

Inter-Society Digital Cinema Forum (ISDCF)

Digital Cinema Primer

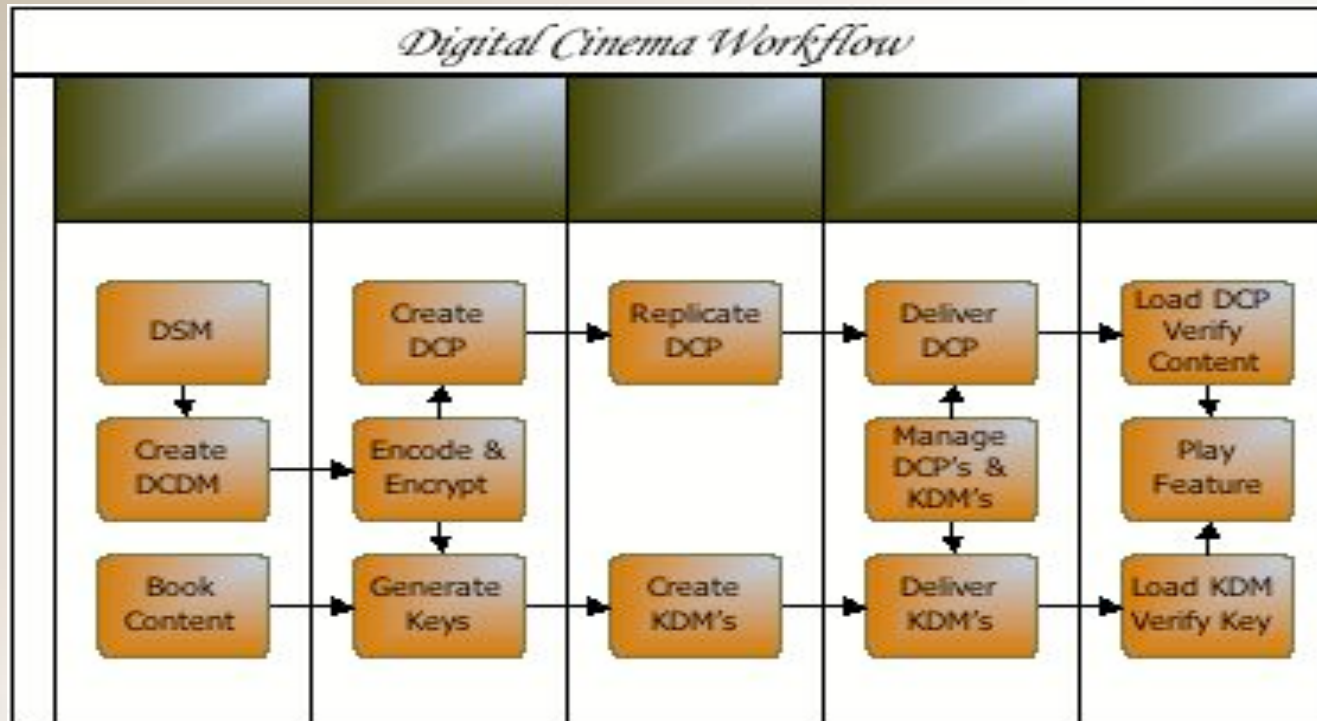
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Prepared by:

Joe Hart, Jim Smith, Walt Ordway and Don Tannenbaum



Digital Cinema Workflow



Digital Cinema Acronyms

DSM – Digital Source Master

DCDM – Digital Cinema Distribution Master

JPEG – Joint Photographic Experts Group

CPL – Composition Playlist

AES – Advanced Encryption Standard

DCP – Digital Cinema Package

KDM – Key Delivery Message

TDL – Trusted Device List

SPL – Show Playlist



Digital Cinema Terminology

DSM – Digital Source Master



The Digital Source Master is created in post production and can be used to convert into a Digital Cinema Distribution Master (DCDM). The DSM can also be used to convert to a film duplication master, a home video master, and/or a master for archival purposes.

