

## ISDCF Chairman's Status Report - June 2013 Jerry Pierce

This is a once-in-a-while summary of critical issues being discussed at ISDCF. This is not a substitute for meeting minutes and only presents the highlights from my perspective. These are my opinions and not a position of the committee. I hope this helps us focus on the big stuff and not get lost in the details. Although this time there seems to be lots of details.

It has been a while since the last Chairman update. Lots of little things happening and they are adding up to big things. Please let me know if I missed something...

### 1) SMPTE-DCP

We are getting close to being able to release in SMPTE-DCP in addition to Interop-DCP. All movies with ATMOS audio are in SMPTE-DCP right now, but that is limited to Dolby servers at this time.

The two issues remaining for SMPTE-DCP are subtitle synchronization and audio routing. The last plug-fest (June 3 / 4, 2013) was very encouraging. It appears that the hardware/firmware is capable for successful SMPTE-DCP playback, with some important caveats-

- Have all DLP projectors been updated to the latest revision of firmware?
- Will series 1 projectors work for SMPTE subtitles?
- Is fully automatic audio routing implemented in the latest revision of server software?
- Have all servers been upgraded to the latest software release?

The plug-fest gave us a set of test material that will help confirm the readiness of field systems. (Discussed below). The plug-fest also gave concern that not all systems are ready.

*The role of the plug-fest* – the plug-fest is a good venue to help manufacturers to test their systems, but it is not compliance testing. There is no definitive answer for playback based on the plug-fest—it is not designed to “test” or “certify”. It’s designed to give feedback to manufacturers. It is very valuable, but not definitive.

In particular, DLP series 1 have not really been tested for SMPTE subtitles. Some systems did not properly output SMPTE subtitles, even for IMB-based systems. (The manufacture recognizes the problem, and will fix soon.) Audio routing was not automatic in all cases—but the hardware seemed to be capable of routing.

The next step is to test *in the field*: 1) audio routing and 2) subtitle demonstration. If these two tests work, then we believe the theater is ready for SMPTE-DCP. Here are the two tests:

1. A single show playlist that plays:
  - A. Interop-DCP audio
  - B. SMPTE-DCP audio 5.1+ HI/VI
  - C. SMPTE-DCP audio 7.1+ HI/VI

A theater gets these 3 DCP/CPL's and builds a show playlist. (Ideally to play back in a 7.1 theater with one headphone set on HI and another headphone set on VI). You play these and listen to make sure the sounds comes out at the right places.

2. A single show playlist that plays:
  - A. SMPTE–DCP subtitle timing test 1
  - B. Interop–DCP subtitle timing test 2
  - C. SMPTE–DCP subtitle timing test 3

The theater should have closed captions on and all three should have subtitles playing on screen and closed captions in matching time on all three renderings (top of screen, bottom of screen, and close captions.)

Right now we don't have all the test pieces prepared—the plan is to get an easy to understand set, provide on both download and a trailer delivery platform. We will have a video of the installation and proper playback so exhibitors can run the tests themselves.

The next major delivery anticipated to be SMPTE DCP will be *The Hobbit II* in December 2013.

More to come...

## 2) Frame Rates

Current systems have been almost exclusively in 2D24 and 3D24. The DCI specification mandates both 2D24 and 2D48 (the 2D48 is used for 3D24). The notable exception has been *The Hobbit I* in 3D48.

SMPTE has published a specification for additional frame rates in 2009 (ST428-11-2009), which was confirmed by ISO in 2011. Although not a requirement of DCI, some or all of these may become a requirement in other regions. Some of these additional speeds (60 fps) have recently also been recommended by DCI. SMPTE/ISO includes:

2D24@2K (250Mb/sec), 2D24@4K (250Mb/sec), 2D25@2K (250Mb/sec), 2D25@4K (250Mb/sec), 2D30@2K (250Mb/sec), 2D30@4K (250Mb/sec), 2D50@2K (250Mb/sec), 2D60@2K (250Mb/sec), 3D24@2K (250Mb/sec), 3D25@2K (250Mb/sec), 3D30@2K (250Mb/sec)

Additionally SMPTE has almost completed a new amendment to this standard, adding:

3D48@2K (500Mb/sec), 3D50@2K (500Mb/sec), 3D60@2K (500Mb/sec)

For the June plug-fest Mike Radford created a great set of 10 second test clips at all of these frame rates. It pushed the maximum video bit rate, maximum audio bit rate, encrypted, and with subtitles. It is a great set of test material. The results were actually very good and encouraging, but, of course, not perfect.

