

SMPTE I23 COMMITTEE ON TELEVISION IMAGE TECHNOLOGY

Dave Bancroft, Chairman



We are now firmly in a multimedia world. People may differ as to the interpretation of this term, but I take it to mean that the images we capture today must be suitable for dissemination in many forms—legacy analog, DTV broadcast, packaged media, conventional and digital cinema—at several levels of scalable resolution. Care taken in the specification of the fundamental parameters of these images, their scanning and colorimetry, for example, will pay off further down the multimedia value chain in ease and economy of conversion and repurposing. I23 welcomes participants in all affected applications.

The SMPTE I23 Committee on Image Technology documents the electronic representation of “conventional” images, which means images for television applications that are in a “baseband” form, i.e., not compressed. Here are some of the things we are up to at the present time; the outcome being SMPTE Standards, Recommended Practices (RPs) or Engineering Guidelines.

Image and Signal Representation

The *Subgroup on Logarithmic Transfer Characteristic* is working on a way to prepare images for transport through existing industry standard SMPTE 292M with a bigger subjective dynamic range. Application will be initially in high-resolution film transfer for television distribution, but results of the work are also being made available to the DC28 Digital Cinema technology committee.

Making 4:3 Images from 16:9 Images: Transition to the wider screens of DTV and HDTV is long and slow due to the enormous installed base of consumer 4:3 receivers. Throughout this period, there is a need for a simple fixed extraction of the center of a widescreen image to service the majority 4:3 viewer. This is separate from more complex schemes to move the extraction dynamically with scene content.

Defining Critical Areas in the Image: A legacy SMPTE RP that defines “safe” areas for action and titles is being revised to accommodate the shift to widescreen; new flat panel display technologies may also have an influence. A related RP is needed to assist manufacturers of standards converters to adopt common practices for up

and downconversion, another much-needed buttress of the DTV transition.

Advanced Television Production

Revision of HD Studio Standards: The SMPTE standard for 1280 x 720 progressive scanning has just been revised and re-approved as SMPTE 296M-2001. The corresponding standard for 1920 x 1080 scanning is in the process of revision.

DVD Mastering: This subgroup is working on RPs for a Cutting Master format, on requirements for correct encoding to support progressive scan display of DVDs, and for emulation and verification in DVD quality control.

Telecine Practices

This is a very specialized subgroup activity. In the recent past, it has standardized the sensing areas to be set in telecines to achieve consistent scanning of the multitudinous different film gauges and formats, with a substantial update being needed, again to accommodate the transition to 16:9 widescreen television display. More recently, we have documented a new digital equivalent of legacy practice for embedding crucial film transfer information into the resulting video signal.

Test Materials

Test materials can be both objective, e.g., color bars, or subjective, e.g., real image sequences. Television production systems need both, the former for calibration purposes and determination of readily measurable parameters, the latter for visual comparison of processes that are difficult to measure objectively or numerically, such as compression algorithms. In the former case, we have just begun work on a new color bar signal, adapting the existing SMPTE EG-1 format to 16:9 and digital, while re-affirming the existing EG-1 as a vital legacy standard for many years to come.

In the latter case, a very comprehensive program to develop real world image test sequences suitable for evaluating compression systems is close to completion in SDTV formats. This means that SMPTE video evaluation tapes will soon become available from SMPTE headquarters in much the same way as the familiar SMPTE test films. The program is now also switching into its second phase, which is to do the same in HDTV.