DSM

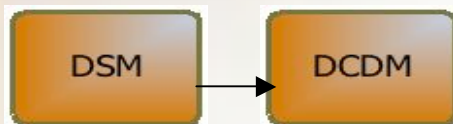


Digital Cinema Terminology

DCDM – Digital Cinema Distribution Master

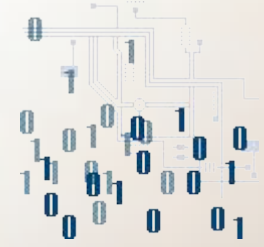
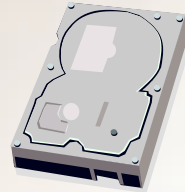


A master set of files that have not been compressed, encrypted, or packaged for Digital Cinema distribution. The DCDM contains all of the elements required to provide a Digital Cinema presentation.



Digital Cinema Terminology

Encode (Compression)



In order for the digital cinema file to be a manageable size, it is compressed. A typical uncompressed feature can be approximately 2 Terabytes (TB) in size. After the compression process, those files may range between 150-250 Gigabytes (GB). This size file, while still large, is more easily delivered.



Digital Cinema Terminology

JPEG2000 - Joint Photographic Experts Group

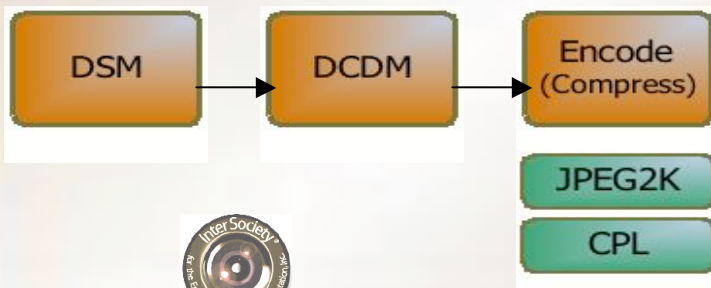
JPEG is the international body that developed JPEG 2000. JPEG2K is the approved compression standard in the DCI specification.



Digital Cinema Terminology

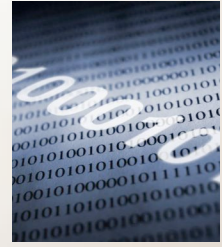
CPL – Composition Playlist

A Composition Playlist consists of all of the essence and metadata required for a single presentation of a feature, trailer, advertisement, or logo. A single CPL contains all of the information on how the files are to be played, at the time of a presentation. There is a separate CPL for each version of a motion picture/feature (composition).



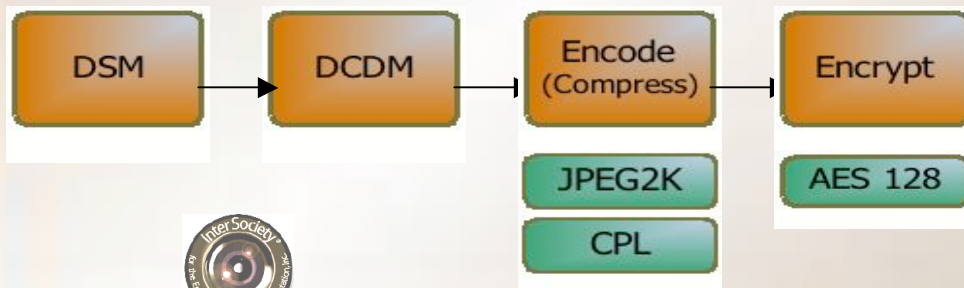
Title	Type	Image Format
Version	Rating	Aspect Ratio
Language	Country	Audio Format

Digital Cinema Terminology



Encryption

During the encoding process files must be encrypted to allow for secure transport of feature content. DCI adopted the AES (Advanced Encryption Standard) 128 bit encryption. AES 128 is the standard approved for U.S. government information classified to the SECRET level.

