,300 key international suppliers from around the world – 250 that were at the show for the first time – exhibiting in around 100,000 square meters spread around thirteen halls at the RAI (to accommodate OB (Outside Broadcast) trucks, satellite links and other large-scale products. There were 22 presentations in the outside exhibits area too). And, of course, over 48,500 attendees were at the show to witness it all.

Business, as could the IBC TV News broadcasts, was brisk too, with many deals and sales struck on the show

floor. There was significant added value at the show this year too, which, along with a resurgent economy, helped contribute to the buzz in the RAI's halls.

This year, IBC expanded into a thirteenth hall to accommodate demand, and the organization also established the Connected World, dedicating a hall specifically to the IP-driven platforms of IPTV, Mobile TV and Digital Signage that are doing so much to extend the broadcast market into both new screens and new times. The Connected World was supported by the excellent Business Briefings and Armchair Revolution sessions that sought to explain and annotate the new technology; while elsewhere the continuing success of the IBC Big Screen with its high-profile free movie screenings such as *Toy Story 3** (courtesy of Buena Vista International and produced by The Walt Disney Company's Pixar Animation

Studios) and *Avatar* (Special Edition)** (courtesy of 20th Century Fox International and by kind permission of Light Storm Entertainment), not to mention demonstrations of innovative technology such as NHK's astonishing-looking Super Hi-Vision, all helped add to the energy and success of the show.

IBC2010 also featured a comprehensive training programme, ensuring it helps invest in the future of the industry. Running over Saturday 11 and Sunday 12 September, The IBC Digital Media Training Workshops were organized and run by an internationally renowned training company Future Media Concepts. The Workshops were practical, intensive hands-on training courses aimed at intermediate to advanced users covering the main tools that industry uses – Apple Final Cut Pro, Avid Media Composer, Adobe Production Suite – as well as topical subjects

such as DSLR video, Video Production, 3D Production Workflow, and Motion Graphics.

There was also free training on offer in the shape of the professional and exhibitor-mounted training sessions on offer in the Production Village that covered all aspects of shooting with the technology on show. And demonstration workshops in the Post Production Zone covered a range of important subjects ranging from production techniques to desktop post production tools, always designed to give attendees valuable hands-on experience, tips and tricks that they could take away with them and use to further advance their careers.

Thanks to these innovations as well as the increasing robustness of the economy, talking to exhibitors traffic was felt to be good not only across the whole of the exhibition but also throughout its duration, with stands continuing to be busy all the way through to the show's closing on Tuesday afternoon.

And, perhaps the best indication of all: by the final day, 80% of exhibitors had made bookings for space at IBC2011.

The IBC Conference has evolved over the years to become one of the leading venues worldwide for the discussion, dissection and debate about the current and future state of the industry. Featuring a global line-up of some of the most influential thinkers in their fields, the IBC2010 Conference took its already excellent reputation for thought-leadership on to the next level with a series of agenda-defining keynotes and thought-provoking sessions that drilled down in detail to the issues that truly matter to an industry undergoing extreme rates of change.

"Over recent years we have established four pillars in the conference – technology, content creation and innovation, the business of broadcasting and added value – and this year each stream demonstrated great success," explained IBC Conference Chairman, Michael Lumley.

Opening the conference was a plenary session including a keynote from Sir Michael Lyons, chairman of the BBC Trust, looking at the future of public service broadcasting – if indeed it has a future in this fiercely competitive world. Under questioning from the session chairman, Raymond Snoddy, he admitted that the BBC might elect to forego a rise in its license fee this year: a week later this was indeed confirmed, but IBC delegates heard it first!

Elsewhere Saturday 11 September's inaugural IBC Sports Day was a huge success and saw sport broadcasting's pivotal role as technology pioneer justly recognized. A keynote from this year's International Honour for Excellence winner, Manolo Romero, charted the history of broadcasting the Olympic Games, as well as looking forward to the technologies that might be used in London 2012 and beyond. A second fascinating session looked at the challenges of covering this year's FIFA World Cup in stereo 3D, and how far they had been met.

There were numerous detailed examinations on the rise of social networking and the implications of connected TV, and Monday 13 September's Stereoscopic 3D Day saw the IBC Big Screen join the conference, with many sessions taking place in the Auditorium. The space and flexibility of the RAI's and IBC's resources meant is-

ues could be illustrated in the most practical way possible. That meant, for instance, that a session about shooting live stereo 3D could actually arrange to shoot some genuine live 3D footage to illustrate its points, with three stereo 3D cameras covering a table tennis match on stage at one point!

Steve Schklair, stereographic 3D pioneer and CEO of 3ality Digital Systems was the man behind this session, and enthusiastically endorsed IBC's policy of integrated practical demonstrations and generally high production values. "I like this conference," he said. "First of all, this is an amazing facility. And I don't like to use the word quality because that suggests the others aren't quality – but IBC really is a quality conference."

And finally, one of the big differentiators that IBC has from other shows is that its free Added Value Conference stream is as rigorously peer reviewed and full of compelling content as the rest of the Conference programme. All the way from the opening session looking at 'The state of the media industry – are we over the worst?', to the closing EBU-organized 'Don't touch these issues, they're too hot!', the free Added Value sessions helped contribute to making IBC2010 the place to find out what is going on at a deep level within the industry.

About IBC

IBC is an independent body, owned by six partners: IABM, IEEE, IET, RTS, SCTE and SMPTE.

Important Dates for Your Diary:

IBC2011 Conference 8–13 September 2011

IBC2011 Exhibition 9–13 September 2011.

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associated with the IBC2010 Conference in Amsterdam and BroadcastAsia in Singapore. See "London Calling" and "Broadcast Asia 2010" for news about these two events.

My congratulations go out to BTS member, Dr. Richard Chernock, who has been selected by the ATSC Board of Directors to be the next Chairman of the Technology and Standards Group (TSG) as the ATSC develops the next generation of DTV standards. For more information, see the ATSC announcement included in this issue. Additionally, we are proud that Rich

also serves as Chair of the BTS Distinguished Lecturer Program which, under his leadership, he has developed into a very successful and active program.

We have three feature articles in this which include a profile of BTS member, Mike Bennett by Jennifer Barbato, an installment on a continuing series of Longley-Rice articles by Sid Shumate and a detailed report of the 10th ITU-IPTV-GSI meeting in Geneva in May 2010 by Hong Liu.

I hope you will enjoy reading this issue of the BTS Newsletter. Our

goal is to give you useful BTS news articles as well as feature pieces covering technical topics, history and people associated with broadcast engineering,

I welcome your feedback and recommendations for topics or articles for the Newsletter. Also, I am looking to add some additional support to the Newsletter staff; therefore, if anyone is interested in becoming involved, please contact me.

Bill Meintel
Editor

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many times is a question that others are interested in as well.

Back to the gathering at Boeing, at the close of the session there was an overview given on the partnership between Boeing and the IEEE, discussion about topics that might be appropriate for the next session and some information about what IEEE does.

One young Boeing engineer asked: What is the best way to get involved with IEEE? Another epiphany for me as it made me stop and think about how I became involved. As BTS President, one of my focuses has been on the society serving the members. A number of the initiatives that we have undertaken are being driven by the idea that being a BTS member provides some benefit. We have created programs like Bridging the Gap, initiatives with Graduates of the Last Decade (GOLD) and Women in Engineering (WIE) to try and provide some tangible benefits for persons joining the BTS. But it dawns on me that if these programs and initiatives are one-sided, meaning that if one joins BTS to gain access to these products, then we have a business transaction and not much more. And if we were a transactional business, then that would work.

However, BTS is a membership organization with the purpose of sharing experience, knowledge and camaraderie. What is needed by BTS and simi-

lar organizations is not a transactional based membership but a relationship with members. Relationships take time, effort, communication, plus give and take from all the parties involved.

When I joined BTS in 1987, I was working as an engineer at an NBC television station. I had been there for a couple of years and was being promoted to engineering supervisor over a group of engineers who I knew were better television engineers than I was. I was desperate to learn and signed up for several technical organizations. My initial motivation was the transaction of joining to get access to the intellectual property in the journals and magazines made available as part of the organization's dues. I discovered that much of what I was reading was still over my head. But the beauty of the journals and magazines was that they contained contact information of authors (some even had CompuServe accounts) so I could send questions to them. The replies received and the subsequent discussions I had with these authors created many of the professional relationships I have now and, in many ways, contributed to my success in my profession and my life. My involvement with the BTS provides the on-going opportunities to further develop and maintain these relationships.

