



# A Case Study for a Post-Cloud Supply Chain

**Michelle Munson**  
**Eluvio, Inc.**

# THE EVOLUTION OF MEDIA CREATION

A 10-Year Vision for the Future of Media  
Production, Post and Creative Technologies

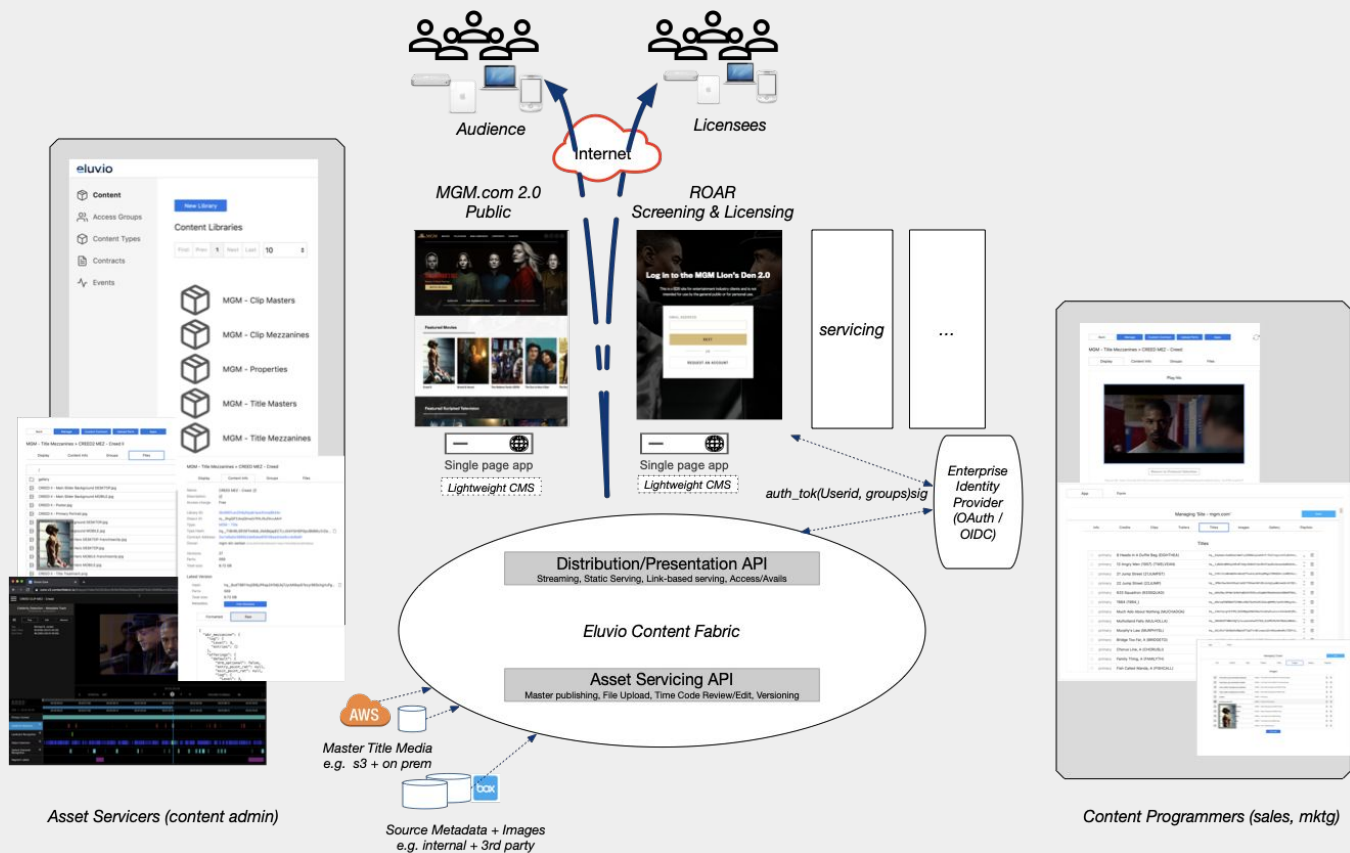


- >>Assets created/ingested to cloud and not moved
- >>Applications come to the media
- >>Propagation and distribution is “publish”
- >>Archive re capabilities, economics of cloud.
- >>Preservation includes means to access and edit.
- >>Individual user ids, access correlates & efficient.
- >>Creation is secure; adapts to changing threats.
- >>Individual media interrelated with universal linking.
- >>Workflows dynamic from data formats, metadata.
- >>Workflows have real-time iteration and feedback.