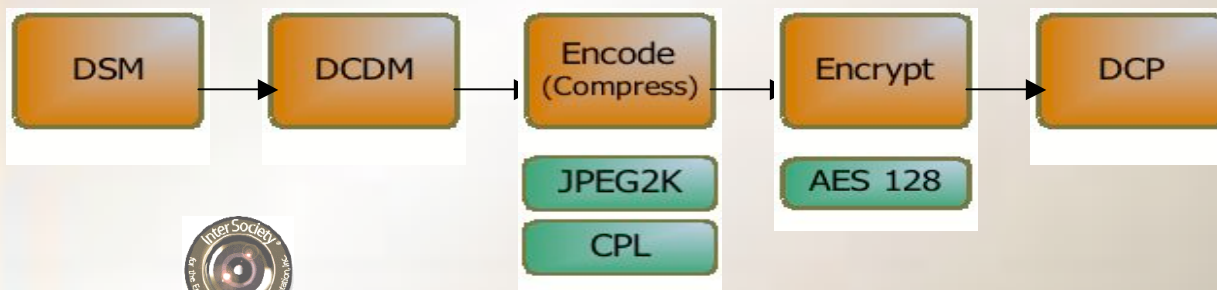


Digital Cinema Terminology

DCP – Digital Cinema Package



The DCP is the set of files that result from the encoding, encryption and packaging processes. A DCP may contain multiple CPL's.



Title Naming Convention for CPLs and DCPs

ISDCF Voluntary Naming Convention

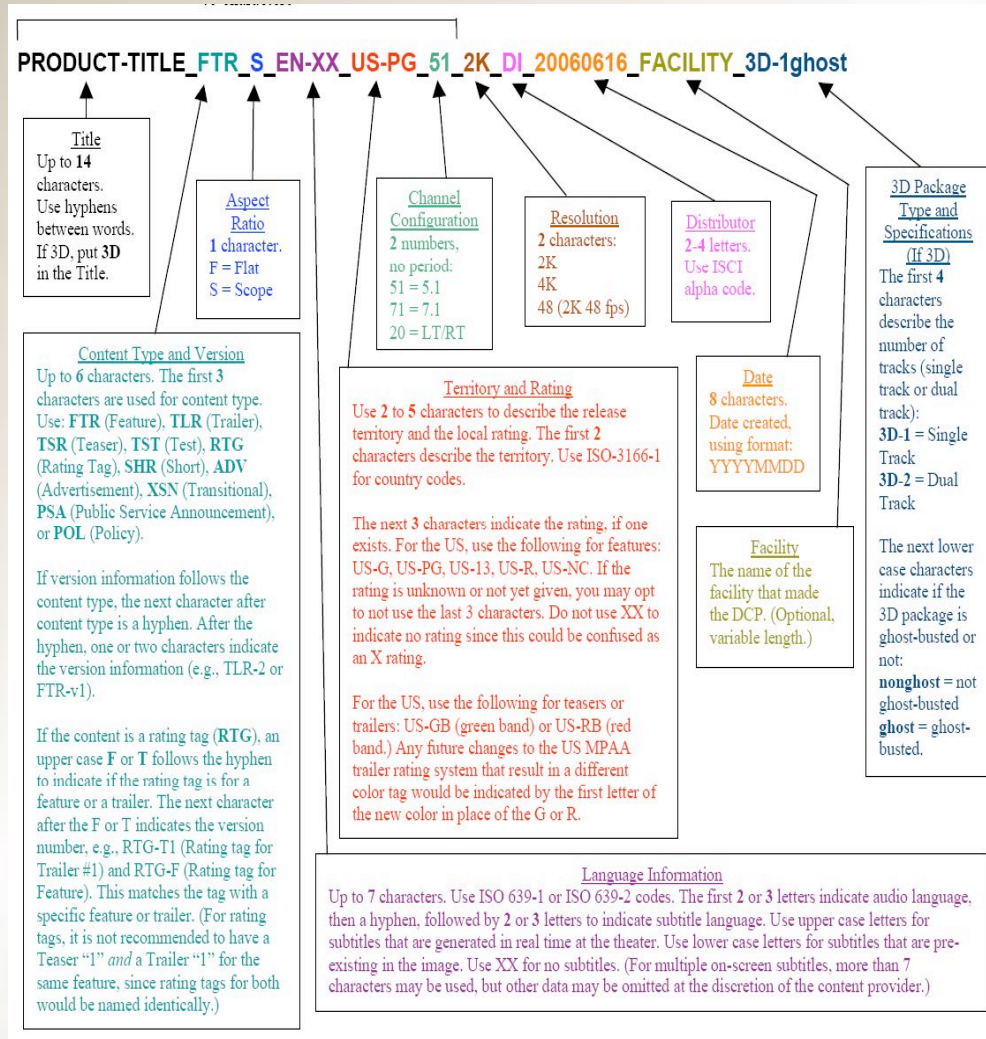
The most significant information about the DCP is contained in the first 40 characters of the CPL text fields due to limited display space of certain DC servers. Additional information is included for servers that can display more than 40 characters.

