

Virtualized Production Within a Proxy Workflow

HELLO!

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Forbidden Technologies

The Proxy

The Codec Discussion

“

Proxy video is highly compressed, low resolution video and sound that mirrors a high resolution original recording.

The Obvious

”

H.264 Codec

Challenges

- ▶ **Assumed some flavour of H.264**
 - ▷ Covers all forms of digital compressed video from low bit-rate Internet streaming applications to HDTV broadcast and Digital Cinema applications
 - ▷
- ▶ **Profile Standards**
 - ▷ At least 22 profiles which defines sets of capabilities
 - ▷
- ▶ **Making H.264**
 - ▷ “Easy enough” to make it, higher profiles require robust processing

- ▶ **H.264 Streaming and files decisions**
 - ▷ One of the most fundamental decisions facing streaming media producers.
- ▶ **Metadata**
 - ▷ Support legacy and emerging/changing metadata.

- ▶ **Creating Proxy/Performance**
 - ▷ Changes in choices of a profile
 - ▷ Remote proxy creation
 - ▷ Performance issues
 - ▷ Creation for time critical purposes.

Proxy Media - Challenges

▶ Visual Searching

- ▶ Search PreMAM
 - ▶ Intraclip visual references impossible without actually playing media.

Playing

- ▶ Bandwidth dependant depending on profile
- ▶ Natively not a growing IP file (exception for Mpeg-TS)
 - ▶ MPEG-TS is designed for live streaming

Proxy Media - Challenges

- ▶ **Distribution**
 - ▷ Public options are available
- ▶ **Hosting Issues**
 - ▷ On premise server side
 - ▷ \$\$
 - ▷ Schedule
 - ▷ Security
- ▶ Not interactive update most relevant in Media Supply Chain

BLACKBIRD and the Data Centre

A Performance IP Codec





▶ Blackbird needs to be hosted

- ▶ Blackbird and Forscene as a platform does not dictate where you create, host and publish media
 - ▶ Your Data Centre
 - ▶ Our Data Centre
 - ▶ Other Data Centre (AWS and others)
 - ▶ Served up on-premise
 - ▶
- ▶ Or a hybrid of data centres
 - ▶ 75% of customers utilize this model



Reasons for Data Centre Hosting

- ▶ Compliancy
- ▶ Performance/Reliability
- ▶ Scalability
- ▶ Risk Management/Disaster
- ▶ Trust

Blackbird Process



Content
Sources



Production camera formats

Xdcam, P2, Canon MXF, GoPro, Various Formats

Infrastructure

Imagine (Nexio), Harmonic (Spectrum)

Post production

Image Streams various codecs, QT, MXF, Stills, Alpha Support

IP and Baseband

HLS, SDI, Smooth Stream, and others, RTMP,
EVS (IP director)

In Development

MPEG-TS, Bonded Network Camera Packages (Dejero)