So how would I answer the Boeing engineer's questions about what

is the best way to get involved? My response is: Ask questions and listen to the answers.

Since 1987, I cannot think of a single author that I asked a question who didn't just answer the question but wanted to help me understand what he or she was talking about. As I gained more knowledge, the individual question and answer sessions developed into group discussions which evolved into idea exchanges.

I have been giving membership a lot of thought lately and am involved in a number of IEEE membership related activities. At the time this column is being written, IEEE will be announcing that its membership worldwide has reached 400,000. That is a pretty large number! The deeper issue will be how many of the 400,000 are doing a business transaction and how many are developing a relationship. BTS represents a fairly small percentage of the total but according to the data about our members, they tend to stay members. Loyalty like that comes from relationships, not business transactions.

Thank you for being an IEEE BTS member and reading this column. Let me know what we can do together to strengthen the relationship.

Bill Hayes
President
Hayes@iptv.org

3D-TV Tutorial at IBC2010

“3D TV: Content, Systems and Visual Perception”

By Yiyan Wu

This BTS three hour tutorial was presented at IBC2010 in Amsterdam on Saturday, 11 September 2010.

The prospect of stereoscopic 3D content has galvanized the industry but with technology advancing so rapidly it is essential that everyone from producers to directors, editors and engineers keep abreast of the latest developments.

The aim of this tutorial was to provide delegates with a broad but comprehensive overview of the essential facts behind state-of-the-art systems for 3D TV broadcasting. The tutorial covered the issues of how the human visual system perceives stereoscopic and 3D images, and how our understanding of this can be used to optimize coding and transmission formats. Signal acquisition and display technologies were reviewed, with explanations of the different approaches adopted by manufacturers. A glimpse into the future was provided by a consideration of 3D TV systems and the latest research in spatial imaging techniques.

The Tutorial was chaired by Dr. Yiyan Wu, Communications Research Centre Canada.

The tutorial had four presentations, followed by a Panel discussion

- 3D-TV: Benefits from Human Visual Perception Studies Dr. James Tam – Communications Research Centre (CRC), Canada
- 3D-TV Transmission Formats and Coding Dr. Karsten Mueller – Heinrich-Hertz Institut (HHI), Germany
- Display Technology for Home and for Cinema Mr. Craig Todd – CTO, Dolby
- 3D-TV System Based on Spatial Imaging Method for Future Broadcasting Dr. Takayuki Ito – NHK Science and Technology Research Labs, Japan.

The tutorial was well received with over 150 delegates attending the presentation. The IEEE BTS hosted lunch for the attendees. For information about this tutorial, please contact Yiyan Wu at yiyan.wu@crc.ca.



Kathy Colabaugh is part of “I Amsterdam”



Full house for tutorial: “There was a full house for the 3D tutorial”



Hayes welcome: “BTS President Bill Hayes welcomes attendees”



Tutorial speakers: “Tutorial Chair Yiyan Wu, with presenters Craig Todd (Dolby), Karsten Mueller (Heinrich-Hertz Institute), James Tam (Communications research Ctr, Canada), Takayuki Ito (NHK science and technology Research Labs)”

BTS Showcase at BROADCASTASIA 2010

By Yiyang Wu, BTS Representative to BroadcastAsia

BroadcastAsia 2010 was held 15–18 June 2010 in Singapore. Over 9,000 visitors from 57 countries and regions across Asia-Pacific, Europe, North America, and the Middle-East attended the event.

This year's event experienced a double digit increase over last year's number of overseas attendees from each of the key Asia Pacific markets including China, India, Japan and Korea.

Exhibitors showcased innovative solutions in 3D HDTV, Broadcasting-to-Handheld, Digital Media Asset

Management, IPTV and Professional Audio Technologies.

Volunteers from the BTS IEEE Shanghai Chapter and local Singapore IEEE personnel set up and staffed an IEEE BTS Membership and Information showcase at BroadcastAsia 2010. This BTS booth was active during the entire event providing information, membership forms and literature about the IEEE and BTS. Several international visitors signed up to become members of the IEEE and BTS at the event which enabled them to receive a special IEEE rate available for new members at trade shows.

The BTS extends its thanks and appreciation to all the volunteers who generously provided their time staffing the booth and answering visitors' questions.

The BroadcastAsia2011 International Conference will return from 21–24 June 2011 in Singapore offering more sessions and a range of add-on workshops that will address the latest needs and technologies in the broadcasting industry.

For the latest information about BroadcastAsia2011, visit its web site at <http://www.broadcast-asia.com/>

IEEE President Elect Moshe Kam Visits Argentina Section

Last August our Section hosted a remarkable visit from Philadelphia, Mr. Moshe Kam, IEEE President Elect

It was a real surprise when, ending the month before, a short email announced that Mr. Moshe Kam was visiting Uruguay Section and, being geographically close enough, offered to cross the R'õ de la Plata river to land also at Buenos Aires, where our Section headquarters is located.

This was not going to be the first visit of Mr. Kam to our country. During September 2008 he chaired one of the largest EAB-TISP (Teachers in Service Program) event held so far in our Region 9. It took place in our Córdoba Subsection, having gathered more than 130 pre-university teachers.

The Executive Committee faced the challenge to prepare in a short period an appropriate agenda, gathering student members, GOLD and other professional ones, and executive



Part of the special meeting attendance

officers as well, all of them representative enough to allow Mr. Kam figure out through slides and dialog a good idea of our Section performance. The challenge was not a easy one because many of our members and officers are scattered around Argentina's geography, covering thousands of kilometers, and the date we agreed on days was in the middle of our winter holidays.

August 19th finally arrived and more than 20 members gathered at the Section office.

Though some of us had already met Mr. Kam in previous meetings, this one was an outstanding experience for each one of those who attended. Moshe listened to a series of short presentations depicting Students, GOLD,



Mr. Moshe Kam

Subsection and whole Section activities and expectations and, afterwards, he asked specific questions and explained his visions regarding many aspects and challenges he foresees in the horizon of the IEEE and that deserve special attention from his point

of view. He made special points over IEEE involvement with life sciences, which are the reading interests of young professionals, how the e-membership will impact membership figures and how the different ExComms across the IEEE worldwide address technical matters as part of they everyday activity.

During his presentation Moshe also recommended our section to undertake four challenges. The IEEE Technical English Program (TEP) beta-testing, the EKN (Etha-Kappa-Nu) initiative, the IEEE-EPICS program and the Uruguay-born e-scientia experience.

The first one (Technical English Program – TEP-beta-testing) [1] comprises addressing a small number of student and GOLD members in order to undertake and IEEE-developed technical English program and perform some lab experiences that produce valuable data devoted to assess the program strengths and weaknesses.

The IEEE-EPICS program is a joint effort with the EPICS organization [2]. The EPICS initiative is devoted to engage small groups of students, freshmen and advanced as well, university professors and local NGOs, involving them in community-targeted engineering projects.

The fourth proposal, the Uruguay-based e-scientia experience, comprises the replication of a project that our neighbor, Uruguay Section, deployed recently with remarkable success [3]. Escientia is a sort of mini-science-fair that involves a special facility that hosts groups of scientific interactive experiences organized as a series of stations within a supposed-to-be space ship trip. The fair aim is to motivate tech careers amid pre-university level students. In fact, it's motto is "find the engineer within yourself". Uruguay Section not only built the facility but engineered it in a replicable design, a remarkable job indeed. The proposal is to duplicate it at Argentina.

Finally, the EKN initiative promotes the formation local chapters of the Eta-Kappa-Nu society [4], now hosted within IEEE. EKN is famous for recognizing worldwide remarkable EE and CS student and professional achievements



Mr. Kam and Argentina Section's Chair and Vice Chair



The whole group at the dinner

according to the organization standards. This will probably be the hardest proposal to undertake, if possible in fact to do, due to local idiosyncratic matters.

Argentina Section decided to undertake the first three shortly described above.