# Agenda

- **Background**
  - MGM Supply Chain Architecture
  - Eluvio Content Fabric
- **Single Substrate of Active Content (Media, Metadata, Code linked)**
- **Streaming/Servicing from Source, Just-in-Time (Highest Quality)**
- **Re-use/re-versioning of Source without File Copies**
- **Inter-object Linking for Static and Dynamic Presentation**
- **Content Security does not trust the infrastructure**
- **Access and Rights control built-in**

# MGM Architecture



# Eluvio Content Fabric

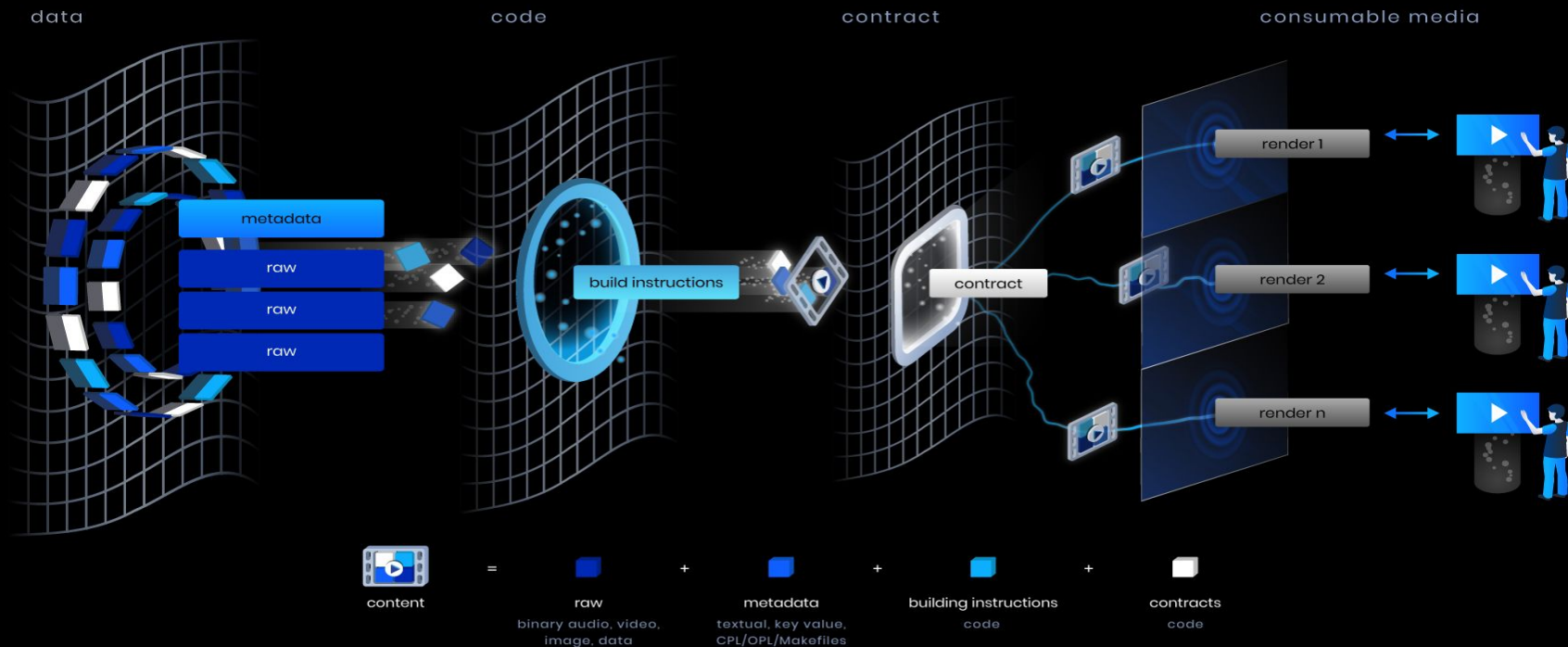
- **New Global Substrate**
  - Neither Cloud nor CDN
  - Premium Video from Master to Consumable
- **Eliminates need for transcoding, databases, microservices, CDN**
- **Single Software Stack**
  - Decentralized Data Distribution & Storage Protocol
  - BW/Storage Efficient
  - Ultra Fast Routing and Video, Just in Time
  - Versioned and Access Controlled (blockchain)
  - ML Tagged Content
  - Monetizable
- **Network of Nodes @ Inet Xchange Points**

