

# **HDTV and Hollywood**

## **Notes for ATSC Keynote**

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### **HDTV can mean two things**

**Television (Proper to call HDTV)**

**Movies (Not proper to call HDTV)**

**Great interest in using digital HD equipment in movie-related applications**

**Would like to have other equipment, but that's the best that is available**

**An example is RGB rather than YUV, or 2048 rather than 1920**

**I will speak about both applications**

**I will be speaking about production and post production, not broadcasting**

### **HDTV Television Applications**

**One application is shoot a TV show in film**

**Transfer the film to HD**

**Do post production in HD**

**Then downconvert for NTSC**

**Yes, you have a show you can broadcast in HD, but we all know many more people see it in SD**

**Shoot a TV show with 60i HD**

**Post production in HD**

**Not very much done this way**

**Shoot a TV show with 24p HD**

**This is happening, much more so than shooting a TV show with 60i HD**

**Post production in HD**

**The in thing to do today**

### **Why is 24p so popular**

**Old days (pre 1980)**

**Shoot with 35mm film**

**Cut film to make the show**

**Transfer the cut film to any TV standard**

## **Newer way (since early 1980s)**

- Shoot with 35mm film**
- Transfer dailies to NTSC**
- Post production in NTSC**
- Standards convert for PAL**
- Not a good international product**

## **Modern way**

- Shoot with 35mm film**
- Transfer dailies to 24p HD**
- Post production at 24p HD**
- Downconvert adding 3:2 for NTSC**
- Downconvert offspeed for PAL**
- Sort of electronic equivalent to cutting high resolution film and getting an international product**
- Of course you can shoot with a digital 24p camera instead of shooting 35mm**
- Then you don't have to transfer dailies**

## **HDTV Movie Applications**

### **Most obvious application is to transfer movies to HD**

- Most movies are transferred at 60i with 3:2 pulldown**
- In many ways this becomes a digital master**
- I will talk in more detail about a “digital master” later**
- Downconvert the HD master to NTSC**
- Drop fifth field, downconvert to offspeed PAL**
- Sony Pictures has transferred about 700 movies to HD**
- Virtually all Columbia Tristar DVDs came from HD masters**
- Comment on 60i really being 24p**
- Example is transfer on Spirit, progressive line transfer, read out frame store with 3:2 pulldown**
- To get 24p you only need to remove the redundant fifth field**
- Movies transferred at 60i with proper 3:2 are the same as 24p**

## **Another application is to shoot movies in HD**

**Most have been shot at 60i, not a big number**

**Transferred to film for theatrical exhibition**

**HD Center has a proprietary technique to convert the 60i to 24 frames**

**Another method is to drop fifth field, combining remaining pairs of fields as film frames**

**Has disturbing motion artifact at 1/12 second**

## **Filmmakers are just beginning to shoot with 24p**

**Big names are associated with shooting 24p**

**For example, George Lucas, Jim Cameron**

**Most notable film so far is “Star Wars II”**

**Post production done with computers at ILM**

**Two upcoming movies from Director Robert Rodriguez**

**“Spy Kids II” for Miramax and “Desperado II” for Columbia**

**Post production for both will be traditional offline followed by online in 24p HD**

## **Digital data will be used to print film with laser printer**

**Likely both will have digital cinema release as well as film release**

**Home video versions may come directly from 24p master, or may come from transfer of film**

## **Digital Cinema**

**Digital cinema, for most of us, means digital exhibition**

**It is not an issue of whether it is shot on film or shot digital**

**Lots of discussions on standards**

**What’s happening today is projection in 30 some theatres around the world**

**Play from QuBit server using fractal compression**

**Movie is about 60-70 GB including the six channel uncompressed sound**

**Distribution to theatre with DVD-Rom**

**Has been some distribution via satellite by Boeing**

**Some distribution with Exabyte tape**

**Projector uses TI DPL at 1280x1024**

**Flat movie (1.85:1 aspect ratio) uses 1.5x anamorphic lens**

**Scope movie (2.4:1 aspect ratio) uses 1.9x anamorphic lens**

**Separate color correction pass because of different colorimetry and black levels**

**Everybody wants higher resolution**

**Debates on how much higher it must be**

**Where are digital cinemas <http://www.dlp.com/dlp/cinema/where.asp>**

## **Digital Master**

**Several different uses for movie**

**Film exhibition**

**Digital exhibition**

**Film printed from digital version**

**“O Brother Where Art Thou” and “Pleasantville”**

**HD broadcasting**

**SD broadcasting**

**Cable**

**DVD**

**VHS**

**Desirable to have all versions come from one digital master**

**May have to do different color correction passes (CRT, DLP, film, etc.)**

**Would like to minimize different passes**

**If movie is shot with film, we want a high resolution digital master representing the film**

**If shot with digital camera, that is the master**

**Do color correction to have a master**

**If printing film from digital, that would be done first**

**Do trims for other needed versions**

## **Summary**

**Key points have been that there are two distinct applications of HD in Hollywood**

**For Television**

**For Movies**

**In television, the techniques are, more or less, same as in the past, just using newer equipment**

**For movies, though, new things are happening, movies will be made and shown differently**