Once the meeting was over, a dinner was organized to honor our guest. All of us enjoyed typical dishes at a typical Argentinean meat restaurant, the specialties of the chef and the charms of the vineyards as well.

Moshe Kam is a long-experienced engineer and IEEE officer, and an inspiring fellow who made it worth each second of our meeting.

Argentina section will remain thankful and hoping the day comes when Mr. Kam visits us again. Until then, best wishes for your office-term, Moshe! You can count on us.

**Guillermo C Kalocai,
Chair 2009–2010 IEEE Argentina
Section**

References

- [1] www.ieee.org/education_careers/education/technical_english/index.html
- [2] www.ieee.org/education_careers/education/preuniversity/epics_high.html
- [3] www.e-scientia.org/
- [4] www.ieee.org/about/corporate/merger_information.html

BTS Digital Multimedia Workshop Presented at the IEEE Vehicular Technology Fall Conference 2010

By Jian Song, Jintao Wang and Yiyang Wu

The 2010 IEEE 72nd Vehicular Technology Conference was held 6–9 September 2010 at the Westin Hotel, Ottawa, Canada. The IEEE BTS Beijing Chapter organized a 1-day workshop “*Digital Mobile Multimedia Transmission Technology and System*” on 6 September 2011. The workshop was co-chaired by Prof. Jian Song (Tsinghua University; BTS Beijing Chapter chair and an Associate Editor for the IEEE Transactions on Broadcasting) and Prof. Jintao Wang (Tsinghua University, Beijing, China).

The workshop received 14 technical paper submissions. Six papers were accepted for oral presentation based on peer-view results. The Technical Program Committee consisted of ten members who planned, organized and managed the workshop. The members are:

- **Albert Heuberger** (Fraunhofer IIS/ Ilmenau University of Technology, Germany)
- **Bo Ai** (Beijing Jiaotong University, China)
- **Hsiao-Chun Wu** (Louisiana State University, USA)
- **Jong-Soo Seo** (Yonsei University, Korea)



**Digital Mobile Multimedia Transmission Technology and System
workshop 6 September 2011.**



**Workshop co-chair Prof. Jian Song, of
Tsinghua University, BTS Beijing Chapter
chair and an Associate Editor for the
IEEE Transactions on Broadcasting**



**Workshop co-chair Prof. Jintao Wang
of Tsinghua University, Beijing, China**



Conference site: Westin hotel Ottawa, Canada

- **Jun Wang** (Tsinghua University, China)
 - **Pablo Angueira Buceta** (University of the Basque Country UPV/EHU, Spain)
 - **Park Jae-Hong** (Net&TV Inc., Korea)
 - **Stirling-Gallacher Richard** (SONY Deutschland GmbH)
 - **Tao Jiang** (Huazhong University of Science and Technology, China)
 - **Zhaocheng Wang** (Tsinghua University, China)
- Dr. Yiyan Wu of CRC Canada and Editor-in-Chief of the IEEE Transactions on Broadcasting presented an invited

talk on “*Mobile DTV and Multimedia Broadcasting*”.

This workshop was presented to an international group of 30 attendees representing Canada, China, Hong Kong, Korea, Norway, Portugal and USA. Most attendees are BTS members including three BTS Chapter Chairs and five BTS Transactions Associate Editors.

CRC Canada had a demonstration booth showcase the ATSC Mobile DTV systems and many other CRC research results in wireless communications and broadcast transmission technologies. The IEEE BTS membership, conference call for papers, and promotion materials are also available at the conference. The BTS Ottawa Chapter planned a BBQ party for BTS members to meet colleagues from other parts of the world. Unfortunately, due to the arrival of Hurricane Earl, the entire week was raining. A buffet lunch was held on 5 September 2010 for 20 BTS members. Many BTS members also participated in a CRC Canada open house on 10 September 2010 to tour the CRC research facilities.

ATSC Board Names Rich Chernock as Next TSG Chairman

By Lindsay Shelton-Gross, ATSC

The Board of Directors of the Advanced Television Systems Committee (ATSC) have named Dr. Richard Chernock to be the next Chairman of the Technology and Standards Group (TSG). Dr. Chernock has been an active participant in ATSC for many years, most recently as Vice Chair of the TSG and leader of Non-Real Time and Mobile/Handheld management layer activities. He replaces Mr. John Henderson of CEA, whose term as TSG Chairman will expire on December 31, 2010.

“Rich’s technical expertise, leadership style and extensive experience in ATSC activities make him the perfect choice to direct the activities of the TSG.” said Mark Richer, ATSC

president. “Rich is an outstanding leader.”

Dr. Chernock is currently Chief Technology Officer at Triveni Digital – an LG Electronics Company. In that position, he is developing strategic directions for monitoring, content distribution and metadata management for emerging digital television systems and infrastructures. Previously, he was a Research Staff Member at IBM Research, investigating digital broadcast technologies. He is active in many of the ATSC and SCTE standards committees, particularly in the areas of mobile DTV, monitoring, metadata, and data broadcast. He is a major participant in the SCTE HMS video monitoring activity. Dr. Chernock is also the Distinguished Lecturer Chair for the IEEE BTS.

“Rich will be taking the reins of the Technology and Standards Group at an exciting time in the future of the television industry” said ATSC Board of Directors Chair Wayne Luplow. “As the ATSC develops the next generation of DTV standards, we are fortunate to have a chair with Rich’s vast experience and leadership skills.

The Advanced Television Systems Committee (ATSC) is an international, non-profit organization developing voluntary standards for the entire range of advanced television systems. The ATSC member organizations represent the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries.

BTS Argentina Chapter Report

Provided by Valentino Trainotti, Chair

This report provides information about two technical meetings hosted by the BTS Argentina Chapter.

June 2010 Chapter Meeting

On 24 June 2010 The BTS Argentina Chapter hosted a conference titled “iTV Interactive TV.”

The conference speakers were:

- Lic. Gabriela Silva, General Coordination, Vilau Latam
- Hernan Cabral, Playout Manager, Sersat Telecommunications

Overview

Speakers from the Vilau Latam Company, as a developer of multi-platform projects provided an introduction to the concept of “interactivity” and Internet-TV convergence by presenting several developments: Multiplatform Projects, Interactive Spaces and Technological Projects.

At the core of the talk, the speakers described the uses and functionality of the WebTV platforms, with examples and case studies conducted in Europe and Latin America, with the same combination of internet, HD TV, community, achieve interactivity for the users which will be the first step toward understanding their preferences in the world of iTV.

Interactive Applications

They also presented interactive applications and TDT in MHP platform designs, OTT, HbbTv, IPTV, 3D and how they apply messages to the service of citizenship, in the digital iTV, the coverage of services (T-Government cases: polls, voting, confidential income transactions, traffic services, weather, storage cases and PPV content, etc). Also on display were examples of works in museums and high social impact projects, which means interactivity, not only capture the attention and install the edutainment but by binding to iTV and webtv, expand their availability to other audiences wherever they are.

iTV and the present market in Argentina

Finally the speakers analyzed the scope of the iTV and the present market in Argentina: The concept was discussed: “iTV,” The new television “and the challenges facing the broadcasting market (manufacturers, operators and broadcasters) with the emergence of new hybrid business models through interactivity, (integration of the three screens, TV, internet, cinema and radio, under the same user experience, a challenging service level).

Challenges of itv-TDI

Concluding the meeting, Broadcast professionals, industry and market representatives, discussed how to meet the challenge to get the most out of iTV-TDI. In our country, the norm is ISDB-T, and as standard should facilitate the development of new business and a business model that serves us all, for which we must draw attention to: the user preference, content and advertisers, as well as TV manufacturers, which in the long term could be connected to provide online content OTT, over-the-top and multiple formats.

July 2010 Chapter Meeting

On 15 July 2010, the BTS Argentina Chapter hosted a conference titled “Transmission of TV signals in 3D,” The presenter was: Horacio Mazzitelli

Overview

Subjects covered: History – Physiology of Vision – Technology – Presentation Systems – Transmission Systems – Production Systems – Conclusion.