# Fabric Technology

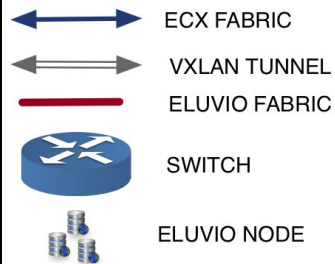
Stores and manages large  
form content

Transforms and delivers  
consumable media

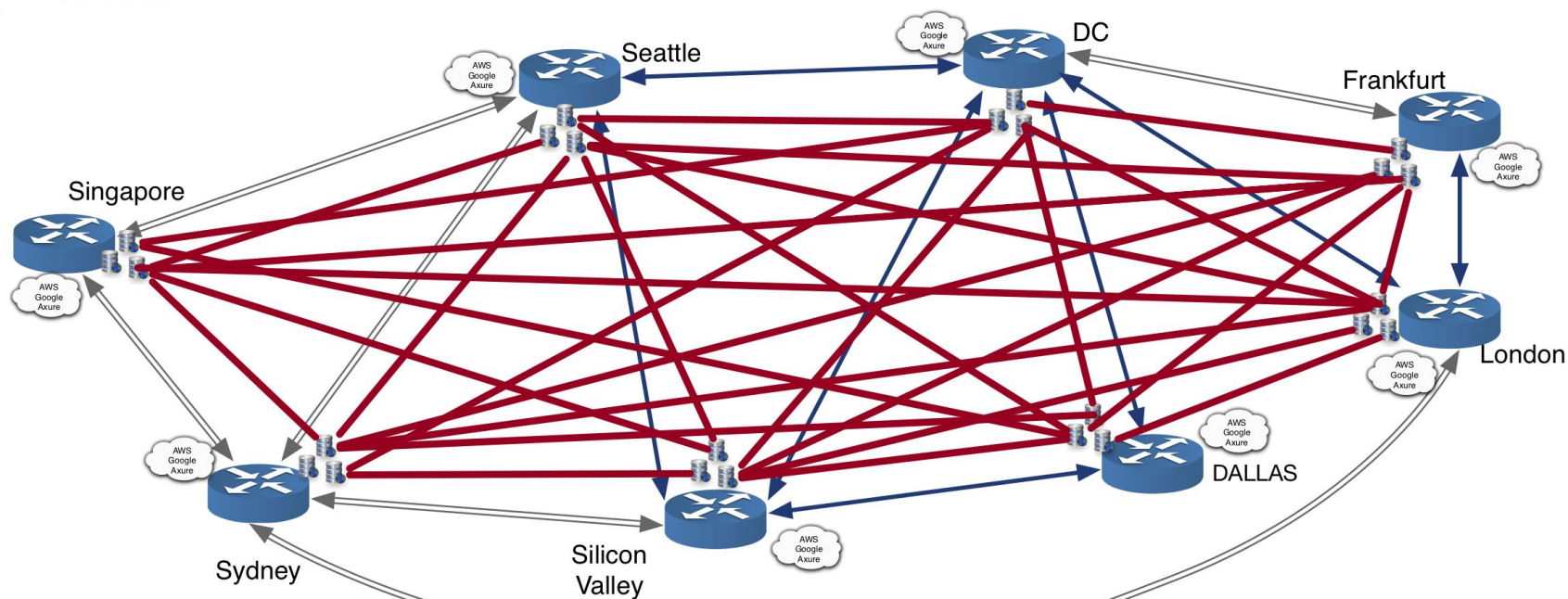
Controls access, protects and  
proves content



## Legend



# Eluvio Content Fabric



# Single Substrate of Active Content

- Single object for Active Servicing & Streamable on Ingest
- *Media, metadata, static content/image*, and *code* linked and versioned
- Ingest by reference (no movement of Master)
  - Cloud & Local Storage
- Metadata and static content added from many sources
- Flat and Timeline based review & (light) edit control
- Automatic ML tagging built-in for video understanding
  - People, place, objects and automation