The most challenging issue was shifting between formats, especially between 2K and 4K material. Getting the projector in the right mode seemed to be the issue, including the right 3-D playback mode was also a problem.

While most systems played back the subtitles, there were timing issues for the subtitles at some of the new frame rates—the subtitles played too fast. The manufacturers with this problem felt it would be an easy software fix.

### 3) 3D Subtitles

Subtitling 3-D movies has been a problem. Since the subtitles need to be in “Z” space, current automatic subtitling does not work, so distributors need to burn in subtitles in each language—very costly and creates many more versions. For some regions it may be cost prohibitive.

SMPTE is near completion of the specification for generation of Z space subtitles in the server/projector. Deluxe/ISDCF has created a short test video to exercise 3-D subtitles.

Good progress was shown, with the DLP series 2 projectors and one in-server rendering solution working well. Series 1 DLP’s must rely on in-server 3D rendering and one projector/server configuration is not capable of 3-D rendering. This will constrain the wide use of 3-D subtitle rendering.

### 4) Markers

Most theaters use an automation queue to bring house lights up at the end of the movie to allow safe exit for patrons. This queue is sometimes at the first frame of credits and sometimes at the first frame of moving credits. Today this information is transmitted to the theater on a piece of paper with a timecode, the goal is to include the information in the CPL with a marker for automatic automation control.

A new piece of content (“Sintel” an open movie project released under the Creative Commons Attribution license) was provided by Fox that included all markers. All systems played the CPL without problems, many of the systems could read the markers and did drive a response. We encourage mastering houses to include at least the marker for beginning of credits and beginning of moving credits to future CPLs.

### 5) HI (hearing impaired audio) Track Generation

We continue to have a problem with having all content (trailers in particular) including an audio track for the hearing impaired (HI Track). Most HI tracks have the dialog up and the music/effects down a bit. The old way to generate this track was directly from the theater audio processor, which generated a mono track with the center channel volume up. But now many digital cinema systems can only use the prepared HI track, removing the option of a track generated locally for content that doesn’t include an HI track. Bottom line, **WE NEED TO HAVE ALL CONTENT INCLUDE A HI TRACK!!**

The options for the theater owner are:

- Solution 1 - Use the proper HI track for all content (trailers and features)
- Solution 2 - Allow some silent content (trailers - and confusion for the patrons)

Solution 3 - Generate in-theater based on 5.1/7.1 formula (that won't work with some next generation headphone solutions unless solution 5 is implemented)

Solution 4 - Use Center Channel only

Solution 5 - Use digital mixer to replicate solution 3

The nudge is to have mastering houses include an automatic HI track if there is not a custom HI track. The formula that might work is: The center track is +6 dB with respect to the left and right channel (mix formula left -6 dB, right -6 dB, center at 0 dB). A peak limiter is used at -14dBFS and a compressor at 2.5:1 as well to limit peaks and heighten dialog (based on a formula provided by Universal).

Some theater owners, by necessity, are using the center channel only, which is not a good solution at all.

## **6) TKR - Theater Key Retrieval**

There is continued interest in automating the delivery of KDMs to theaters. Some larger theater chains have implemented a VPN connection to the KDM providers and internally distribute the KDMs to each theater/screen. But TKR can work for all theaters - a one-plex or a full theater chain.

It is a chicken and egg issue. We need three things to happen to get TKR working:

- Studios/Distributors to post KDM and encode CPL's with TKR procedures
- Server/theater manager vendors to implement TKR in servers and TMS (or NOC)
- Exhibition works with their internal IT to open a port/path to retrieve the KDMs.

I hope this can move forward...

## **7) Composition Metadata Guidelines (Naming Convention)**

A revision to the naming convention has been prepared. The new version has posted to the Naming Convention web site <[www.digitalcinemanamingconvention.com](http://www.digitalcinemanamingconvention.com)>. Good stuff, although it is a band-aid to a band-aid. The RIGHT way to do naming is in metadata and an ad hoc group in SMPTE will be working to move that forward.

## **8) Immersive sound**

Dolby and Barco continue to roll out their incompatible immersive sound solutions to theaters. Movies are being released in one or both of these formats. There is some activity progressing for an open standard solution, but it has not been presented to ISDCF or SMPTE as of today.

All for now...

Jerry  
Chairman ISDCF