~ 40 characters

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Title Naming Convention for CPLs and DCPs

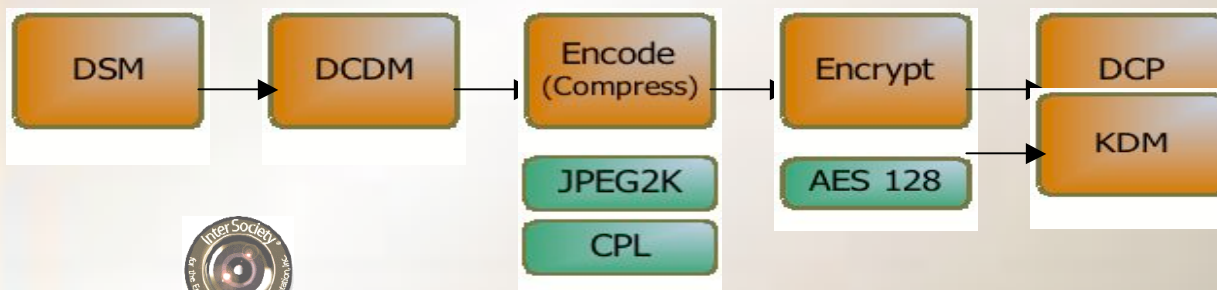


Digital Cinema Terminology



KDM – Key Delivery Message

The KDM provides the method for securely delivering content and key elements. A KDM contains the 'keys' to unlock the elements of a CPL for a specific device. If a DCP contains multiple CPLs, a unique KDM is required for each different CPL, and can only be generated for devices on the Trusted Device List (TDL).

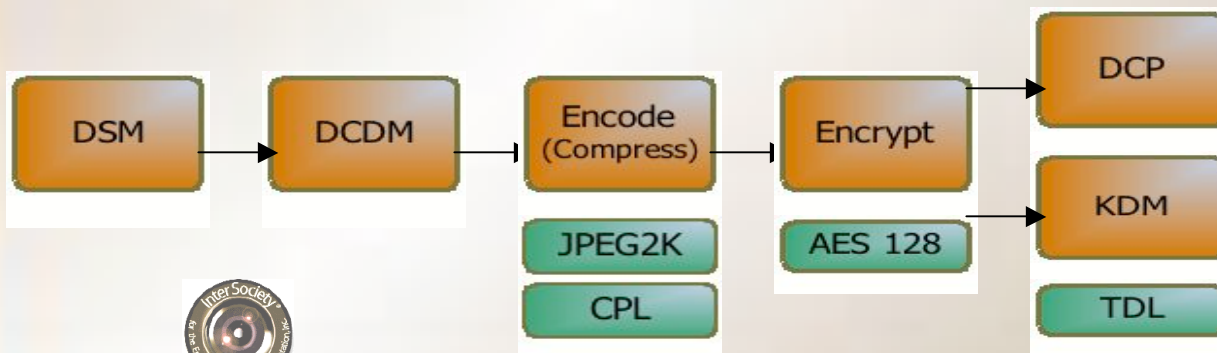


Digital Cinema Terminology



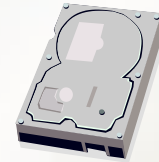
TDL – Trusted Device List

The TDL is list comprised of digital equipment installed in theatres for which studios or other rights owners have given their approval to these ‘trusted’ devices to play their content. KDMs are only created for devices on the list. This adds another level of security to the DC process.

