



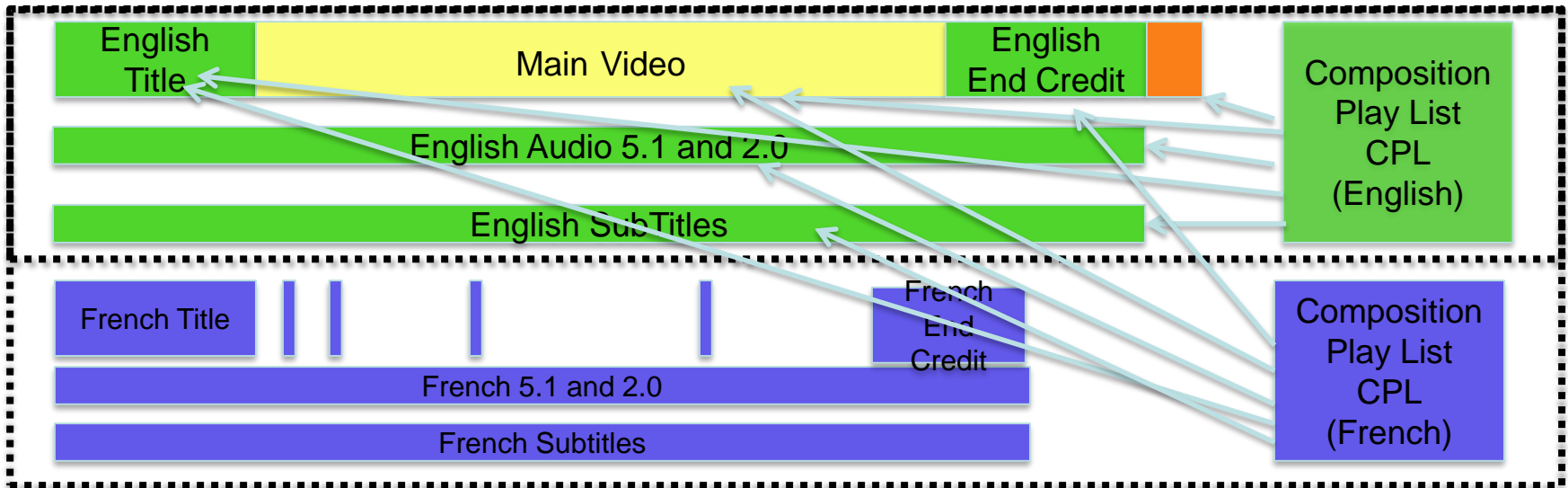
IMF and Automated Mastering

or

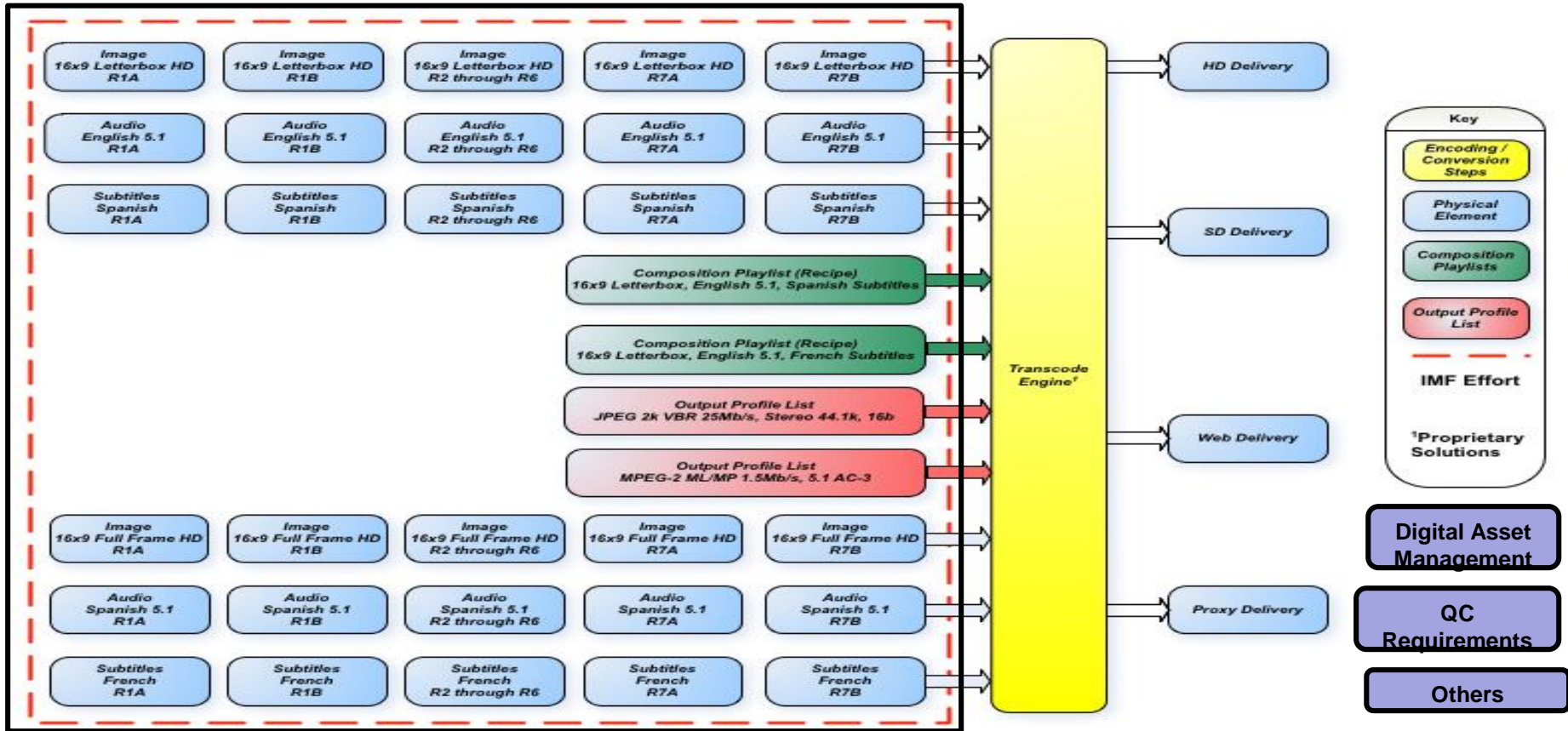
(Needs for Automated Servicing)

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Twentieth Century Fox

Operation of the IMF



Scope of IMF



Format	Archival HDR Master
Format	JPEG2000
Format Profile	IMF MainLevel-7
Sub-Level	Sub-Level 0
Progression Order	CPRL
Compression Mode	Mathematically Lossless (5/3 Wavelet Transform)
Bit Rate Mode	Variable
Max Bit Rate	Open (No Cap)
Width	3840
Height	2160
Display Aspect Ratio	16:9
Frame Rate	23.976 fps
Scan Type	Progressive
Bits per Sample	16 bits
EOTF	ST 2084
Color Sampling	RGB 4:4:4
Color Space	BT.2020
Colorimetry	COLOR.7
Quantization	QE.2 as specified in SMPTE 2067-21 (Full Range)

Format	Archival SDR MASTER
Format	JPEG2000
Format Profile	IMF MainLevel-7
Sub-Level	Sub-Level 0
Progression Order	CPRL
Compression Mode	Mathematically Lossless (5/3 Wavelet Transform)
Bit Rate Mode	Variable
Max Bit Rate	Open – No Cap
Width	3840
Height	2160
Display Aspect Ratio	16:9
Frame Rate	23.976 fps
Scan Type	Progressive
Bits per Sample	10 bits
EOTF	BT.1886
Color Sampling	RGB 4:4:4
Color Space	Rec. 709
Colorimetry	COLOR.3
Quantization	QE.2 as specified in SMPTE 2067-21 (Full Range)



But Archival and Servicing Files are not the same !

