the standard
News from ATSC, Volume Six, Issue Two, September 2005
Advanced Television Systems Committee Inc.

"ACAP is a great example of industry cooperation and another step forward in the ongoing evolution of digital television." – Mark Richer, ATSC

ACAP takes a giant leap forward...

ATSC Publishes ACAP Standard for Interactive Television

The members of the Advanced Television Systems Committee recently approved the Advanced Common Application Platform (ACAP) Standard. ACAP provides content creators, broadcasters, cable and satellite operators, and consumer electronics manufacturers with the technical details necessary for the development of interoperable interactive television services and products. ACAP is the result of the ATSC's effort to harmonize its DTV Application Software Environment (DASE) specifications with CableLabs' OCAP™ specifications. ACAP is important because a ubiquitous standard will help facilitate consumer acceptance of interactive television services.

Implementation of ACAP in Korea

by Jin-young Yang, TTA

Korea is taking its last steps towards the launch of the first regular over-the-air ACAP service. Korea's specifications for terrestrial DTV broadcasting of interactive data services based on ACAP are being finalized in the Telecommunication Technology Association (TTA) and associated regulation is being revised by the Ministry of Information and Communication. Broadcasters, including KBS, MBC, SBS and EBS, have plans to initiate regular DTV ACAP data broadcasts in December, with service covering Seoul and the surrounding vicinity.

Since mid 2004, Korean terrestrial broadcasters have been transmitting experimental ACAP-based interactive applications, along with HDTV programming. Aircode, also a Korean based company, has been concentrating its efforts toward the development of applications and head-end equipment for data emission, while Samsung Electronics, LG Electronics and Daewoo Electronics have been developing ACAP consumer receivers. With middleware implemented by iSET, ETRI has dedicated its expertise to the research and development of the end-to-end system. ETRI also played an important role in the standardization of the new ATSC ACAP Standard (A/101). DTV Interactive, a Korean based company that provides test platforms, is busy developing analysis equipment for interactive DTV applications.

(Continued on page 2 – Korean Implementation of ACAP)

Korean Implementation of ACAP

(continued from page 1)

The first ACAP Interoperability Test was facilitated by TTA in March 2005. This interoperability test successfully verified interoperability among multi-vendor data broadcasting products, and it proved that terrestrial ACAP data content transmitted through cable is compatible with OCAP cable receivers. For the test, broadcasters KBS, MBC, EBS, and SBS provided ACAP streams containing program associated and independent applications. Two 8VSB players, provided by Fu-tech Creator and ETRI, were used on a TTA head-end system to successfully transmit three physical channels. Additionally, Aircode, Samsung, LG and iSET tested ACAP interoperability among applications, data injectors, PSIP servers and receivers with positive results. The conformance testing event proved very useful for the implementation of ACAP, and similar events are planned by TTA in the very near future.

Recent developments in the TTA effort to build a complete conformance test environment include an HDTV data broadcasting head-end system, an ACAP test suite and an ACAP Automated Test Environment (ATE). Capable of generating approximately 10,000 ACAP test applications, the automated ATE collects test results from a receiver and generates a test report. Additional activities in TTA include the development of ACAP middleware reference applications, and definition of interfaces to enable receiver conformance testing in a manufacturer independent way.

With the introduction of interactive television, a DTV receiver will act as an information gateway to home. TTA is hopeful that consumers will embrace ACAP, and propel interactive television to the next level. ■

"Business models and applications should be developed based on their usefulness in real life in order to create interest and excite consumers. At the same time, the receiver performance should be enhanced continuously. Conformance testing enables CE manufacturers to secure competitive technology, and reduce the time to market – leading to high quality consumer receivers. Testing also confirms that properly formed ACAP content will run on all types of ACAP receivers." – Jin Young Yang, TTA

The TTA Automated Test Environment (ATE) generates up to 10,000 ACAP test applications, collects results and generates reports.

Photos courtesy of TTA

Korea first implemented DASE-based experimental DTV data broadcasting in 2002, during the FIFA World Cup Korea/Japan, and The 14th Asian Games. Screen captures (left and above) provided by Korean broadcasters show just a few of the many applications of ACAP interactive television.

HDTV Data Head-to-End System

About TTA

Telecommunications Technology Association (TTA) is a standardizing, testing and certifying body in the field of information, communication and broadcast technology.

Enhanced AC-3

How Does that Sound?