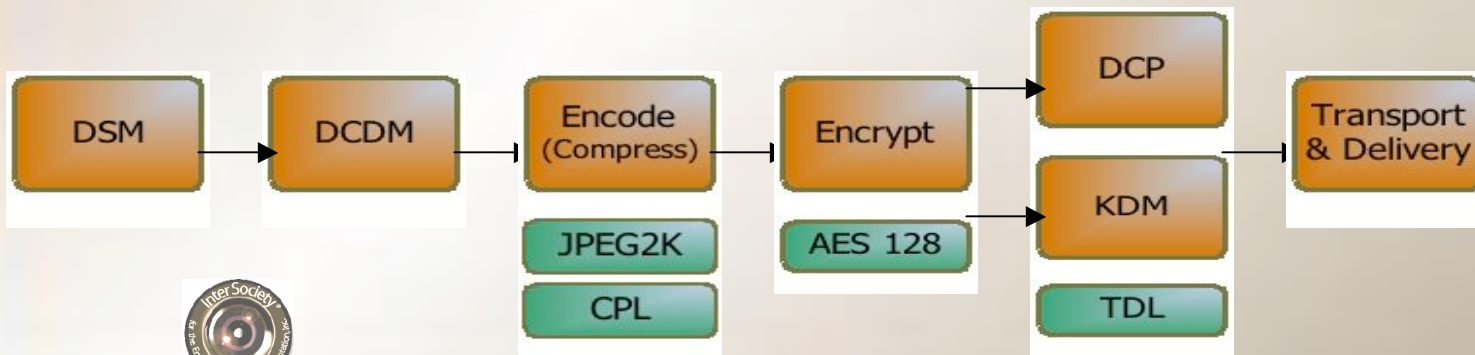


Digital Cinema Terminology

Transport and Delivery



Digital Cinema Packages (DCPs) and Key Delivery Messages (KDMs) are transported either physically on media (such as hard drives) or electronically via satellite. When the DCP arrives at the theater and is loaded, it is unpackaged, decrypted and decompressed for play out by the projection equipment.

