



# **Standards Development & the SMPTE Role**

## **Policy, Procedure, Patents, & Procrastination**

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(16 days, 1 hour 30 minutes & counting)



# **What is a Standards Development Organization?**

- **Generally an organization with rules for membership and procedure**
- **Clearly defined scope**
- **Venue for those who wish to work together**
- **Should be seen to be “fair” and consistent**
- **Can shield from anti-trust accusations**
- **Seen as relevant and trustworthy by its customers**



# Organization's Roles

- **Manage the daily workflow of the committees**
- **Manage the output of the committees**
- **Publish what needs to be published**
- **Keep private what needs to be kept private**
- **Uphold the organization processes and rules**



# **Committee Member's Roles**

- **Participation in the group, active or passive**
- **Expertise**
- **Receptiveness**
- **Represent views of sponsor**
- **Effective, open communication**



# **Supporter's Roles & Expectations**

- **Contribute: financially, IP, workforce**
- **Looking for return on investment**
- **Looking for equal opportunity to contribute**
- **Looking for equal access to the review process**



# **Consumer's Expectations**

- **Looking for relevance**
- **Looking for real standards**
- **Looking for guidance**
- **Looking for channels to the experts**



# Comparing Technical Orgs

**Formal**

Operates under detailed and strict policies and procedures

ISO

ANSI

IEEE

W3C

SMPTE

OASIS

TCG

OMA

DMTF

**Inclusive**

Operates transparently & encourages wide participation and public, global input

**Exclusive**

Excludes or limits participation either explicitly (e.g. by invitation only) or implicitly (high cost of membership or rights dependent upon level of membership).

DLNA

PCI

Open  
Source  
Projects

**Informal**

Operates loosely without formal policies and procedures



# **The Changing Field for Standards**

## **The Role of Patents**





# What is a Patent?

- **A recognition by a government that you have invented something useful, novel, and non-obvious**
- **Requires disclosure of invention and preferred embodiment**
- **Grants the right to control use of the invention for some period**



# **What is the Value of a Patent?**

- **Provides the opportunity for protection of R&D investment through exclusivity or licensing**



# **The Traditional Approach**

- **Restrain competition or charge royalties to those who use the invention**



# **The New Approach**

- **Get your IP into a Standard, then charge royalties to everyone**



# The Patent Pool

- **Licensing by multiple patent holders to many licensees is complex, time consuming and expensive (and usually inconsistent)**
- **Pool concept approved by DoJ for MPEG-2**
- **Patents examined for “essentiality”**
- **One license for all essential patents**
- **Patent holders collect according to number of patents**



## **MPEG-2**

- **Initially \$4.00 for each encoder, decoder, & transport interface**
- **Reduced to \$2.50 per**
- **Reasonable (=widely accepted) rates; lots of money for the patent holders**
- **Estimated 400M decoders shipped in 2004 (circa \$1B in royalties)**



# MPEG-4

- **Original video codec (part 2) ~15% better than MPEG-2**
- **New royalty structure with usage fees**
- **Not compelling**
- **Little money for patent holders**



## **MPEG-4 (Continued)**

- **New codec (part 10, AVC, H.264) circa 2x improvement over MPEG-2**
- **Same problem with early license proposals**
- **Terms now more acceptable – looks like another commercial success**





## **Conduct & Standards Bodies**

- **Disputes in USA over undisclosed IP**
- **Suggested that a company encouraged adoption of a technology without disclosing patents**
- **Following standardization, company now wants royalties**
- **All SDOs looking at patent policies!**



## **Where Does SMPTE Fit?**

- **Traditionally little involvement with patents**
- **Like most SDOs, SMPTE requires that essential IP be disclosed, and that a RAND statement be made**
- **Most SMPTE Standards have been free of royalty-bearing IP**
- **This is changing!**



## Some Changes

- **Various companies declared IP needed for MXF – but no royalty demands to date**
- **Various companies have IP claimed to be essential to VC-1 (patent pool under negotiation)**
- **DCI chose JPEG2000 partly because it is believed to be royalty-free**
- **But, one company has declared numerous patents said to be essential to proposed SMPTE Standards for D-Cinema**



## On the One Hand . . .

- More work for SDOs
- SDOs need to be careful to have adequate rules, and to enforce consistently
- Participating members need to be really careful
- Look out for licensing terms!
- No more free lunch!