Unbelievable! ATSC digital audio has gotten even better with the addition of Enhanced AC-3 (E-AC-3). This sophisticated and versatile audio coding technology is designed specifically to adapt to the changing demands of future audio delivery, video delivery and audio storage systems. Due to its enhanced efficiency, it offers extremely high-quality audio, while reducing the size of the overall program package. And, to make it even more adaptable across the board, E-AC-3 decoders will maintain backward compatibility with the existing Dolby Digital 5.1-channel home theater systems currently in use.

The members of the Advanced Television Systems Committee, Inc. (ATSC) approved a revision to the A/52A Standard (entitled A/52B) on June 14, and the Standard was published on July 26. Additionally, in a subsequent membership vote completed on July 27, the ATSC approved a revision of the ATSC Digital Television Standard (A/53D) specifying E-AC-3 as the high-efficiency audio coding system to be used for robust mode transmission of E-VSB.

"The enhancements to AC-3 provide improved performance and flexibility, and offer the industry expanded audio capabilities that can be used for broadcast, cable, satellite, DVD and other applications...we are continuing our tradition of developing specifications for high quality digital audio." – Mark Richer, ATSC

ATSC first standardized the AC-3 digital audio system in November of 1994. AC-3 is now widely used in digital television systems around the world. Dolby Laboratories submitted enhanced AC-3 to the ATSC for consideration in response to a Request for Information published in December of 2002. E-AC-3 offers new coding tools that fundamentally improve performance, and new features that allow operation over a wider range of bit-rates and numbers of channels. Of great importance to the industry, E-AC-3 can be converted into AC-3 for playback compatibility on consumer's existing A/V decoders.

The new E-AC-3 Standard (A52B) and other ATSC standards and recommended practices are available on the ATSC web site at: www.atsc.org/standards.html. ■

"E-AC-3 technology will enable future ATSC transmissions to deliver audio more efficiently while maintaining compatibility with the existing installed base of millions of home theaters - that's a win-win for both broadcasters and consumers."
– Craig Todd, Dolby

A view from the top...

ATSC 2005 Annual Meeting

On May 10, Richard Wiley, Wiley Rein and Fielding, and former chairman of the FCC, kicked off the 2005 Annual Meeting with a retrospective of DTV, and the role ATSC has played in its success. Following Mr. Wiley's speech, state of the industry addresses given by Eddie Fritts, President and CEO, NAB; Kyle McSlarrow, President and CEO, NCTA; and Gary Shapiro, President and CEO, CEA, offered a more insightful, provocative glimpse in to the future of DTV. Throughout the day, industry leaders from broadcast, cable, satellite and manufacturing came together in a united forum to shed new light on the future of DTV.

David Donovan, President of the Association for Maximum Service Television, Inc. (MSTV) gave a compelling presentation on the digital transition and the challenges that lay ahead.

Compelling presentations – the digital transition and the consumer challenges ahead, the future of terrestrial broadcasting, and an exciting peek at what's new on the digital home front – were just a few of the topics covered by this years notable speakers and session chairs: David Donovan, MSTV; Nat Ostroff, Sinclair Broadcasting; Peter Smith, NBC; Robert Seidel, CBS; Bob Luff Nielsen Media Research; Tom Campbell, Ken Cranes; Pat Griffis, Microsoft; Jack Perry, Decisionmark; David Felland, WMVS Milwaukee; Tom Creter, WJW Cleveland; Jimmy Goodmon, Capitol Broadcasting; Terry Mackin, Hearst-Argyle; Reynold Hoover, Department of Homeland Defense; Jerry Whitaker, ATSC; Joseph Flaherty, CBS; Glenn Reitmeier, NBC and Wayne Luplow, Zenith.

Bob Rast, Micronas, (right) presents John Henderson, Hitachi with the 2005 Bernard J. Lechner Award at the ATSC Annual Meeting on May 11.

KUDOS

John Henderson, Hitachi (left), received the 2005 Bernard J. Lechner Award for his immeasurable contributions to the T3/S-10 Special Group on Receivers.

"John's ability to bring various industry segments together not only resulted in the publication of the ATSC Receiver Performance Guidelines, but also helped foster a better understanding of the complex technical issues."

– Mark Richer, President, ATSC

Art Allison, NAB, and Ralph Justus, CEA, were also recognized for their outstanding contributions to the ATSC – Allison for his work in the Implementation Subcommittee from 1997-2004; and Justus for his service as T3 Chair from 1998-2004.