Stereoscopic vision and stereovision is a technique already known and used in photography from the early twentieth century. At the end of the century, films in 3D, were very common and were very marketable. At the end of the first decade of the twenty-first century, it begins to be seen, the first television commercial systems based 3D capture, transmission

and representation of the two similar images displaced relative to each other and polarized. Although there were some experiences with systems not requiring polarized glasses to view images in three dimensions, such as the Philips brand. The existing systems, based on the same principle as the 3D film, require the use of filters color, red for the right eye and cyan for the left eye.

Camera System

The uptake system consists of two conventional cameras, high-resolution duly adapted and synchronized, by controlling the convergence and separation parameters and monitor the images captured for real-time to correct the defects characteristic of the system. Usually you make a recording and a subsequent post where corrections are made for the flaws inherent in this type of production (aberrations, calorimetric differences, convergence problems, etc.).

3D Market Developments

Meanwhile there are still several factors that determine the 3D market developments: The statistics say that only one third of the population is able to see 3D, another third of the population can learn to see 3D and the other third will never see 3D.

In terms of technology: Although technology is the existence of which took place in theory, its practical application is still under development, as only now has the industry been able to develop effective eye-tracking technology and emission of light by the new LCD screens, which are those that allow images to be reflected in the lens with sufficient velocity to create the impression that the human eye is perceiving a continuous image.

3D Technology and the Consumer Market

The market challenge is to develop 3D technology to a level acceptable

to the consumer market, so as to cause more concurrent users and mass production to cut costs, set-top boxes with space and bandwidth manufactured by a firms supporting

the consumption of 3D images at home and not only in special facilities such as cinemas.

As for home use of 3D screens, it is still necessary to stabilize costs, but

it is a reality for large manufacturers of 3D market, ending the dependency on glasses that are now necessary, which increase cost and limit the number of users.

BTS Beijing Chapter Report

By Jian Song, Chair

The IEEE BTS Beijing chapter organized and conducted a highly successful seminar presented by Dr. Wang, Xianbin, an IEEE BTS Distinguished Lecturer, at Tsinghua University, Beijing, China, 25 August 2010. Two technical presentations were given by Dr. Wang on the topics below:

- 1) "Robust System Design for OFDM and Single Carrier Based Multimedia Content Distribution under Distributed Transmission Network";
- 2) "Emerging Technology and New Applications for DTV Systems".

More than 40 people, including faculty members and students from Tsinghua University, Beijing Jiaotong University, attended this seminar.

During his talk, Dr. Wang, Xianbin shared the study results of his broadcasting technologies research group. First, he presented an overview of the traditional OFDM and DVB-T receiver design and his recent development of an alternative ATSC receiver for long multipath channels. Then, he introduced an iterative hybrid frequency-time domain equalizer for an ATSC system to handle broadcast channels

with exceptional long delay spreads. He also presented research on emergency communication using the existing DTV stations making use of the DTV transmitter identification (TxID) watermark signal insertion.

The seminar lasted approximately two hours followed by in-depth discussions about broadcasting technologies and corresponding applications.

By providing technical seminars on broadcast engineering as an activity of the IEEE BTS Beijing chapter, we hope to have more opportunities to serve our community in the future.

Mike Bennett BTS AdCom and IEEE Senior Member BTS Representative on IBC Board A BTS Member Profile

By Jennifer Barbato, BTS Publications/Newsletter Coordinator

The BTS takes great pleasure in introducing Mike Bennett, a BTS AdCom member who has over 40 years experience in broadcast engineering. Mike provides an important, technical and management capability for our Society by serving as the IEEE BTS representative to the Board of the International Broadcasting Convention (IBC) in London.

The IBC is the second largest Broadcasting trade show in the world and held annually in September at the RAI Exhibition and Convention Centre in Amsterdam, the Netherlands. It is the premier annual conference and exhibition for professionals engaged in the creation, management and delivery



Mike Bennett

of entertainment and media content worldwide. Despite the recent recession, IBC continues to prosper and in

2010 had the second highest attendance in its history of 48,500 visitors.

Mike has done an impressive job representing IEEE BTS at IBC for many years. His BTS IBC position started as a volunteer but Mike has since assisted in establishing the IEEE BTS one of the six IBC partners.

In this article, the BTS would like you to know a little more about Mike's career and accomplishments.

Overview

Mike's career has encompassed nearly all aspects of the international broadcast industry world-wide. From R&D (EMI) to Sales Director for Scientific Atlanta based in the UK responsible for Europe,

Middle East and Africa. Mike has worked for many well known broadcast companies and institutions and has gained an enormous amount of experience over the past 40 years. Some of the organizations and companies were the Independent Television Authority – Independent Broadcasting Authority (now Arqiva but formally was NTL), Sony Broadcast, Snell & Wilcox, Panasonic Broadcast and Scientific Atlanta.

At present he is a technology consultant and expert on compression systems and IPTV. Over the years Mike has worked in research, design, development, product management, project leadership, exhibition management, sales, marketing and more recently Hi Tech experience in modern compression systems used for emission.

An Early Interest in Engineering

Mike was born in a town called Gravesend in the county of Kent, United Kingdom. He became interested in engineering when his father bought him a “crystal set” and Meccabno-set at the age of 7. Mike says “this was a very primitive technology, but it was enough to spark my interest in anything that had to do with Electricity and electronics”. Mike also had an interest in looking into huge excavation holes in the ground. He would see all of the network cables and wires going in many different directions and it made him ask many questions as to why, what and how. Mike was also known in his family as the one to call when an appliance broke. He fixed clocks, vacuums and anything that was broken.

When Mike was 11 his father joined the Canadian Air Force and his family was posted to a NATO base in the North East of France. For the next five years the family lived in Germany, various parts of France and two years in Canada, where Mike attended Junior High School. In 1960 the family returned to the UK. Mike then attended Twickenham Technical College, Merton College of Advanced Technology and University of South Bank in London. At the age of 16 Mike joined EMI at Hayes in Middlesex initially as a craft apprentice and lat-

er became an engineering apprentice. After being an apprentice for 5 years, he was given a one day release a week to attend Technical colleges, where he could study the theories he was practicing during his apprenticeship.

During those five years Mike trained in many different departments within EMI including transformer, design and construction, electronic wiring shop, the apprentice training school, environmental testing division, R&D computer lab, TV camera tube design and manufacture and ministry test facilities for bloodhound and sea slug missiles. In the last six months of his apprenticeship, with sufficient grades, each apprentice was allowed to choose which department they would specialize in.

Mike had become very interested in Broadcast television. EMI being the largest broadcast manufacturer in the UK gave him the perfect opportunity to study what he loved. He joined the EMI central research laboratories working in the color television department. This was innovative, since the only transmissions in the UK were black and white. He spent the next 5 years as a Junior Engineer and worked on the circuit design for the EMI 2001 camera and a vertical aperture corrector. In 1970 he began working for Independent Television Authority, working in experimental and development department. They produced the original standard converters, an adaptive Aerial for the Channel Islands, over air monitoring television transmission and the teletext system known as Oracle for the ITV commercial network. During Mike's time with EMI, the Government issued a discussion document called “ILR (Independent Local Radio) an alternate to BBC. Due to his background work he was chosen to join a team of only four individuals to plan the first commercial radio network in the UK. Thanks to an act of Parliament the formal planning of 60 commercial radio stations started. This helped to complete a network of 60 stations with 75 possible additional community stations covering 95% of the population with Commercial services. Since Mike had been a member of the project that helped to plan the location

and frequencies of the radio stations he then joined a section within IBA that was responsible for testing the technical standards for commercial television and radio.

This is when he became very interested in audio and broadcast engineering. Quality Control Sections and new codes of practices known as COP's were put in place during this time. Mike was responsible for helping to bring on air 20 stations throughout the UK. During the next six years he became an expert in all forms of testing including audio, RF and co-channel and adjacent channel interference and video equipments. With his experience and seeing how many stations could not meet their COP, in 1979 Mike decided to join a small company building local radio stations. He was responsible for the design of the ILR stations in Newport/Cardiff, Coventry, Exeter and Torquay. In 1980 Mike joined Sony Broadcast and traveled the world promoting products and became an expert in the developing countries. He continued to consult in these countries giving technical presentations of complex technologies in a very simple and informative way. 1992 Mike joined Snell & Wilcox and was responsible for selling standard converters and transcoders. Mike says one of the most interesting projects he has worked on was with a company called Path1 in 2003. They had developed a compression product that transmitted broadcast television signals over the internet. This project is still running today transferring broadcast quality pictures over 4 different multiprotocol label switching (MPLS) networks between the ITN building in central London and a Broadcast Television Station in New York City. As a stand-by, when maintenance is required the same signal is transmitted via the basic internet. The cost of this transmission is a fraction of the cost if the same signal was transmitted via satellite and of course this was before IPTV became common place.