Archival

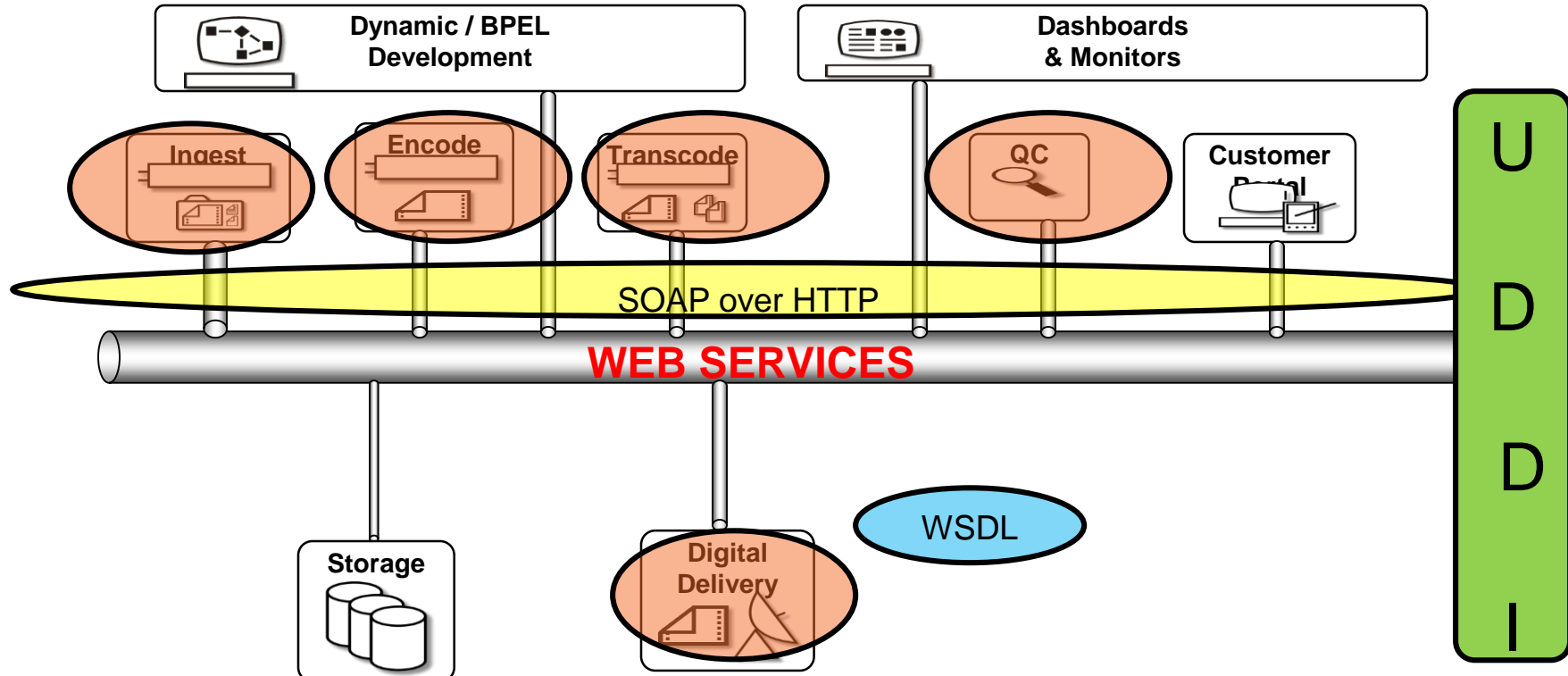
Video Essence	HDR Requirements
Video Codec	JPEG2000
File Format Profile/Sub-level	IMF MainLevel-7 Sub-Level 0
Bit-rate	Open (No Cap) Variable Bit-rate mode
Resolution / Frame Rate	3840x2160, 23.976 fps, Progressive
Bit-depth	16 bits
Color Sampling	RGB 4:4:4
Video Range	Full Range
Color Space	BT.2020
Transfer Characteristic System ^{*)}	ST-2084

Servicing

Video Essence	HDR Requirements
Video Codec	JPEG2000
File Format Profile/Sub-level	IMF Main-Level 5 / Sub-Level 3
Bit-rate	Max 800 Mbps, Variable Bit-rate mode
Resolution / Frame Rate	3840x2160, 23.976 fps, Progressive
Bit-depth	10 bits
Color Sampling	YCbCr 4:2:2
Video Range	Legal/Narrow Range
Color Space	BT.2020
Transfer Characteristic System ^{*)}	ST-2084

We need a way to duplicate a ML7 IMF with a ML5 IMF.

