

IEEE Broadcast Technology

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

Latest
ATSC 3.0 News

2018 BMSB Focuses on 5G, ATSC 3.0, Spectrum and more—complete conference coverage begins on p.5

BTS Fall Symposium planners prepare for another great event. Have you made your plans to attend? P.33.

President's Message

Bill Hayes, BTS President



Greetings BTS members.

As I write this message, I am in the relative lull between the first half of the year and all of its events, including the Consumer Electronics Show (CES), the National Association of Broadcasters Show (NAB), and our own Broadband Multimedia Symposium and Broadcasting (BMSB) conference, and the second half of the year and its events including the International Broadcasting Convention (IBC), the Society of Motion Picture and Television Engineers (SMPTE) Technical Conference, and our own IEEE Broadcast

Symposium. For me, this year was different in that I had a personal conflict that required me to miss attending the NAB Show for the first time in my professional career, and while I don't want to give away my age, this amounts to a lot NAB Shows, so not attending left a noticeable gap in the timeline that is my life. I've been pondering why missing this one event has had a more profound effect than I thought it would. At the core, I think it is about a missed possibility and the regret that follows when I know I had a chance to do something and couldn't or didn't take advantage of the opportunity.

So, what does this have to do with my column for the BTS' **Broadcast Technology** and the Society? Well it is pretty simple, if the Society is doing what it's supposed to do, then being a part of it should provide opportunities for the members, and not taking advantage of those opportunities should leave us with a feeling of regret because we missed a chance to grow. My intention here is not to generate guilt, but rather to create a recognition of the responsibilities that members have to the Society, and that the leadership of the Society has to the members. Sometimes in the crush of making things go on a day-to-day basis, we lose focus on what we are supposed to be doing and why.

This has been made abundantly clear to me as I lead the engineering and technology department at Iowa Public Television through what I have started calling quantum evolution where we as over-the-air broadcasters need to recognize and respond to the massive change in how we reach people with content. I recently had a discussion with one of the IPTV staff who was lamenting that we no longer did the same type of productions we used to do. This colleague was referring to the days when we would roll our big production truck to a venue and capture a concert, opera, or other fine arts event for broadcast. And in those days when broadcasting was the dominant or only mass distribution mechanism available, this model often made sense. However, in a world of on-demand consumption and multiple distribution paths, we must change our model to adapt to reality. My role at Iowa Public Television is to provide the technical guidance for the organization to thrive in this changing environment and lead the engineering and technology staff through this change. This is the same vision that I have tried to bring to all of my colleagues in leadership at BTS and to the membership as well.

I am now midway through my last year as president of the BTS. It is a position that I have been honored to hold. I look at the time I've spent leading the Society as some of the best of my career. I

continued on page 9

Inside

President's Message	2
From the Editor	3
BMSB Attracts Video/Broadband Experts From Around The World	5
The 2018 BMSB In Pictures	10
2018 ATSC Annual Meet: 'Standard Is Complete, But The Journey Is Just Starting'	18
Midwest Broadcast Associations Accelerate Down Road To ATSC 3.0	25
LEDs Revolutionize Broadcast Tower Lighting	29
Make Plans Now To Attend The 2018 BTS Symposium	33
Annual ETF Conference Brings TV History Buffs To Ohio	34
RF News and Views	38
The Downward Path to Broadcast Engineering	43
DVB News	45
ITU Report	47
Internet Of Radio-Light: A Revolutionary In-Building WLAN Architecture Combining VLC and mmWave	48
TV White Space Technology And LTE: A Comparison Of Energy Efficiency And Base Station Density	52
IEEE Young Professionals Workshop	58
In Memoriam	61
Broadcast Technology History Quiz	62
Chapter Reports	64
Upcoming Events	65
What's New	66

Cover: A new type of UHF 'slot' transmitting antenna? Variation on a disk cone design? Actually, it's one of the many architecturally-striking structures in the "City of Arts and Sciences" in Valencia, Spain—the host city for the 2018 BMSB conference.