The success of this year's meeting would not have been possible without the support of Dolby, Panasonic, Zenith/LG, Decisionmark, Harris, Leitch, Texas Instruments and InFocus. ATSC would like to thank our sponsors, once again, for their generous contributions, and for their ongoing support of the ATSC and its important work. ■

Profile: Patrick Waddell, Harmonic

A veteran of the broadcasting and performing arts industries, Mr. Waddell has over 30 years experience serving a variety of staff and freelance positions with a number of different organizations. A second-generation broadcaster, he has worked with a number of broadcast technologies, including audio production, video engineering, and transmission. He worked as a freelance audio engineer and mixer with several Bay Area recording facilities in addition to doing extensive location recording work.

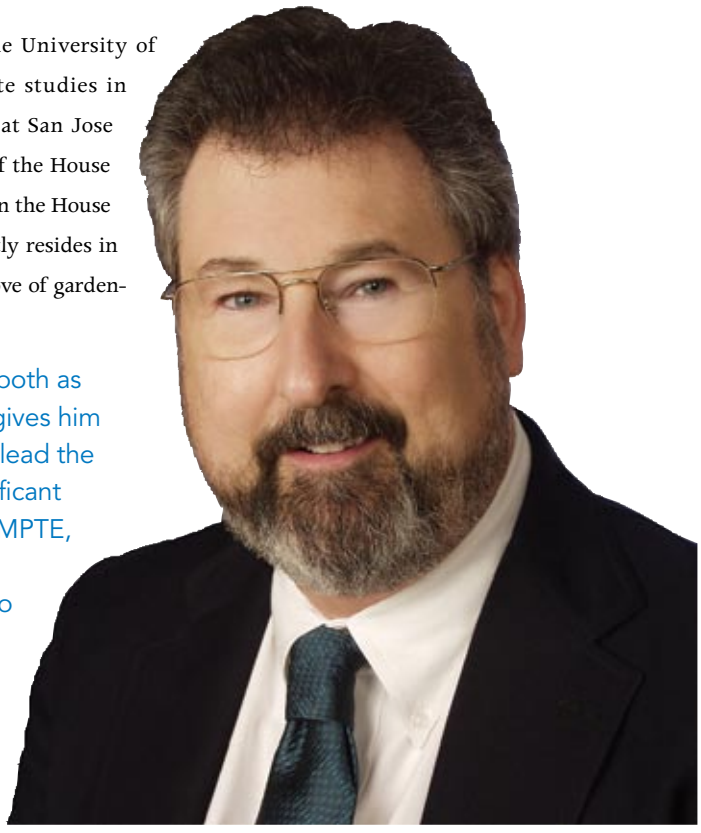
Mr. Waddell joined Harmonic in December 2000 where he is responsible for "cross-platform" technologies (such as audio and DPI), as well as compliance with industry standards and government regulations. He is currently the Technical Marketing Manager for Harmonic Inc., and also serves as Harmonic's primary standards representative to a number of industry standards bodies, including the DVB, SMPTE, SCTE, and the ATSC.

Before joining Harmonic, Mr. Waddell worked at Sony, where he served as the primary North American engineering point of contact for MPEG compression products as well as high-definition signal processing and conversion products. During his tenure at Sony, Waddell also did systems integration design, installation and testing for a number of major Sony customers.

Mr. Waddell has been a regular contributor to the Technology and Standards Group (TSG) S6, the Specialist Group on Audio and Video Coding (TSG/S6), and is currently the chair of the group. Under his direction, the members of S6 develop recommendations for audio and video coding for use in the ATSC digital television system. TSG/S6, as directed by TSG, is charged with investigating and documenting more efficient coding methods, and documenting VC-1 and AVC codec bindings and constraints for the use of Enhanced AC-3 in the ATSC DTV Standard. Additionally, S6 maintains A/54A (Sections 5 and 6), "Guide to the Use of the ATSC Digital Television Standard," as well as several other ATSC Standards documents, including A/52B, "Digital Audio Compression (AC-3) Standard, Rev. B ."