Near Future Consideration

NDI

Blackbird Process



Transcode to Blackbird
Performance Codec
and view as proxy

Content
Sources

Concurrently
Ingest
Transcode
Upload

**Concurrent Processes
are available**

Python scriptable pipeline tools to organize
media and inject metadata

Blackbird Process Overview

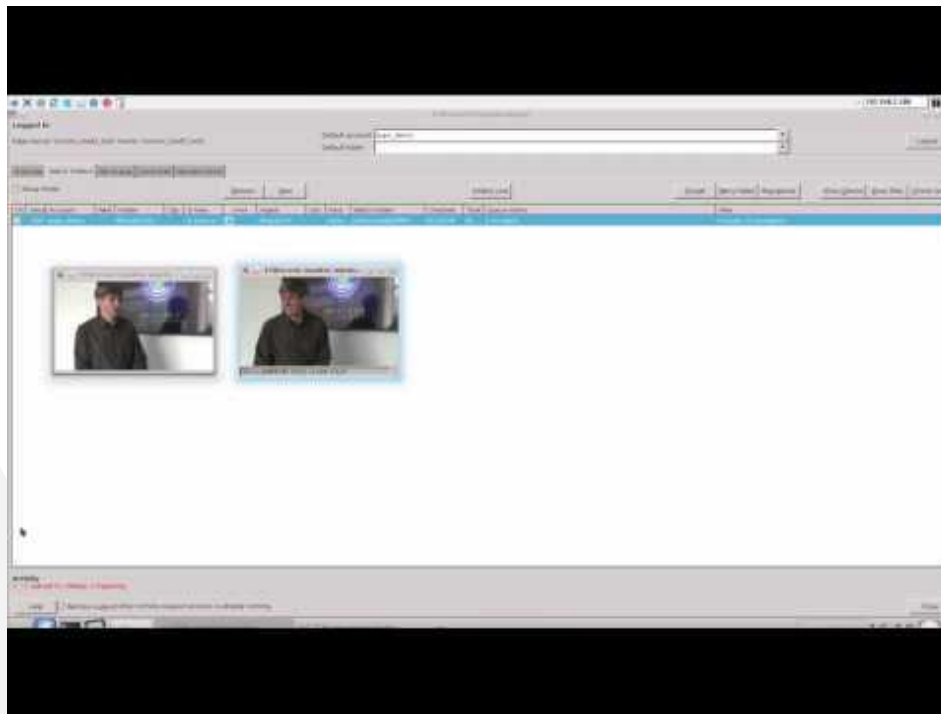


Create/Upload

Edge Server

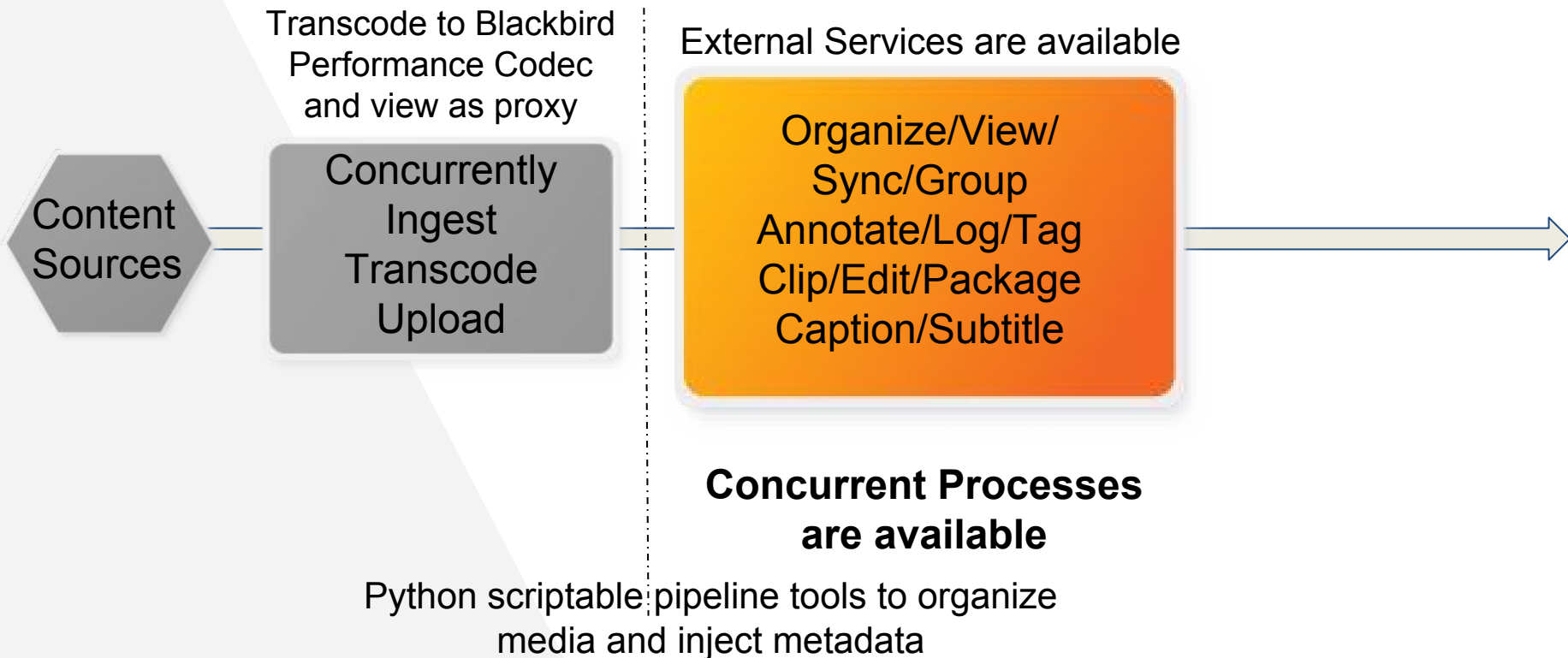
- ▶ Virtualized
- ▶ On Premise
- ▶ On Location
- ▶ Mobile Creation
- ▶ OTS CPU
- ▶ Closed or IP Files
- ▶ Video Waveform
- ▶ Low Bandwidth

Making Blackbird



This example is based on 6 year old I7 technology

Blackbird Process



Blackbird Process Overview



Create/Upload

Edge Server

- ▶ Virtualized
- ▶ On Premise
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Hosting Services