In addition Mike has traveled extensively establishing many different sales distribution networks across Europe, Middle East, and Africa for various organizations and companies.

Membership in the IEEE and Other Professional Organizations

Mike first became aware of IEEE when he carried out a project for a former IEEE Region 8 President Professor Robert Williams. He helped Professor Williams set up an ILR radio station in Guilford. The two became quick friends and Prof Williams suggested Mike join the IEEE. Mike served as Secretary for the UK RI Section of the Region 8 for 6 years and in 1981 he became involved with and joined the management committee of the IBC. Mike has joined many organizations during his professional career including the IET, AES, and BT Societies. He has held various positions on committees within the Societies. When he

was asked how IEEE has helped him with his career he stated “Each organization that I have belonged to over the years has helped me progress in their specific areas on engineering”.

Advice for Young Engineers

Mike gave this advice to young engineers “Anybody considering a career in the field of electronic engineering must be prepared to re-educate themselves every 4 to 5 years as the changes I have seen in 40 years are enormous”. Mike is very enthusiastic about the engineering institutions and Governments should encourage young people to go into the electronics field of study as it can be rewarding, informative and profitable.

Other Activities

Besides engineering, Mike used to be a flag marshal at a local motor racing circuit in Newbury called Thruxton. He got involved in racing because of his interest in mechanical devices that go really fast. He still attends the events at the race track but has taken a break from being flag marshal, as it is now a full time job. He hopes to take a more active role in a local racing club once he retires.

IBC

The BTS is proud that Mike is a member of our Society and AdCom and especially for his valued service as the IEEE BTS Representative on the IBC Board. To learn more about the opportunities the annual IBC event offers, please go to www.IBC.org

Testing the Fix for Longley-Rice's Most “Complex” Line of Code

By Sid Shumate, Givens and Bell

Now, from a practical standpoint, how does the miscreant minus that I identified in the Summer 2010 article affect the calculation of the two-ray attenuation? The answer is: At present, in the current form of the ITM, not much, except for horizontal polarity, at the horizon, in desert-like conditions. To show this:

ESTABLISHMENT OF TEST PARAMETERS:

With regard to the variables involved here, at the second call to the `abq_alos` subroutine, there are two: δ and R_c . With regard to δ , I previously described, in the Spring 2010 installment how the value of δ is restricted: “And after all that, if q , currently holding the value of δ' , the path distance difference between the direct ray path, r_0 , and the indirect ray path $r_1 + r_2$, is greater than 1.57, (equal to $\pi/2$, or one-quarter wavelength, or 90°) then q , representing δ , is reset to be equal to: $3.14 - (2.4649/q)$, a.k.a $(\pi - (\pi/2)^2/\delta')$. This compresses all rotation after the first $1/4$ cycle into just under one single slow cycle that approaches, but never reaches, a single null far beyond the horizon [Alg. 4.50]. So the ITM two-ray calculations do not include the two-ray Fresnel-zone fadeouts near the transmitter site, only the last, long fadeout near the horizon, where the direct and reflected signals are within one wavelength of each other and approaching the same length.”

This is shown in the comparison in the below Figure 1, taken from a NASA paper, where “The model has also been parameterized so that desert-like conditions are imposed, minimizing seasonal and diurnal effects of foliage”¹.

Therefore, for my own desert surface example, the value of δ , due to limiting, tends to start near 2.89 radians, or in complex Cartesian or rectangular coordinates, $(-0.9696, j0.2448)$ at 1 km path distance (after the limiting is applied). The limiting continues to have its effect, on and off, until about 7 kilometers for a frequency of 100 MHz, where the two paths have reached a difference of less than

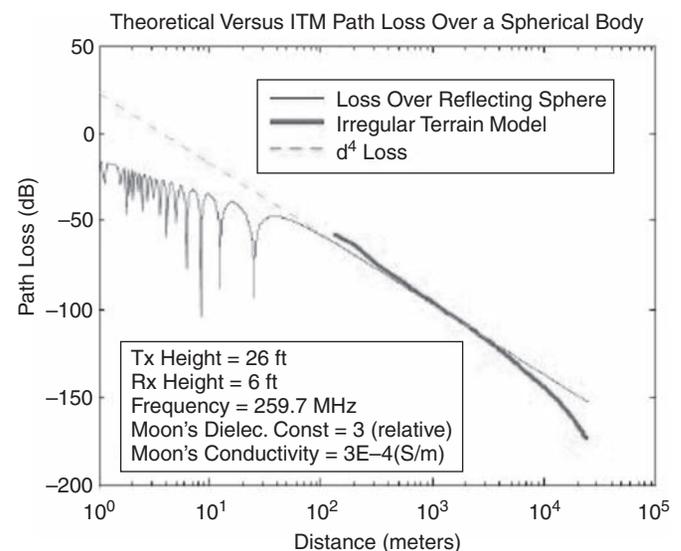


Figure 1 – Smooth Moon path loss

$\frac{1}{2}$ wavelength, and the value of δ is less than 1.57; at this point, the limiting no longer is applied, and the actual phase difference takes over; the phase difference then fades down to 0.2 radians (0.980, j0.199) at 50 kilometers. The relative resulting difference between the true, full 2-ray effect (thin line) and the ITM attenuation (thick line) is shown in the NASA example in Figure 1. NASA's moon surface predictions are good for showing 2-ray results, in that the moon's surface is often relatively smooth and spherical, with absolutely no vegetation clutter.

As to the value of $R_e e^{i\theta r}$, represented by argument r , for a hard dry flat desert surface for a 100 MHz FM broadcast band example, I have found that for vertical polarity, the real value of the complex number can start near -0.08 at one km, dropping even further to -0.002 at 3 km, and then slowly rising toward -0.3 at 50 km. Horizontal polarity provides for stronger reflections: starting at -0.85 at one km and rising to -0.99 at 50 km.

For the input parameters obtained in my own tests, stating d in radians, and $Ree^{i\theta r}$ in complex rectangular, i.e. Cartesian, co-ordinates:

HORIZONTAL POLARITY:

Path dist d, Km	δ limited Q radians	r. Real horizontal desert	r. Imag horizontal desert	r horizontal (real) $\Delta h = 90$ m	R horizontal (imag) $\Delta h = 90$ m
1	2.894231	-0.85461	-0.05511	0.000	0.0000
2	2.648463	-0.9221	-0.05919	-0.001	0.0000
3	2.402694	-0.94705	-0.06074	-0.005	-0.0003
4	2.156925	-0.95994	-0.06155	-0.014	-0.0009
5	1.911157	-0.96779	-0.06204	-0.026	-0.0016
6	1.665388	-0.97307	-0.06238	-0.039	-0.0025
7	1.432764	-0.97686	-0.06262	-0.052	-0.0033
8	1.253669	-0.97972	-0.0628	-0.065	-0.0042
9	1.114372	-0.98195	-0.06294	-0.078	-0.0050
10	1.002935	-0.98374	-0.06305	-0.089	-0.0057
20	0.501468	-0.99183	-0.06357	-0.174	-0.0111
30	0.334312	-0.99455	-0.06374	-0.226	-0.0145
40	0.250734	-0.99591	-0.06383	-0.266	-0.0170
50	0.200587	-0.99673	-0.06388	-0.301	-0.0193

VERTICAL POLARITY:

Path dist d, km	δ limited q, radians	r vertical (real) desert	R vertical (imag) desert	r (real) vertical (real) $\Delta h = 90$ m	r (imag) vertical (imag) $\Delta h = 90$ m
1	2.894231	0.081832	-5.3E-07	-5.3E-07	-5.3E-07
2	2.648463	-0.00018	-1.6E-05	-1.6E-05	-1.6E-05
3	2.402694	-0.00223	-0.00015	-0.00015	-0.00015