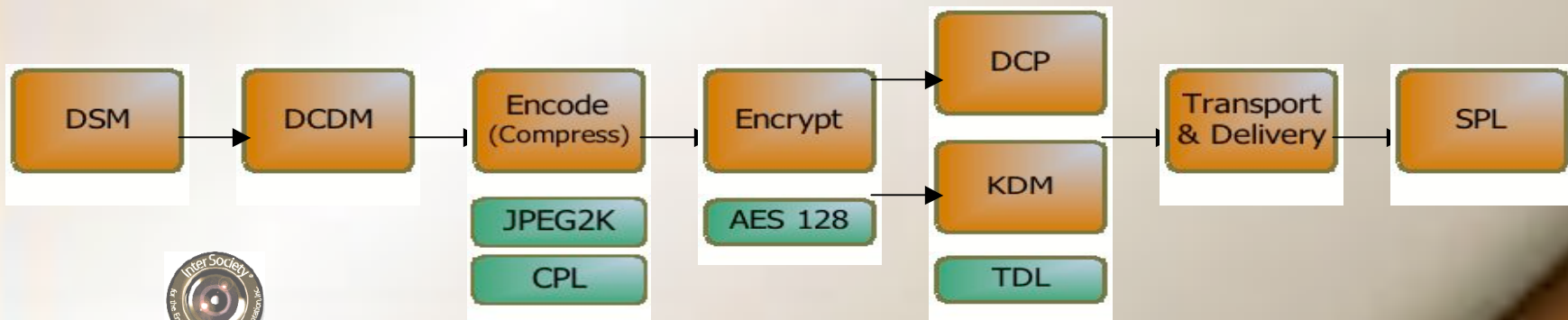


Digital Cinema Terminology

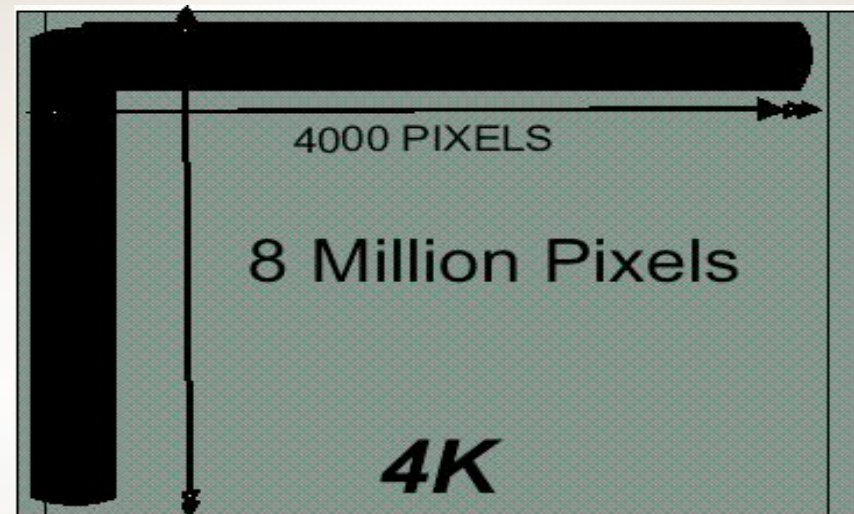
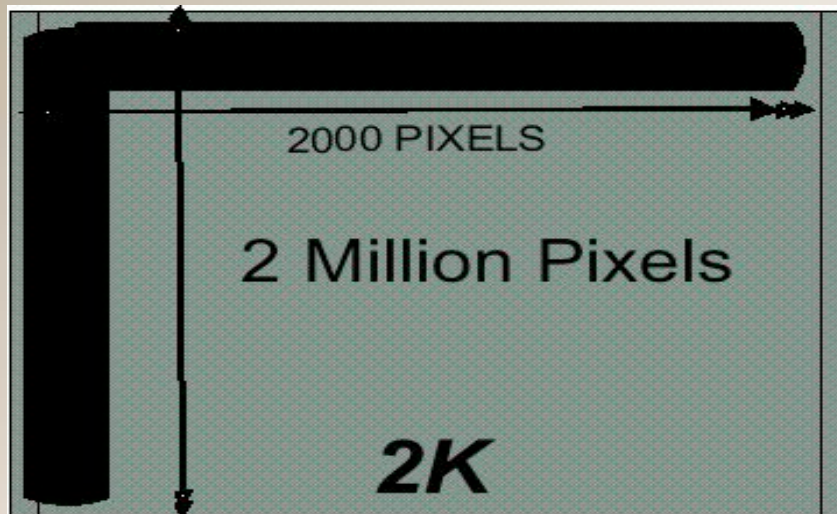


SPL – Show Playlist

A Show Playlist is assembled by using theatre management software to compile content (screen ads, trailers, features) into a single list for play out.



2K vs. 4K



4K Resolution has 4 times as many pixels as 2K resolution



Frequently Asked Questions

Studio

Question: Are Studios going to be releasing all of their films in digital from now on?

Question: Can the studio specify when and how long the file will play?

Question: How are Digital Features held over?

Question: Will trailers be in digital as well?

Question: Will 35mm ever go away completely?

Question: What are VPFs?



Frequently Asked Questions

Mastering

Question: What is the visible difference for an audience in quality of digital vs. analog/35mm (brightness levels, visual crispness, etc.)?

Question: What are the different compression formats?

Question: How is anti-piracy improved with digital?



Frequently Asked Questions

Distribution

Question: How does the DCP get to the theatre?

Question: What is the limit on the number of films that a theatre can store in their servers ?

Question: What is the weekly timetable for digital delivery at a theatre ?

Question: Can pre-show entertainment also use the digital systems?



Frequently Asked Questions

Exhibition

Question: Are the exhibitors converting all their screens in a complex?

Question: Will the screens still be able to play 35mm after they are converted.

Question: If one hard drive is sent to a multiplex, can the theatre play it on more than one screen at a time?

Question: What happens when there is a problem with digital delivery (with 35mm prints, Studios make backup prints; what is the backup plan for digital)?



Frequently Asked Questions

3D

Question: How many features are currently scheduled to run in 3D?

Question: Is there any special equipment required for 3D?

Question: Who pays for the glasses?