# Example

MGM - Title Mezzanines > CREED MEZ - Creed

Display	Content Info	Groups	Files
Name:	CREED MEZ - Creed		
Description:			
Access charge:	Free		
Library ID:	libb3691LecDh9yNyqKHpwxTm		
Object ID:	iq_3hgQFz2bgQtwnvJ1PAJSuE		
Type:	MGM - Title		
Title Hash:	hq_719HRLSR1SfTmWdLJNAB		
Contract Address:	OxcTe6abb3866b2ab6dee6f97		
Owner:	mgm-elv-serban (0x4c6051038329)		
Versions:	27		
Parts:	569		
Total size:	8.72 GB		

Latest Version

Formatted	Raw
<pre>{   "abr_mezzanine": {     "log": {       "Level": 3,       "entries": []     },     "offerings": {       "default": {         "drm_optional": false,         "entry_point_rat": null,         "exit_point_rat": null,         "log": {           "Level": 3, </pre>	

MGM - Title Mezzanines > CREED MEZ - Creed

Display	Content Info	Groups	Files
<div>Back Manage Custom Contract Upload Parts Apps</div>			

Play hls

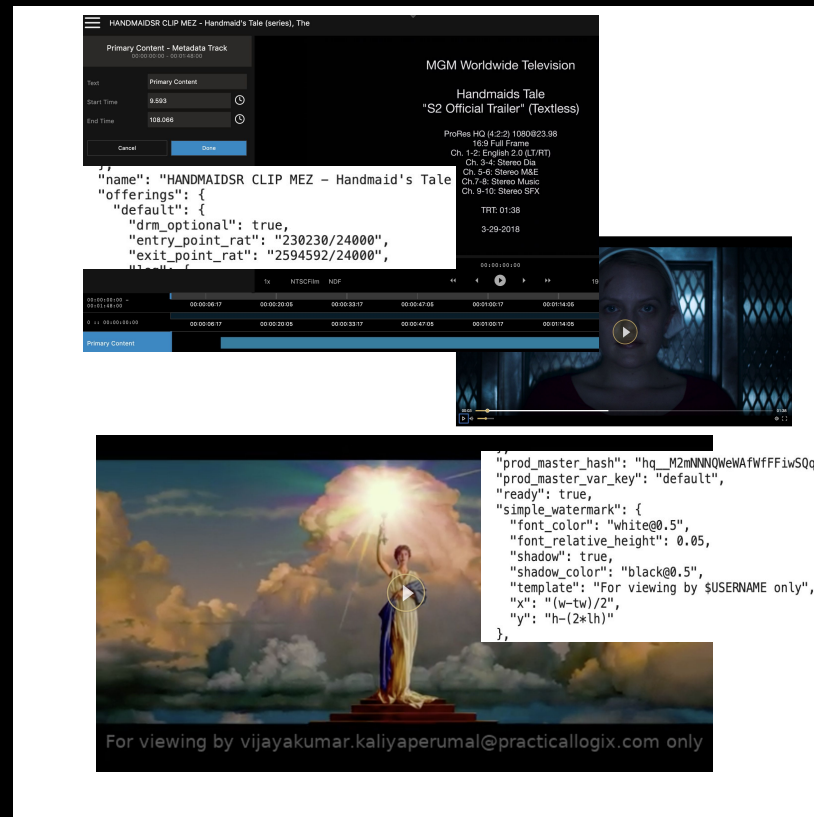
[Return to Protocol Selection](#)