4	2.156925	-0.00767	-0.00047	-0.00047	-0.00047
5	1.911157	-0.01607	-0.00095	-0.00095	-0.00095
6	1.665388	-0.0263	-0.00153	-0.00153	-0.00153
7	1.432764	-0.03741	-0.00215	-0.00215	-0.00215
8	1.253669	-0.04877	-0.00278	-0.00278	-0.00278
9	1.114372	-0.05999	-0.0034	-0.0034	-0.0034
10	1.002935	-0.07086	-0.004	-0.004	-0.004
20	0.501468	-0.15441	-0.00862	-0.00862	-0.00862
30	0.334312	-0.20871	-0.01162	-0.01162	-0.01162
40	0.250734	-0.25067	-0.01395	-0.01395	-0.01395
50	0.200587	-0.28676	-0.01595	-0.01595	-0.01595

These are the test data parameters I will refer back to later. The results, first for desert conditions, are:

VERTICAL POLARITY:		Incorrect	Corrected		
Path dist d, km	δ limited Q radians	R vertical (real) desert	R vertical (imag) desert	A_i with - vertical desert in dB	A_i without - vertical desert in dB
1	2.894231	0.081832	-5.3E-07	0.715969	0.715971641
2	2.648463	-0.00018	-1.6E-05	-0.00143	-0.001297682
3	2.402694	-0.00223	-0.00015	-0.01516	-0.013428119
4	2.156925	-0.00767	-0.00047	-0.04034	-0.033581703
5	1.911157	-0.01607	-0.00095	-0.05515	-0.039749994
6	1.665388	-0.0263	-0.00153	-0.03762	-0.011377183
7	1.432764	-0.03741	-0.00215	0.020197	0.057456972
8	1.253669	-0.04877	-0.00278	0.099962	0.147121012
9	1.114372	-0.05999	-0.0034	0.191651	0.247394742
10	1.002935	-0.07086	-0.004	0.289286	0.352356247
20	0.501468	-0.15441	-0.00862	1.183821	1.279363245
30	0.334312	-0.20871	-0.01162	1.824238	1.926251905
40	0.250734	-0.25067	-0.01395	2.33378	2.437914387
50	0.200587	-0.28676	-0.01595	2.783419	2.889503919

HORIZONTAL POLARITY:		Incorrect	Corrected		
Path dist d, km	δ limited q radians	r. real horizontal (real) desert	r. imag horizontal (imag) desert	A_i with - horizontal desert in dB	A_i without - horizontal Desert in dB
1	2.894231	-0.85461	-0.05511	-5.33717	-5.268028601
2	2.648463	-0.9221	-0.05919	-5.48303	-5.343065731
3	2.402694	-0.94705	-0.06074	-5.29246	-5.077119247
4	2.156925	-0.95994	-0.06155	-4.89927	-4.600975556
5	1.911157	-0.96779	-0.06204	-4.31938	-3.926343875
6	1.665388	-0.97307	-0.06238	-3.5387	-3.032771781
7	1.432764	-0.97686	-0.06262	-2.58494	-1.946038999

8	1.253669	-0.97972	-0.0628	-1.67937	-0.911173142
9	1.114372	-0.98195	-0.06294	-0.84794	0.045284261
10	1.002935	-0.98374	-0.06305	-0.08542	0.92998359
20	0.501468	-0.99183	-0.06357	5.094012	7.276354967
30	0.334312	-0.99455	-0.06374	8.067493	11.4033893
40	0.250734	-0.99591	-0.06383	10.08567	14.59665794
50	0.200587	-0.99673	-0.06388	11.57915	17.30370261

And for average conditions, as defined by ITM recommended coefficient presets:

VERTICAL POLARITY:		Incorrect	Corrected		
Path dist d, km	δ limited Q radians	r (real) vertical (real) $\Delta h = 90$ m	r (imag) vertical (imag) $\Delta h = 90$ m	A_r with – vertical $\Delta h = 90$ m in dB	A_r without – Vertical $\Delta h = 90$ m in dB
1	2.894231	-5.3E-07	-5.3E-07	-5.6E-06	-3.34622E-06
2	2.648463	-1.6E-05	-1.6E-05	-0.00019	-5.57116E-05
3	2.402694	-0.00015	-0.00015	-0.00182	-8.50427E-05
4	2.156925	-0.00047	-0.00047	-0.00567	0.001143475
5	1.911157	-0.00095	-0.00095	-0.01054	0.005023048
6	1.665388	-0.00153	-0.00153	-0.01445	0.011941407
7	1.432764	-0.00215	-0.00215	-0.01591	0.021040266
8	1.253669	-0.00278	-0.00278	-0.01544	0.03048001
9	1.114372	-0.0034	-0.0034	-0.01357	0.039588621
10	1.002935	-0.004	-0.004	-0.01073	0.048101708
20	0.501468	-0.00862	-0.00862	0.029101	0.102148081
30	0.334312	-0.01162	-0.01162	0.061494	0.129207553
40	0.250734	-0.01395	-0.01395	0.08647	0.148236421
50	0.200587	-0.01595	-0.01595	0.107269	0.164232154

HORIZONTAL POLARITY:		Incorrect	Corrected		
Path dist d, km	δ limited Q radians	R horizontal (real) $\Delta h = 90$ m	R horizontal (imag) $\Delta h = 90$ m	A_r with – horizontal $\Delta h = 90$ m in dB	A_r without – horizontal $\Delta h = 90$ m in dB
1	2.894231	0.000	0.0000	-0.00033	-0.00032142
2	2.648463	-0.001	0.0000	-0.00535	-0.004997399
3	2.402694	-0.005	-0.0003	-0.03415	-0.030406817
4	2.156925	-0.014	-0.0009	-0.07352	-0.060807512
5	1.911157	-0.026	-0.0016	-0.09006	-0.063522321
6	1.665388	-0.039	-0.0025	-0.05957	-0.016885649
7	1.432764	-0.052	-0.0033	0.021774	0.080040996
8	1.253669	-0.065	-0.0042	0.125458	0.197105415
9	1.114372	-0.078	-0.0050	0.238719	0.321542818
10	1.002935	-0.089	-0.0057	0.354996	0.447045594
20	0.501468	-0.174	-0.0111	1.327481	1.45540838

30	0.334312	-0.226	-0.0145	1.97735	2.109322592
40	0.250734	-0.266	-0.0170	2.48523	2.617404506
50	0.200587	-0.301	-0.0193	2.931955	3.065005036

Others have noted to me the differences in results between the original military ESSA ITS-67 FORTRAN based implementations, such as TIREM, and the ITM, which have up to now been assumed to be, and may still be in part, due to the different derivation of R_e . There is not a lot of difference resulting from the extra minus in the normal operation of the ITM primarily because of the very small angles, i.e. small imaginary values, involved, the limiting of the value of δ , and the fact that except for over hard surfaces, such as desert or paved cityscapes with relatively little foliage, the two-ray cancellation contributes only a minor effect.

In average conditions, what I found is that most of the line-of-sight losses come from foliage clutter. The foliage clutter, especially for near-the-ground receive antennas, prevents the reflected ray from arriving at the receive antenna with enough strength to significantly cancel out the direct ray, except near the transmitter site when, from a tall tower or hilltop, the signal is passing straight down, or nearly so, through the clutter layer. Near a high transmitter site, the Snell's Law T (transmissivity) factor, of the clutter canopy layer, is near 1.0, as the signal is shooting down through the canopy layer in a vertical or near-vertical angle. As the receive site gets further away from the transmitter site, the T goes down to near zero, and the R (reflectivity) of the clutter canopy approaches 1.0. So in actual reception, the two-ray multipath, measured as an average using the FCC TASO methodology, (not on a spot measured basis) where there is ground cover of any sort, tends to show up only very near the transmitter site, or at the horizon for antennas above the clutter canopy. The ITM algorithm is modified from the Tech-Note 101 methodology in that it does not calculate and show the two-ray losses near the transmitter, only the slowly increasing loss found at a distance, as the reversed phase of the signal reflected off the clutter canopy, or the ground if there is no ground cover, cancels out the direct signal near the horizon. This loss is usually more noticeable for antennas that are above the clutter canopy layer than for antennas that are in the clutter, i.e. below the clutter canopy layer. So the error caused by this problem when using the ITM is small, and can normally be found only if one is looking for it.