Mr. Waddell earned a BSEE degree from the University of California, Santa Barbara, and did graduate studies in Technical Production for Live Performance at San Jose State University. He serves as a lay member of the House of Deputies of the Episcopal Church, serving on the House of Deputies Committee on Canons. He currently resides in Santa Clara, California where he pursues his love of gardening, and caring for his pond-full of koi. ■

"Pat's experience in video and audio, both as a broadcaster and as a manufacturer, gives him the broad perspective ATSC needs to lead the complex work of TSG/S6. He is a significant contributor not only to ATSC, but to SMPTE, CEA and other standards-developing organizations. ATSC is very fortunate to have him." – Bill Miller, ABC, TSG Chair



2005 Technology and Engineering Emmy Awards

ATSC would like to congratulate our member companies recently honored with an Emmy for their outstanding contributions:

Closed Captioning:
ABC, PBS and CEA

Pioneering Development of Locally Integrated and Branded Content using IP Store and Forward Technology:
Warner Brothers (The WB)

Lens Technology Developments for Solid State Imager Cameras in High Definition Formats:
Angeniux (Thales)

The honors were bestowed at the 57th Annual Technology and Engineering Emmy Awards on September 29 at Bristol Myers Squibb in Princeton, New Jersey.

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The ATSC is an international, non-profit organization developing voluntary standards for digital television. The ATSC has member organizations representing the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries.

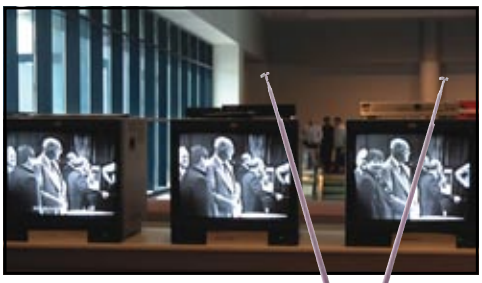
Welcome Wagon

ATSC would like to welcome the following new members to the ATSC team: Intel, Modulation Sciences, SpectraRep, Jampro, Corning Incorporated, EGT, Extensible Formatting Systems, Inc. (XFSI), Terayon, CBC, The Weather Channel, Auvitek, Zentek, Baylor University and Fernando Luis Leite Carreiro (Individual Observer). ATSC eagerly anticipates their contributions to the DTV standards currently being developed in the ATSC, and we know their participation will have an immeasurable effect on the future of digital television. ■

ATSC DTV Hot Spot at NAB2005

Some of the hottest technologies on the DTV horizon were showcased in the ATSC NAB2005 DTV Hot Spot, April 18-21, at the Las Vegas Convention Center. Demonstrations by Harris, Thales, Harmonic, Tri-Vision, ETRI, Zenith/LG, APTS, Aircode and Broadcast Data Corporation included: Advanced Common Application Platform (ACAP); Enhanced VSB (E-VSB); Programming Metadata Communication Protocol (PMCP); Software Data Download Service (SDDS); Equalization Digital On Channel Repeater (EDOCR); and Program and System Information Protocol for Terrestrial Broadcast and Cable (PSIP), the ATSC standard recently mandated by the FCC. ■

An added highlight to the Hot Spot was an impressive collection of vintage cameras and related equipment provided by Chuck Pharis. In a concerted effort with Joel Wilhite and Pat Waddell of Harmonic, the very latest in video technologies (advanced codecs and video servers) were merged with gems of the past (an RCA TK-31 and related CCU gear) to feed black and white images into a Leitch server which coded/decoded the feed, and displayed the images using AVC H.264 and VC-1 codecs.



Low Cost ATSC Receivers Get Great Reception

On September 15, ATSC members, LG, Motorola, Thomson, and Zoran, conducted a demonstration on Capitol Hill of their low-cost, high performance digital receivers. Low cost set-top boxes for use with the large population of existing analog receivers, and new low cost integrated receivers, demonstrated the capability to receive studio-quality, standard definition pictures complete with multicasting capabilities – an important element of the DTV transition. ■

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January 25:	Board Meeting
February 7	PC Meeting
February 8	TSG Meeting
February 21	Board Dinner - Informal
May 9	TSG Meeting/Cocktail Reception
May 10	Annual Meeting - Virginia
May 11	Board Meeting (8-12 PM)
May 11	PC Meeting (1-5 p.m.)
July 12	Board Strategic Planning (p.m.)
July 13	Board Strategic Planning (a.m.)
September 26	PC Meeting
September 27	TSG Meeting
October 11	Board Meeting
December 12	PC Meeting
December 13	TSG Meeting

For more information on all ATSC meetings, visit the ATSC web site at: www.atsc.org/technicalmeetings.html

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