Data Centres

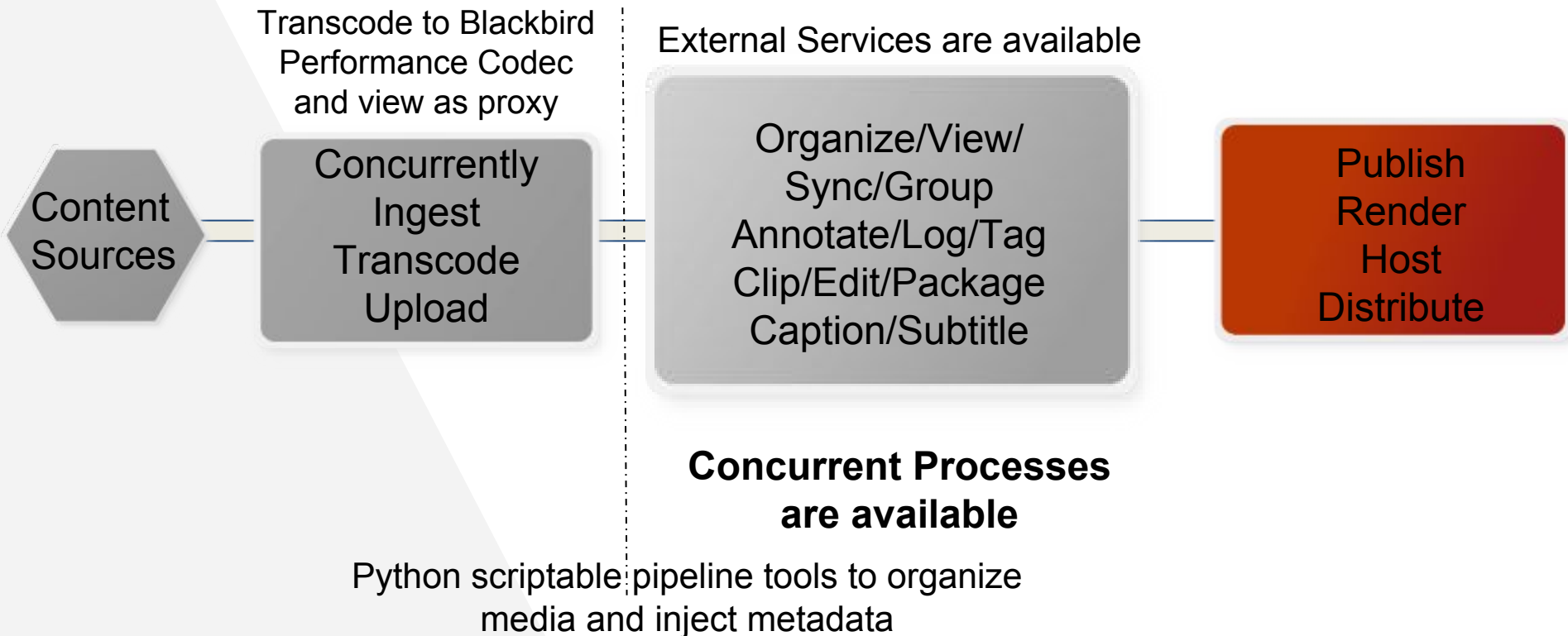
- ▶ On Premise
- ▶ Public Data Centre
- ▶ Private Data Centre
- ▶ High-bit-rate can remain on premise

Playing Services

Forscene and HTML5/Javascript

- ▶ Forscene JS
- ▶ JS API
- ▶ Video Waveform
- ▶ IOS/Android
- ▶ Collaborative Services
- ▶ New Services

