

Peter D. Symes

Before starting to write this message I read again Bill Miller's last message as Engineering Vice-President, published in the *Journal* in October of last year. That may have been a mistake; Bill was in this position for almost six years, and a great deal of his work—such as SMPTE's Sector membership of ITU—came to fruition in 2001. Bill is a hard act to follow, and after just nine weeks in office I do not have a list of similar achievements to report.

So, I will focus on one particular topic that represents a significant part of the Society's ongoing engineering activities—Digital Cinema standardization. This project started in 1999 with a Study Group. Last year, following publication of a voluminous report, the group was restructured into the DC28 Technology Committee with a number of Working Groups, to start the process of drafting standards documents. This work is led by Tom Scott, the Engineering Director for Film, and Curt Behlmer, Chair of DC28. A distinguished roster of Working Group Chairs represents many of the principal businesses and personalities involved in movie production, distribution, and presentation.

Digital Cinema promises to be one of the most fascinating areas of technological innovation in this first decade of the new millennium. Film has been with us for about 100 years, and during this time we have seen substantial improvements, but no real fundamental change in the technology. A cinematographer from the early 20th century would be amazed at the variety and quality of the lenses in use today, at the resolution and latitude of the film stocks, the speed of manufacture of release prints, the quality of theater images and sound, and at every aspect of a 2002 feature film. But, very little would be incomprehensible. Every step in the process has improved enormously, perhaps unimaginably, but the steps and most of the fundamental technologies remain the same.

Digital Cinema Technology

Contrast this with the embryonic technologies of Digital Cinema we see today. Even if we ignore the complexities of possible electronic acquisition, the delivery of a D-Cinema feature to its audience uses processes quite alien to film-based technologies. Multi-terabyte compressed files are delivered by DVD, or by satellite, or perhaps by ATM networks, to disk-based video servers. Playout via high-speed encrypted links to electronic projectors using, for example, microscopic mirrors vibrating at seemingly impossible speeds . . . every element is new, fundamentally different from what came before, and evolving rapidly.

There is discussion, sometimes heated argument, on every facet of D-Cinema, involving people from different professions with little common language. Cinematographers, for example, have evolved a craft and art form closely linked to the characteristics of the film they use. Digital techniques may be acceptable, but only if they make no perceivable change to the "look" intended by the cinematographer. Sometimes this causes confusion. For example, electronic noise added to the images is quite unacceptable, but the film grain is regarded as an essential part of the "look" and its appearance must not be disturbed.

SMPTE Involvement

Within SMPTE there is a great deal of work to be done. We must provide the forum for the cinema experts to define the system they



need, and we must do this without imposing pre-conceived answers derived from the world of television. At the same time we need to ensure that the technologies and expertise developed in television engineering are available as part of the D-Cinema solutions. For example, much work has been completed in recent years on metadata and file formats. Sometimes existing solutions may need to be adapted to meet the needs of D-Cinema, but no one is served by creating new incompatible solutions to problems that have already been solved.

We must not assume that SMPTE alone can provide all the answers. Many organizations have require-

ments and technologies that should be part of an overall system. SMPTE has already established liaison with MPEG, and is seeking solutions for compression and digital rights management from the work of this organization. Other standards organizations are also involved: ISO, IEC, and ITU all have a role to play.

Nor must the SMPTE activities be too Hollywood-centric! Most of the DC28 meetings take place in the Hollywood area, because that is where many of the experts are to be found. But there is a real need to expand our horizons and to ensure that we take advantage of all available expertise, no matter where located. As part of this process, we hope to hold a DC28 meeting in Europe later this year. SMPTE has already established an excellent dialog with the European Digital Cinema Forum (EDCF), and several DC28 participants attended the recent EDCF conference in Rome. EDCF and other international organizations will be represented in the NAB digital cinema event discussed below.

SMPTE Mini-Conference at NAB

There is widespread interest in all aspects of Digital Cinema, and a two-day Super Session will be held on the subject at the NAB conference in Las Vegas on April 6-7, 2002. This mini-conference is being organized by SMPTE, in conjunction with NAB and *Digital Cinema Magazine*.

The first day's program (Saturday) is being organized by SMPTE Editorial Vice-President Edward Hobson and is in two main parts. The morning will provide tutorials on aspects of D-Cinema technology, and an overview and status report on the work of DC28 and its subgroups. The speakers are the experts who will make Digital Cinema into a viable technology—this is not to be missed! The afternoon session will examine some of the complexity of the techno-political and business issues surrounding Digital Cinema, including the roles of the various standards organizations. Distinguished speakers from many parts of the world and from many aspects of business will present their views and concerns.

On the Second day (Sunday) Brian McKernan, editor of *Digital Cinema Magazine*, will introduce a variety of speakers representing artistic and business interests.

Digital Cinema is the greatest challenge to face SMPTE for many years. We need to encourage innovation in an area of new technologies and complex businesses. We need to understand all of the impacts of starting to replace a 100-year-old technology. Above all, we need to foster a new era of understanding, cooperation, and mutual aid between the traditional film and television sectors of our Society.

GRASS VALLY GROUP AD



595 W. Hartsdale Avenue, White Plains, NY 10607-1824
 Telephone: (914) 761-1100 • FAX: (914) 761-3115

E-Mail Addresses • General: smpete@smpete.org • **Administration:** execdir@smpete.org • **Editorial:** journal@smpete.org •
Engineering: eng@smpete.org • **Marketing:** mktg@smpete.org • **Accounting:** acct@smpete.org • **Membership:** member@smpete.org
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