THE NATIONAL ASSOCIATION
OF THEATRE OWNERS

May 29, 2008

Letter on Access in Digital Cinema

To Our Partners in the Movie Distribution and Equipment Vendor Communities:

The need to provide greater access to motion pictures for our deaf and hard of hearing patrons, as well as the blind and visually impaired, is very important to the exhibition industry. The transition to digital cinema must provide greater access than that possible with today's film systems. We provide this status report to encourage support of this goal.

As the industry moves forward to improve access in digital cinema, special consideration must be given to **closed captions** in digital distribution and playout. Digital cinema is the enabler for a new generation of closed caption solutions that allow select patrons to privately observe captions without impacting the movie-going experience for others.

Overall, much progress has been made. Below we highlight the on-going work in this area. Note that on the following page we also provide more technical details of this work.

Access Audio

Access audio is defined as Hearing Impaired (HI) and Visually Impaired Narrative (VI-N) sound tracks. As the names of these sound tracks suggest, they are intended as supplemental audio for the hard of hearing in the case of the Hearing Impaired track, and narrative audio for the blind and visually impaired in the case of the Visually Impaired Narrative track. When DCI-mandated improvements are implemented in digital systems by early 2009, three standard audio formats will be supported, each format supporting HI and VI-N access audio. At that time, the access audio tracks should be supplied in all digital distributions.

Closed Captions

To enable closed captions in digital cinema, NATO is working inside SMPTE to produce a uniform standard distribution format for digital cinema captions. In addition, we are working toward a standard interface for the digital cinema player so that any 3rd party closed caption system can simply plug in without modification. The goal is to incorporate these new standards in digital cinema systems by early 2009, along with the DCI-mandated improvements currently scheduled.

3-D Captions

As the popularity of 3-D content grows, the need for 3-D captions becomes apparent. Such captions must be given depth to match that of the primary images of the picture, thereby reducing eye strain. We note that no standards work is now in process for enabling 3-D captions.

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This on-going work is coordinated for NATO within SMPTE by NATO consultant Michael Karagosian. Please contact the NATO office or Michael if further information is needed.

Best regards,

John Fithian

Attached: NATO Memorandum on *Technical Information Regarding Access Audio and Captions*

NATO Memorandum May 29, 2008

Technical Information Regarding Access Audio and Captions in D-Cinema

Michael Karagosian

This memo outlines the on-going work in SMPTE for Access Audio and Closed Caption distribution in digital cinema.

Access Audio

Proposed SMPTE 429-2 DCP Constraints specifies three sound formats (tables A.1, A.2, and A.3) for digital cinema distribution. All SMPTE-specified sound formats include channels for Hearing Impaired (HI) and Visually Impaired Narrative (VI-N) audio.

To the manufacturers of digital cinema servers: please note that the physical output to be used for HI and VI-N channels is NOT specified in SMPTE 429-2. For all audio formats, including future labeled-audio formats, it is *strongly recommended* that HI and VI-N channels be directed, respectively, to either physical outputs 7 and 8, or 15 and 16.

Closed Caption Distribution

Proposed SMPTE 428-10 Closed Caption and Closed Subtitle specifies the constraints to be applied to SMPTE 429-7 Subtitle when mastering timed text for closed displays. For distribution, the Closed Caption is wrapped using SMPTE 429-5 Timed Text Track File. SMPTE 429-12 also specifies the Composition Playlist extensions to properly identify Closed Captions to the playout system.

Notes:

1) To support the multiple language capability of the emerging generation of Closed Caption devices, multiple Closed Caption track files, each in a different language, may be included in a single Composition.
2) Proposed SMPTE 429-12 also specifies the Composition Playlist (CPL) MainCaption extension to properly identify Open Captions to the playout system. The Open Caption is mastered using SMPTE 428-7 Subtitle, with or without the constraints specified in SMPTE 428-10, and wrapped for distribution using SMPTE 429-5 Timed Text Track File.

Closed Caption Device Support

All Closed Caption devices, including Rear Window and the emerging generation of Closed Caption devices, will be driven by a standardized interface at the digital cinema server. This work is in progress within the SMPTE DC28.30 Closed Captions Ad Hoc Group.