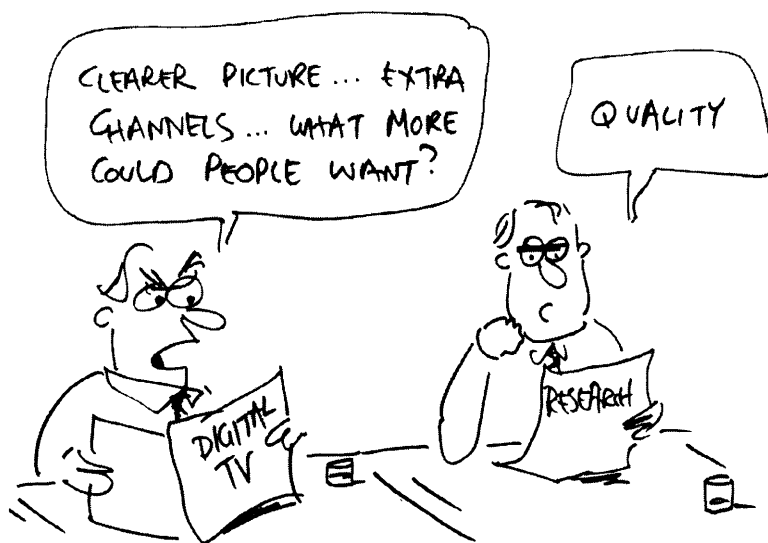




A delegation from the United States of America, Advanced Television Systems Committee (ATSC) recently met with ABA staff to discuss digital television developments in the USA, the ATSC's digital television standard, the ATSC's ongoing work, and the outlook for the immediate future.

## Digital television developments in the USA



A delegation from the United States of America's Advanced Television Systems Committee (ATSC) recently visited Australia to publicise the work of the ATSC, and more particularly, to share the results of that work. Mr Robert Graves, Chairman of ATSC, and Mr Richard Citta, from Zenith Corporation and a member of the Committee, visited the ABA on 22 May.

Their presentation covered the digital television development process in the USA, ATSC's digital television standard, ATSC's ongoing work, and the outlook for the immediate future.

While in Australia, they also met with the Federation of Australian Television Stations (FACTS) engineering group, and the Department of Communications and the Arts Communications Laboratory.

### Advisory Committee on Advanced Television Service

The work of ATSC was foreshadowed by the USA's Federal Communications Commission (FCC) when it created the Advisory Committee on Advanced Television Service in September 1987. This committee was set up to advise the FCC on technical and policy issues regarding advanced television and to recommend a technical standard.

Amongst other matters, the FCC's initial decisions included: achieving full high definition television (HDTV) if possible; encouraging development of an all-digital system; maximising compatibility with non-broadcast media; and limiting initial eligibility for advanced television channels to existing broadcasters.

These decisions provided the framework for the Advisory Committee which initially considered 23 systems, all of which were analog. The first all-digital system was proposed in 1990 and within seven months, three other all-digital systems were proposed.

Between July 1991 and October 1992, the Advisory Committee tested six systems: one enhanced, one analog and four digital. By February 1993, the Committee had decided that there would be no further consideration of analog systems, but that the best elements of each digital system should be merged.

### ATSC

ATSC is made up of more than seventy corporations, associations, research and educational institutions working together to develop standards for the entire range of advanced television

# Innovations

systems. Membership is open to organisations throughout the world.

Several members worked on constructing an advanced television prototype, including:

video encoder	AT&T General Instrument
video decoder	Philips
audio	Dolby
transport	Sarnoff/Thompson
transmission	Zenith

The ATSC documented advanced television specifications as the following standard:

video formats	high definition and standard definition, progressive and interlaced
video compression	MPEG-2
audio compression	Dolby AC-3
packetised data transport	188 bytes per packet
transmission	8-VSB, 16-VSB high data rate mode

For high definition television picture formats, both progressive and interlaced, the ATSC has chosen the following specifications:

1080 x 1920
720 x 1280

For standard definition television picture formats, both progressive and interlaced, the ATSC has chosen the following specifications:

480 x 704
480 x 640

For video formats, all television receivers will be able to decode and display all formats on high definition (HD) and standard definition (SD) displays. This will greatly enhance the capacity for video programs, permitting the following combinations per channel:

Program Type	Programs/Channel
Sports/Action Video	1 HD (or 2-3 SD)
Typical Video	1 HD + 1 SD (or 4 SD)
Movies/Slow Video	2 HD (or 6 SD)

The ATSC conducted objective and subjective quality tests on digital television and testing was also conducted on audio as well as transport and transmission. The advanced television testing included work carried out in independent laboratories such as the Advanced Television Test Center, Cable Labs, Advanced Television Evalu-

ation Laboratory, IBM and Hitachi. Field tests on both VHF and UHF were also conducted.

In recommending the adoption of the ATSC's digital television standard in May 1996, the FCC saw it as providing 'striking improvements to today's pictures and sound' and that it would deliver 'additional services and programs'. Except for the video formats, the ATSC's digital television standard was mandated for the USA in December 1996.

## Implementing the digital television standard

In April 1997, the FCC loaned a second channel to each full-power television broadcaster who would be required to return their analog channel at the end of the transition period in 2006. While a minimum number of hours of HDTV has not been set, services would be required to ensure that there is no reduction in the quantity or resolution of free-to-air television. A rapid implementation schedule has been mandated and this includes provision for a transition period of nine years. Decisions on public interest obligations have been deferred, but a must-carry rule applies to cable. The implementation schedule also carries provision for simulcast requirements in later years.

The FCC's requirements for transition to digital transmission are:

November 1998	24 stations on air (voluntary)
May 1999	40 stations on air (four networks/10 markets)
November 1999	120 stations on air (four networks/30 markets; 53 per cent of viewers would have at least three signals, excluding non-commercial stations)
Within 5 years	All commercial stations
Within 6 years	All non-commercial stations
2006	Transition completed

USA research shows that there is a willingness among consumers to pay for HDTV and that quality is as important as program variety. It is expected that HDTV in the US will have one per cent penetration in less than two years, but that this must be accompanied by rapid broadcaster buildout.

**For more information on the ATSC's work on advanced television, visit their homepage on the Internet at <http://www.atsc.org>**