Blackbird Process

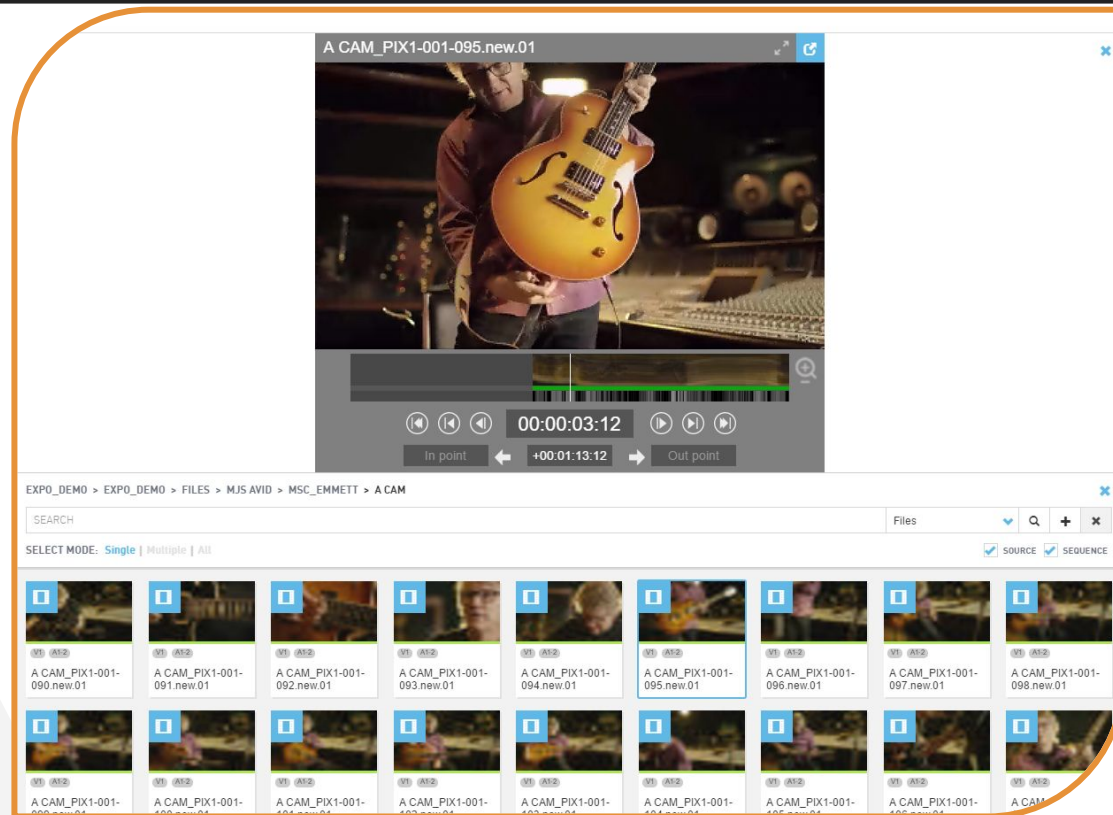


BlackBird Benefits



- ▶ Secure/Lightweight
- ▶ See and hear
- ▶ Frame accurate
- ▶ Blackbird visual waveforms
- ▶ Shuttled or scrubbed
- ▶ Reverse
- ▶ IP Performance - how little can you get away with?
- ▶ Grows
- ▶ Holds Metadata in a database
- ▶ Scalable

Blackbird Example in Javascript HTML5



Javascript Player API

HTML5 player to embed in a web application

Playback sources and EDLs

Load - Play - Stop - Pause - Fast Forward - Rewind - Seek - Get Timecode

Mute/Solo Audio and Video Tracks

Hide/Show Close caption data

Layer alpha channel support

12 video tracks

36 audio tracks

Proxy Workflow Within an Existing Media Supply Chain





Challenge 1

- ▶ Living in a Hybrid Media Supply Chain
 - From hybrid IC/Mechanical Transports to SaaS (XaaS)
- ▶ 2017
 - ▶ We live between Consumer off the Shelf (COTS)/IP AV to Public and Private Cloud infrastructures

Media Supply Chain “some” Challenges

Pre-MAM

Challenge 2

Needs to collect all the information about every asset.

Immediate availability for up-to-the-minute arrivals

Challenge 3

Provide the history and path of assets from creation.

Search across all asset information.

Challenge 4

Scheduling of assets and and metadata for compliant delivery to MAM

Feeder for playout or defined tools for whatever the next step is.

Simplified Media Supply Chain - Blackbird/Forscene Where does it fit in?

Content

Capture

Compression

Quality Control

Digital Asset Management

Metadata Entry

Digital Rights Management

Ingest

Content Delivery Network

Digital Service Provider

Legacy media to digital files

Converted to digital format (if analog)

Transcode, Codec

Desired results and free of corruption

Handle the metadata

Describes the contents of a medium

Encrypting the content, license

Compressed file/metadata into MAM

Delivering the media to the end-user

Display makes content available

SaaS that can connect near or atop of the MSC

Caption

Annotation

Search

Clipping

Versioning

Metadata xchange

AI utilized in SaaS service at the Proxy stage that can connect near or atop of the MSC

Caption

Audio Transcript
Speaker Indexing
Voice Activity Detection
Translation

Clipping

Scene Detection
Content Moderation

Annotation

Audio Transcript
Speaker Indexing
Voice Activity Detection
Translation
Keyword Extraction

Versioning

Content Moderation

Search

Audio Transcript
Face Detection and ID
Sentiment Analysis
Translation
Keyword Extraction
Scene Detection

Metadata xchange

JSON results of all

The Role of the Cloud (Data Centres) in the Media Supply Chain

Real Time Visibility



Scale up and down to targets



Cognitive Toolsets



Building on the first 3 advantages can now operate at speed.

Blackbird (Forscene) Near and Present Future

- ▶ Higher Resolution proxy
- ▶ Lower bandwidth requirements
- ▶ Additional HFR
- ▶ Live Multicam
- ▶ Write blackbird on devices
- ▶ Other developers writing blackbird
- ▶ Finishing Proxy (renderless pipeline)
- ▶ Video Waveform AI
- ▶ Live multicam

THANKS!

Any questions?

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