In the ITWOM, the algorithm is changed to more closely match the original Tech-Note 101 methodology, and therefore does show the two-ray losses near the transmitter; due to the rapidly changing phase between the direct and reflected rays near the transmitter, the losses appear as rings on a Longley-Rice area mapping. So the error discussed here has only a very slight effect on the results of the ITM algorithm, but is more significant in the results shown near the transmitter site in the ITWOM.

So what was the reaction at NTIA-ITS when I pointed out this correction? The emails I had received from Mr. Najmy and Dr. Paul were extremely helpful in making the last installment of this series of articles, the Summer 2010 article, revealing and accurate. If one has a question about understanding the ITM source code, they are very helpful and patient.

The original ITM algorithm, essentially unchanged since 1982, primarily provides a stable, reference benchmark algorithm, not an ongoing development. The current development emphasis at the NTIA-ITS is in working on a new short-range model to support cellular-type and portable emergency communications, as revealed in the NTIA-ITS 2008 Technical Progress Report at: <http://www.its.bldrdoc.gov/pub/ntia-rpt/tp/2008/>. On pages 48 and 49 of the Telecommunications Engineering, Analysis, and Modeling section, a brief report by Dr. Robert Johnk and Paul McKenna describes the initial stages of development and states: "After performing an exhaustive review of current models, ITS determined that none was entirely suitable for use in analyzing mobile-to-mobile (MTOM) interference interactions" and "It was therefore necessary to initiate an analysis and measurement effort to develop and validate models in this parameter range." The 2009 report provides an update on the project.

Therefore, there exists an opportunity for others to develop a better implementation of the Tech-Note 101 methodology, improved by the knowledge gained since 1982; one which takes advantage of the capabilities of today's 64-bit multicore personal computers and terrain databases, and one tailored to today's usage requirements. I found it necessary to do so starting in 2006, when attempting to use the ITM to analyze FM radio reception interference, and this continuing series of articles have described what I found.

As part of the direct-to-home satellite reception proceedings that have occurred over more than a decade at the Federal Communications Commission, a proceeding was left open for a petition to present improvements to the FCC's ILLR model, which is based primarily on the ITM model. The Satellite Television Extension and Localism Act of 2010 (STELA) required the FCC to improve the model. I petitioned the FCC to consider the ITWOM model I developed; the FCC has responded by issuing a Report and Order and Further Notice of Proposed Rulemaking, identified as FCC 10-194. This can be found at: http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db1209/FCC-10-194A1.pdf; section IV

of this report, starting at paragraph 57, opens a window for submission of improvements to the ILLR. I will submit a dual version of the ITWOM, which will allow runs with either the ITM, or the ITWOM, for comparison. The continuing FCC record on this proceeding, including the Petition and Comment submitted August 25, 2010, can be found by going to the FCC Electronic Comments Filing System (ECFS) home page at: <http://fjallfoss.fcc.gov/ecfs/>, clicking on the *Search for Filings* link, and searching for proceeding 10-152. The window for Comment ends on January 21, 2010 and the window for Reply Comment ends on February 7, 2010.

Finally, an improvement for a previous correction. Along with the above NTIA-ITS information, I was able to verify that the delta-h calculation is supposed to extend out not just to 50 km, (the FCC standard) but up to 800 km. (500 miles) in order to compute the ratio of knife edge to rounded edge loss in the diffraction range. So the source code correction stated in the Fall 2009 article, which allows the ITM code to operate with any higher detail database, should be updated. Instead of having line 1258 replaced by:

```
Line 1258:      kmx = (int)(5000.5/pfl[1])
Line 1259:      ka = mymin(mymax(4,ka),kmx);
```

The better fix is:

```
Line 1258:      kmx = (int)(83350/pfl[1])
Line 1259:      ka = mymin(mymax(4,ka),kmx);
```

I intend to wrap up this series with the next installment. I will note the most recent ITM error I found, located in the diffraction range knife edge calculations, and then provide an overview of what has been done take the corrected ITM to a terrain-specific true point-to-point prediction system.

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¹NASA Report NASA/TM-2007-214825 "Path Loss Prediction Over the Lunar Surface Utilizing a Modified Longley-Rice Irregular Terrain Model," July, 2007, by Larry Foore, Glenn Research Center, Cleveland, Ohio and Nathan Ida (Fellow, IEEE), University of Akron, Akron, Ohio, available at: <http://gltrs.grc.nasa.gov/reports/2007/TM-2007-214825.pdf>

The 10th IPTV GSI Meeting Report

By Hong Liu, CRC Canada

The 10th IPTV GSI event, hosted by ITU-T, took place at Geneva, Switzerland, on 17–21 May 2010. More than 50 delegates from industry, research institutions, and standardization entities participated in this meeting. ITU-T Question 13 of Study Group 16 (Q13/16) presided over the meeting during this event. Study groups 2, 9 and 12 also jointed the meeting for discussions related to IPTV.

On the first day, IPTV-GSI Technical and Strategic Review (TSR) Coordinator Mr. Masahito Kawamori from NTT (Japan) opened the meeting. Next the meeting agenda and work plan were presented by the coordinator and adopted by the attendees. The allocation of meeting documents and incoming liaison statements to relevant subgroups for review was approved and then the meeting schedule was accepted. A conference call with MPEG was scheduled prior to the meeting to discuss an advanced IPTV terminal and joint work between ITU and MPEG. In the final part of the meeting, Mr. Masahito introduced ongoing ITU Interop events on IPTV, where many companies are invited to showcase their IPTV products and to test for interoperability. The purpose of these events is to promote industry adoption of the ITU-T standards for IPTV. Therefore any company or organizations of interest is welcome for participation. The detailed information can be found at the web site of <http://www.itu.int/net/ITU-T/cdb/interop.aspx>.

A. Meeting Results

During the meeting a total of 50 contribution documents and 6 incoming liaison statements were received and discussed. In addition, this meeting produced 7 outgoing liaison statements and 6 meeting reports. Progress was made with the following recommendations and technical documents as a result of discussion.

- H.IPTV-MAP (Multimedia Application Platforms and end systems for IPTV)

- H.IPTV-MAFR.4/5/6/13/14 (Multimedia Application Framework for IPTV)
- H.IPTV-AM.0/1 (Audience Measurement)
- H.IPTV-WBTM (Web Based Terminal Middleware for IPTV)
- H.IPTV-CPMD (Content Provisioning Metadata)
- H.721 (IPTV terminal device: basic model)
- HSTP.IPTV-Widget
- HSTP.IPTV-3D

The distribution of the contribution documents under discussion in terms of their topics are listed in the following table.

General	3
Web-based Terminal Middleware	3
MAFR	7
IPTV Service Platform	2
3D-IPTV	2
Event Handling and Audience Measurement	24
Content Provisioning	1
Service Discovery and Navigation	3
Conformance and Interoperability	3

Prior to this meeting, CRC representing IEEE BTS submitted three contributions: (1) Proposed addition to clause 8.1 of draft Recommendation H.IPTV-AM.1; (2) “Proposed addition to clause 8.2 of draft Recommendation H.IPTV-AM.1”; (3) “Proposed addition to clauses 5, 6.1, 7, 8 and 9 of draft Recommendation Multimedia Application System for three-dimensional IPTV service”. These three contributions were assigned numbers C-419, C-420 and C-421 respectively. The contributions C-419 and C-420 proposed modifications in full text to clauses 8.1 and 8.2 of draft recommendation H.IPTV-

AM.1, entitled “IPTV application event handling: audience measurement for IPTV distributed content services”. The contribution C-421 proposed the addition of sections and text to the clauses 5, 6.1, 7, 8 and 9 of draft Recommendation: “Multimedia Application System for three-dimensional IPTV service”.

On behalf of IEEE BTS and CRC, I presented three contributions during the meeting. They were well received. The following are the discussion results.

- For the contributions of C-419 and C-420, most of the requirements text was accepted with some modifications. It was agreed that IPTV distributed content service specific function diagrams in the documents are useful to explain service specific requirements for audience measurement. But they need to be harmonized with the recommendation Y.1910 (IPTV functional architecture). Therefore contribution for further clarification is needed for the next meeting.
- The contribution of C-421 was fully accepted. On the IPTV-GSI coordinator’s request, we combined our proposal with another contribution from NTT on 3D IPTV service and added them to the draft technical paper HSTP.IPTV-3D.