We want to have a matching ML7 archival IMF and ML5 Servicing IMF which are identical in all assets (number of CPL's, CPL timelines, audio, CC/subs)



Need IMF to fit into a BPM workflow

- Need Web Services and REST APIs
- What about toolsets that can build the Timeline and move Tracks
Can we standardize on that ?

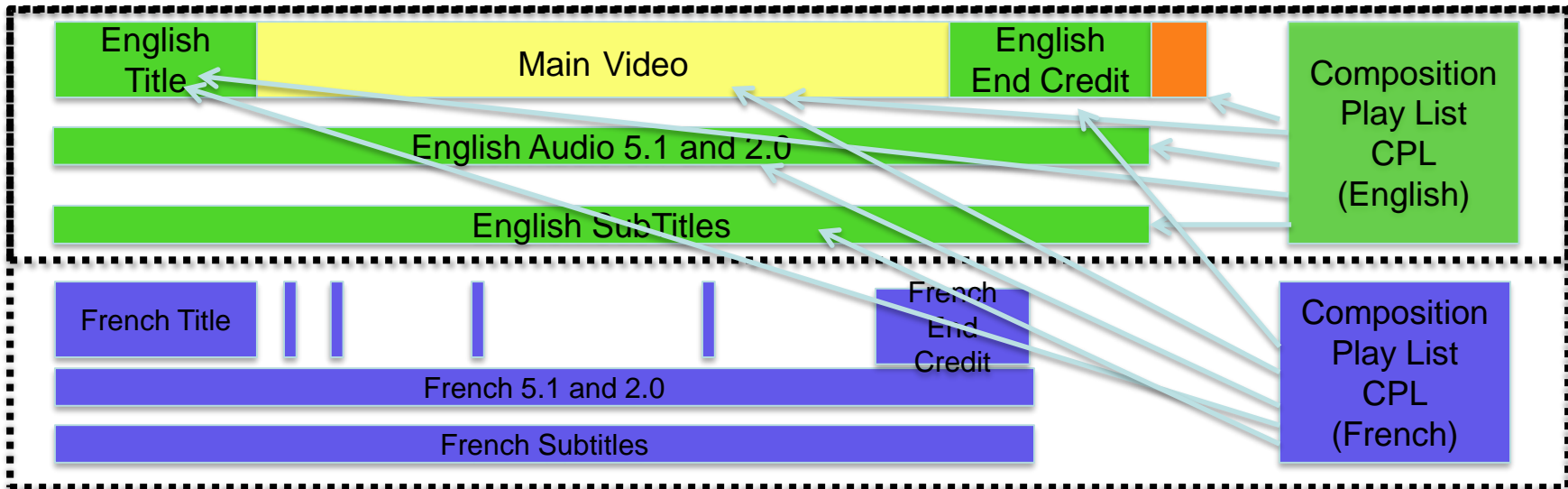
JIT IMF Manufacture

- We don't make all versions at the same time
- We get corrections/revisions all the time

A way to import an IMP with the relationships described in the XML's translated to a database that allows for replacements and additional versions to be added against it.



IMF Needs at Fox Studios



- Content Owner needs to be aware that distributor has “Main Video” – only then are supplemental deliveries fail proof
- Need to ensure that UUIDs of Assets are kept through the supply chain – and forever (?)



Conclusions

- IMF Adoption at Studio Level
- IMF Adoption at Distributor Level
- Great Strides in IMF inter-operability
Kudos to the SMI group
- Need to start looking beyond the Post House Level and move into the Enterprise level – and have just outlined some larger asks.



Thanks for Listening

More Info ?

- **Join 35PM50**
- **Participate in IMF Plugfest and SMI**
- **Provide Use Cases**

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