## **On the Other Hand . . .**

- **Participation in SDOs is expensive**
- **If companies contribute inventions to Standards, they need to be compensated**
- **Need for Standards to be current technology**
- **So, live with it!**



## **How important is this really?**

- **“Rembrandts in the attic”**
- **Patents that apply to new markets or product lines may bring unexpected wealth to a company**
- **Some companies stock value increased more than one hundred times following important licenses or court decisions!**



# **Is SMPTE Still Relevant?**

**A snapshot of some ongoing work**



## **Connectivity beyond 1.5Gb/s**

- **Requirements for 1080p50/60 and D-Cinema**
- **Proposals include:**
  - **Mezzanine compression for 3Gb/s over 1.5Gb/s link**
  - **3Gb/s SDI on coax**
  - **10Gb/s fiber with multiple 1.5Gb/s partitions**
  - **10Gb/s fiber using UDP**





# **New Compression Schemes**

- **VC-1 work just finishing**
- **VC-2 will be mezzanine compression for 3Gb/s over 1.5Gb/s**
- **VC-3 will (probably) be Avid DNxHD**
- **Studio constraints for MPEG AVC**



# Recording Technology

- **D-9 just completing**
- **Recording Media Storage Card and Interface for Tapeless Acquisition Systems (P2)**
- **Standards for optical recording**
- **Discussion of holographic recording**



# **File Format & Metadata**

- **Fine tuning of MXF to improve interoperability**
- **New mappings within MXF**
- **VBI & ANC data in MXF**
- **Metadata coding, MXF  $\leftrightarrow$  XML**
- **Metadata dictionary online access**
- **AAF Object Model**



# Lip Sync

**Attempting to address end-to-end problem**

- **Study Group chaired by Graham Jones**
- **Not all in SMPTE's "court" – requires liaison with other organizations**
- **Need for verification at multiple points**
- **Lots of input!**
- **Chaired by Graham Jones, NAB**

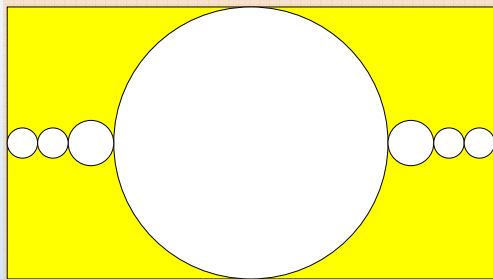


# Active Format Descriptor

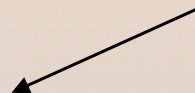
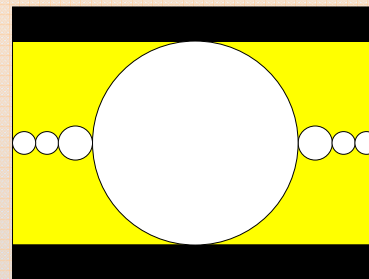
- When did you see a 16x9 screen displaying the correct aspect ratio?
- Basketballs  $\leftrightarrow$  Footballs!
- Again, need an end-to-end solution
- SMPTE / ATSC / CEA cooperation
- AFD exists in transmission path
- Need studio metadata & carriage mechanism to feed AFD



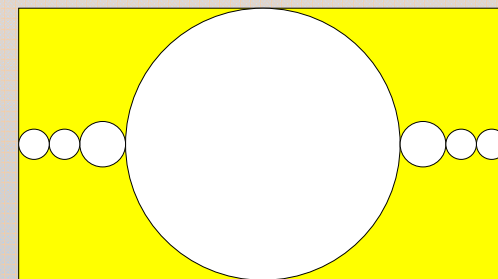
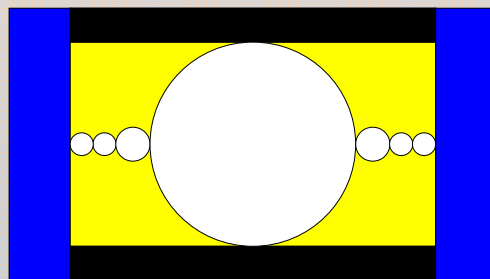
16:9 AFD=8



4:3 AFD=10



16:9 AFD=10



Without AFD a  
Postage Stamp image  
can be a result

With AFD

Stephen Scott



# What is Happening?

- **Another group chaired by Graham!**
- **Standard in Preparation in 3 parts**
  - **Format for Active Format Description, Bar Data, and Pan-Scan Information**
  - **Vertical Ancillary Data Mapping of Active Format Description and Bar Data**
  - **Vertical Ancillary Data Mapping of Pan-Scan Information**



## **And More**

- **Displays – impact of new types**
- **Traffic to automation interface**
- **Captioning data**
- **Dolby metadata**
- **New timing reference signals**
- **A “digital” time code**
- **ExCCI**





**Oh Yes!**

- **We do film and D-Cinema too!**



# **We Need Support**

- **Declining workforce = fewer individual members**
- **More burden on corporate sponsors**
- **Smaller engineering staffs = less participation from user organizations**
- **Some user organizations (e.g. NAB) provide expertise and user perspective**
- **Even small organizations can help**
- **Encourage (pay for?) staff memberships**
- **Sustaining membership starts at \$750/year**



**Thank you!**