Although delivering 3D to the home is a new concept to the Telecom industry, the success of 3D cinema and the lining up of hardware manufacturers to sell 3D television sets to consumers sensitized the industry to the fact that 3D TV is becoming an important player in media market and will be add-valued service in the near future. Therefore, ITU-T study group 16 is working on developing a technical paper HSTP.IPTV-3D to include 3D IPTV as a high level application in the IPTV architecture. This group also wants to coordinate with other standard bodies on 3D IPTV.

It is worth pointing out that increasing attention is being paid to

audience measurement by telecom manufacturers. 24 proposals from Cisco, OKI (Japan), ZTE (China), Huawei (China), Korea and IEEE BTS/CRC were received in this meeting on audience measurement. Even though audience measurement implementation brings extra cost to the IPTV terminal box, telecom manufacturers are considering it as an important feature to promote their products.

The following discussions of interest to broadcasters are summarized.

- [265-GEN] ITU-T SG13 LS (liaison statement) on collaboration request for new work items on mobile IPTV

It reported that ITU-T SG13 agreed to establish two new work items related to mobile IPTV: Y.miptv-scen (Scenarios and Use cases of mobile IPTV) and Y.miptv-req "Functional requirements of mobile IPTV". SG13 requested Q.13/16 to collaborate on the development of draft Y.miptv-scen and would like to use the current Appendix II of Draft Rec. H.IPTV-TDES.4 as a baseline text for further development of Draft Y.miptv-scen in SG 13. After discussion, it was agreed that all the relevant groups may join this effort on this work if the work is deemed sufficiently important.

- [264-GEN] ITU-T SG13 Reply LS to SG17 on IPTV security work

Since SG17 is developing X. iptvsec-6, Framework for downloadable SCP system in mobile IPTV environment. SG13 requests SG17 to provide with a clear definition, if there is any, of the scope of "mobile IPTV". It was noted that ATIS-IIF has been working on ID management between subscriber and service provider, and that ID management related content security issues may be relevant to mobile IPTV. This is also a good topic to collaborate and coordinate in IPTV-GSI.

- [248-GEN] ETSI MCD Reply LS on the work on IPTV audience measurement (COM16-LS-130)

ETSI MCD informed us of their recent work on audience measurement, concepts for improving the interfaces to existing and developing interactive systems TR, Content Distribution Infrastructures TR, 3D gaming graphics. Three deliverables (TR 102 688-1/-2/-3) have been published and are publicly available at the ETSI web site. It was decided that their documents will be reviewed, especially the audience measurement documents, when they are stable.

- [C-400] NTT Proposed requirements for HSTP.IPTV-3D ("Multimedia Application System for Three-dimensional IPTV service")

This proposal was made in order to add some requirements to HSTP.IPTV-3D document and send liaison statements to relevant organizations requesting them to harmonize with the work by ITU-T on 3D IPTV. It was accepted and harmonized with the IEEE/CRC contribution IPTV-GSI-C-421 to be incorporated in the current technical paper HSTP.IPTV-3D.

- [C-422] OKI Proposed modifications of H.IPTV-AM.0 about delivery protocols

This contribution proposed the use UDP over IPsec as an audience measurement transport protocol. It was adopted. It was also pointed out in the discussion that several protocols should be "is recommended to" and others be "optionally" for implementers. In doing so, more research is required on the functionality and popularity about audience measurement applications as there are several factors to be considered. More contributions are needed on recommended protocols

for audience measurement in the next meeting.

- [C-408] Cisco Proposal for revised text of H.IPTV-AM.1

HD codec in proposal 4 will be kept in H.IPTV-AM.1. The meaning of channel change time seems to be ambiguous, and more text is needed for further clarification.

- [C-409] Cisco Proposal for revised text of H.IPTV-AM.2

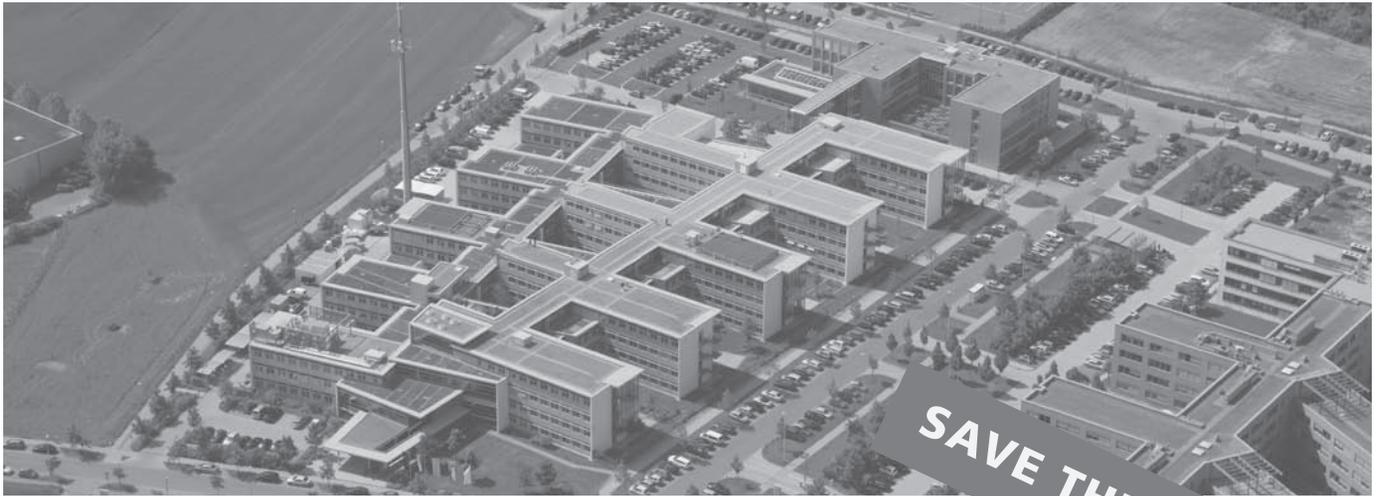
This contribution proposes the addition of word definition and the new concept of "User Interface Screen" that includes static picture page, login page, and video screen. At this moment, user interface screen is an abstract concept. The main target of AM series is to clarify the data between IPTV application server and end users. The information of user interface screen seems to be additional information. "Interactive Display" seems to be inappropriate for this concept. Further discussion is needed for clarification.

B. Other Business

Mr. Steven Wright (AT&T), newly elected Chair of ATIS-IIF (Alliance for Telecommunications Industry Solutions – IPTV Interoperability Forum), joined this meeting and actively participated in the discussions. His appearance will greatly enhance the collaboration between the work on IPTV in ITU and that in ATIS-IIF.

The next IPTV-GSI event was held in Geneva from July 19 to 23, 2010.

Hong Liu is a research Engineer at Communications Research Centre Canada. His research areas include video processing, DTV systems and multimedia communications. He is a member of IEEE and BTS. He can be contacted at hong.liu@crc.gc.ca.



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IEEE Senior members or IEEE Life Senior members in good standing, who have completed five years of service in any grade of IEEE Membership and who have made an outstanding contribution to the electronic **or electrical engineering profession** may be nominated in one of four categories: application engineer/practitioner, educator, research engineer/scientist, or technical leader. The IEEE Fellow web site, <http://www.ieee.org/fellows>, has all the information you will need including the requirements for nominee eligibility as well as nomination instructions and all the necessary forms. The nomination period is presently open and will continue through 01 March 2011 for the Class of 2012.

You are strongly encouraged to read the information on “Before You Hit Submit” and then use the Online Application process which is quick and easy. Once you have started the application, it can be held in Draft status until you have completed the entire form and are ready to send the information to us. Once you have submitted the application, the electronic process will automatically send emails to your references and endorsers and provide the means for you to track their status. Also once you have submitted the nomination, no changes for whatever reason can be made which is why we encourage you to put the maximum number of references on the form and find out if they are willing to help you with the submission before sending the nomination.

The IEEE Fellow Staff is working to make your nomination process as trouble free as possible and they are ready to assist with all phases of the application process. Should you have any question during the completion process you can email fellows@ieee.org with any questions.

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