From The Editor

ATSC 3.0 on the road, the fall symposium, 2018 BMSB, and more

By James E. O'Neal, Editor-in-Chief,
BTS Life Member



It's very early in July as I write this, having returned home from Columbus, Ohio only a few days ago after attending an ATSC 3.0 "road show" held there. It was designed to bring information about the new digital TV transmission standard to broadcast personnel who might not have been able to attend similar events held at the NAB Show in Las Vegas or at the ATSC annual meeting/conference in Washington, D.C. The day-and-a-half Ohio session attracted more than 100 broadcast engineers and station managers from U.S. midwestern states, who were eager to learn about the innerworkings of the new standard, what it would take to begin broadcasting ATSC 3.0 at their stations, how to monetize it to their advantage, how 3.0 lends itself to single frequency networking, and a lot more. (See the complete story elsewhere in this issue of **Broadcast Technology**.)

This "ATSC 3.0 Midwest Next-Gen TV Summit," as it was officially called, was important for at least two reasons. The first is that even though U.S. TV broadcasters have their hands very full with the on-going broadcast spectrum repacking, they're also sufficiently interested in the new technology to travel hundreds of miles (many conference attendees I spoke with drove themselves to Columbus, a fact attested to by several station news vehicles parked outside the large hotel hosting the event) to learn all they could about ATSC 3.0. The second takeaway from the conference was that even though implementation of 3.0 is not mandatory (the FCC in its ruling last November said only that stations *could* put a 3.0 signal on the air if they wanted to—there is no hard line in the sand to do this, nor is there a fixed date for terminating present-day ATSC 1.0 transmissions), some stations are planning to do so anyway.

It's heartening to witness this sort of enthusiasm for a nascent technology which still has a number of question marks surrounding it (the declining number of U.S. homes that receive television over-the-air, the cable/satellite "cord cutting" now going on, whether or not the younger generation of viewers can be lured away from the data plan streaming of television content, the total absence right now of ATSC 3.0 television receivers and 3.0-enabled handheld devices in the United States, and more).

This summit was of such interest and importance that one of the five FCC Commissioners—Michael O'Rielly—traveled from Washington to speak at the event and to listen to concerns about both 3.0 implementation and the repack on a one-on-one basis from broadcasters assembled there.

I commend the six state broadcasters associations (representing some 150 Illinois, Indiana, Kentucky, Michigan, Ohio, and Wisconsin television stations) and the ATSC for putting the conference together, and also the numerous television station personnel who took time out from their very busy schedules to make the trip to Columbus to learn about ATSC 3.0. In his opening remarks at the conference, Dave Arland, a spokesperson for the ATSC and also executive director of the Indiana Broadcasters Association, hinted that there might be more such regional seminars. Let's hope he's right, as the United States is a big country with lots of TV stations and viewers, and ATSC 3.0 learning opportunities are too important to be restricted only to those who can attend the NAB Show or the ATSC annual conference.

Make Plans For Attending The BTS Symposium

Speaking of learning opportunities, our Society is in the process of tuning up the agenda for this fall's Symposium (more about which will be found elsewhere in these pages). I was on a conference call this week with organizers of the event and plans are underway to offer a good assortment of cutting-edge presentations on ATSC 3.0, digital radio broadcasting, and a lot more. And the planned presentations aren't limited to U.S. landscape either, as the agenda includes a number of papers on contemporary broadcasting in other countries as well—all the more reason to get yourself registered for the Oct. 9–11 event as soon as possible, and to book airline and hotel reservations before prices start going up (as they always do when you procrastinate too long). In case you somehow didn't get the message, the Symposium is returning to the same Arlington, Virginia hotel that hosted it last year, just across the Potomac River from downtown Washington, D.C., and easily reached by those traveling by car, train or airline (D.C.'s National Airport is just a short subway ride from the conference venue, and there are plenty of transportation options for getting there from the other two major regional airports, Dulles and BWI). There's really no good excuse for not attending—the Symposium program is top-notch, the fall weather in Washington is gorgeous, and there's plenty to see and do in the Nation's Capital if you want to bring the family and spend some extra time seeing the sights in D.C. and the surrounding area. I look forward to seeing you at the Marriott Key Bridge Hotel this October!

The 2018 Broadband Multimedia Systems And Broadcasting Event

Another very interesting and valuable learning opportunity is the IEEE's BMSB (Broadband Multimedia Systems and Broadcasting) conference, which is held in early June, and this year took place in Valencia, Spain (look elsewhere in this issue of **BT** for coverage