Tedial Evolution
Adopting IMF to Build a True Media Factory
we believe

We believe in

Business Innovation
Business Transformation
Business Efficiency
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Media Activities

Program Making
- Acquisition | Production
- Post production
- Studios
- Promos / Commercials

Processing Enrichment
- Metadata enrichment
- Audio/Subtitles
- Editing
- Versioning

Publishing Distribution
- Multi-channel broadcast
- TV everywhere and OTT
- Catchup and VOD
- B2B and B2C
Market Evolution

Linear Play
- Known Formats
- Limited Channels
- Single Clip

Non-Linear
- Formats Explosion
- Packages
- Multiple Content

OTT
- iTunes
- Xbox
- "...

*tedial Media IT*
The Goal: Coordination and Efficiency
Building a True Media Factory: The Foundations

**Components to be Delivered.** Audio Essences, Subtitles and any other related clips

**Transformations to be Completed.** For each specific platform

**Packaging and Delivery.** To each destination

Diagram:
- **Components:** Audio Track(s), Subtitle(s)
- **Transformations:** Transcoding, DRM, Tracks Reordering
- **Packaging:** Metadata + Components Dynamic Info Package
Adopting IMF: What’s made for

Content Makers
- Films
- Series
- Programs

IMF Package-1
IMF Package-2
IMF Package-n

Content Distributors
- Territory / Platform

Content Distributors
- Territory / Platform

Content Distributors
- Territory / Platform

Content Distributors
- Territory / Platform
Adopting IMF: Why?

Proprietary vs Standard. Use of IMF

Composition Playlist (CPL). Definition of the components to be delivered

Essence Component. Individual essences specs.

Output Profile List (OPL). Transformations to be done
Adopting IMF: The Design Foundations

**MediaSet.** Asset (Original Master) + a set of related assets declared as Physical Versions

**Physical Versions.** All the instances as versions (with specific media)

**MediaFile.** References all the physical files in a single, logical structure.

**Relationships.** Use of EBUCore: IsVersionOf, IsPreviewOf of, IsTrailerOf, IsArtworkOf, ...
Adopting IMF: What can be achieved

MAM
- Films
- Series
- Programs
- [...

IMF Package-1 (Delivery Profile-1)

IMF Package-2 (Delivery Profile-2)

IMF Package-n (Delivery Profile-n)

Media Factory
- Engines
- Control
- Delivery
- Profiles
- Packaging

Package-1

Package-2

Package-n

Platform-1
- CableLabs
- 1.1

Platform-2
- NetFlix

Platform-3
- CableLabs
- 1.1 (mod)
Adopting IMF: Composition Playlist (CPL)

Composition Playlist (CPL)

- **Segment**
  - Image Sequence (Id = 1123)
    - Resource(TrackField-1)
    - Resource (TrackField-2)
  - Audio Sequence (Id = 125F)
    - Resource (TrackField-3)
  - Audio Sequence (Id = 3236)
    - Resource (TrackField-4)

- **Segment**
  - Image Sequence (Id = 2345)
    - Resource (TrackField-5)
  - Audio Sequence (Id = 115F)
    - Resource (TrackField-6)
  - Audio Sequence (Id = 2336)
    - Resource (TrackField-7)
    - Resource (TrackField-8)
Adopting IMF: Composition Playlist (CPL)

Image Track File (id=1)

Image Track File (id=2)

Audio Track File (id=3)

Audio Track File (id=4)

Audio Track File (id=5)

Audio Track File (id=6)

Audio Track File (id=7)

Image Track File (id=8)
Adopting IMF: Output Profile List (OPL)

Composition Playlist (CPL)
- Video Virtual Track
- Audio Virtual Track
- Audio Virtual Track

Output Profile List (OPL)

Macro List:
- Image Crop Macro (name=crop-1)
- Pixel Decoder Macro (name=decode-1)
- Image Scale Macro (name=scale-1)
- Pixel Encoder Macro (name=encode-1)
- Audio Routing Macro (name=route-1)
- Audio Encode Macro (name=encode-2)
Application

**Engines Profiles Definition.** Registration of the macro (engines) available on the system

**Customer + Delivery Profiles Creation.** Identify the delivery profiles for each destination

**CPL Definition.** Selection of the components to be exported.

**OPL Definition.** Transformations to be done

**Instigation.** Manually / API

**Execution.** Executed by the media processing factory, controlling all the 3rd party systems (engines) needed for the media transformations
Application

IMF Package. Profile per each destination (CPL + OPL + Package)

Reusability. Same packages can be used for similar destinations (Same CPL/OPL)

Content Independent. The Profile is used per destination, not per content
Adopting IMF: Delivery Profile CPL

- Video Track File (Label=1)
- Audio Track File (Label='LAN-1')
- Audio Track File (Label='LAN-n')
- Subtitles Track File (Label='LAN-1')
- Subtitles Track File (Label='LAN-m')
Adopting IMF: Delivery Profile OPL

Composition Playlist (CPL)
- Video Virtual Track
- Audio Virtual Track
- Audio Virtual Track

Output Profile List (OPL)

Macro List:
- Image Crop Macro (name=crop-1)
- Pixel Decoder Macro (name=decode-1)
- Image Scale Macro (name=scale-1)
- Pixel Encoder Macro (name=encode-1)
- Audio Routing Macro (name=route-1)
- Audio Encode Macro (name=encode-2)
Application: IMF Packages for Delivery Profiles

Media File
- V1
- A1 (EN, PCM)
- A2 (SP, PCM)
- A3 (PT, PCM)
- A4 (EN, Dolby-E)
- ...  
- S1 (EN)
- S2 (SP)
- ...

IMF Package-1
- V1
- A1 (SP, PCM)
- A2 (PT, PCM)
- S1 (SP)

CPL
- Transcode
- PSE Check
- DRM
- Package

IMF Package
- CPL
- OPL

IMF Package
- CPL
- OPL
Application: From the Operator’s perspective
Application: How does it work?

Version Factory

Get IMF Profile for Destination[i]: CPL / OPL

Content Requests

[MediaID, Destination] [...]
Application: Content Publishing for Broadcasters

Version Factory: As Next Generation in Automation Systems for Content Publishing

Abstraction of the multiple platforms for content publishing: Linear, Non-Linear
   Packages: Metadata + Main Clip + other content (Trailers, Posters) + Multiple Resolutions
   Single Clip for traditional linear playout

Global Monitoring. A single platform to control and manage all the publishing operations including 3rd party products

Integration with Business Planning: Traffic and Scheduling Systems, Multiple Inputs, Playlist processing, scheduling requests, missing clips, ...

Flexibility: Use of IMF for the definition of the profiles for each platform (Packages, Languages, subtitles, Formats, ...)
Application: Content Publishing for Broadcasters

Customer Business Planning
Traffic | Scheduling | TV Everywhere planning

Content Requests

Global Scheduling

Version Factory

Components Transformations Packaging
Profile-1: Non-Linear
Profile-2: Non-Linear
Profile-n: Linear

Components

VOD
Catch-up
Linear
Application: Content Publishing for Broadcasters
Application: Flexibility & Future Proof
Conclusion

Use of SMPTE Standards. Guarantees evolution, reduces R&D efforts and ensures future interoperability.

Use of IMF. Although not intended for this, it naturally fits due to the design principles and features.

IMF-Ready. When content distributors adopt the IMF for content delivery.

Use Cases. Content Delivery (Distribution companies) / Publishing (Broadcast)

Some Enhancements. Needed for packages delivery (e.g. Cablelabs), using relationships and specific operations for it.
Thank you for your attention

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