Playlist URL: https://host-56-220-3-85.contentfabric.io/qfiles/libb3691LecDh9yNyqKHpwxTmej8KS4v/hq\_9udT9B1Ysq269JPKap241MJk7JycMbqeE1Bay965chgVuhgSKUjPn3b4wBFZ3GEEj2rep/playout/default/hls-aes128playlist.m3u8?player-profile=hls&authToken=ewjke3BmTZVWwQCOjpc3BjMUjV1JCWVS5MYnkbBUjPVtNMhKLZlhb3MSinFauWJawQJOjpbGlMZY5uYWR0eCXXOWFlSHB3WHRZWofa1ModelsmFzHicilwekdGnfGMzJMzdmQqlwyREMjVDfTUyYjMGjdMjMDIComE4mmRYagLCjaWIOUpvcVRMZhuUlUYemJuXJh9uWVBBSNR1Rgh24U1uWSlimdyW50jsiemWhZclmR43JCkVpmVlgtemWoz2SwalWFQpwktFgcODzNhwLCjhaAQE1ODESNMOATAseFI6ChLczhpgrMyNTLZXIdexGhmNZJBTCrN1yxkgBWfMcYWWCMXOCNgprRvRCmhETHCuJlpRGDCoPyTIN2zwSELSNFny5ds528bmwhCHZNbzZam9OUFGsFKUm10RG1hlwIWZnaFPway6klJP\_RVMYNTLZXDX3U1N1atneFrVRWP\_OuLC1VOHuVpnN3hhb1FKUJJUVZFBDwdrZVNxbmdGWipcd1VOS3Zmb3zhVhZRrmcgMznRHSTWFTGXYSURVfhWVFREjhTnE

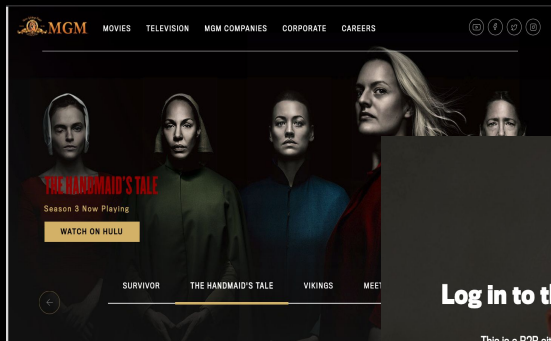
[illegible]

# Streaming/Serving from Source Just-in Time

- Video, Imagery, Metadata
- Ultra fast start, highest quality/no rebuffer (no CDN – video or static)
- Standard Multi-format ABR Streaming (HLS, DASH) w/ DRM
- All players/platforms (elv-client-js)
- Playable on ingest with configurable output offerings/dynamic content
  - Set start points without editing
  - Visible watermarking with user id from Okta auth token & metadata directive



# ReUse/ReVersioning without File Copies



## Log in to the MGM Lion's Den 2.0

This is a B2B site for entertainment industry clients and is not intended for use by the general public or for personal use.

EMAIL ADDRESS

NEXT

OR

REQUEST AN ACCOUNT

### Featured Movies



Creed II

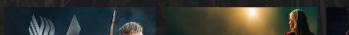


Gretel & Hansel

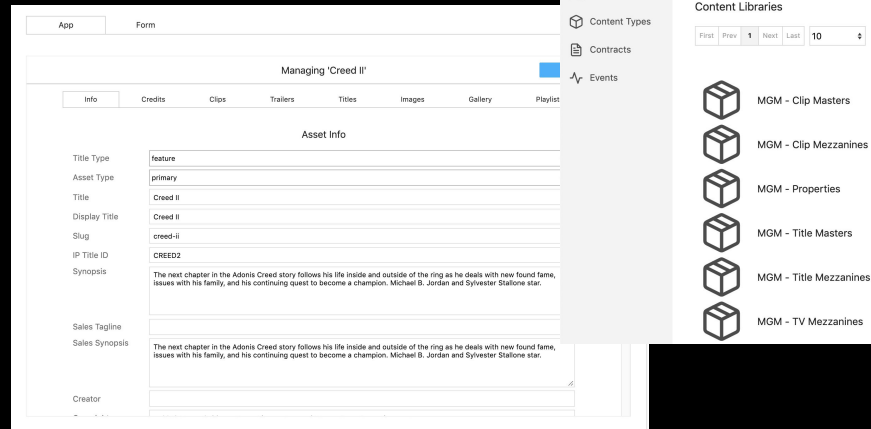


The Addams Family (2019)

### Featured Scripted Television



- Same content, two properties
- “Pop up” w/out re-do !
- Alternative Metadata/UX per property



# Inter Object Linking for Presentation

- Simple API with static/dynamic URLs

- Content hash with Human friendly static URL (slug)

```
GET .../q/hq__0123/rep/playout/default/options.json
```

```
.../seasons/1/titles/the-first-episode-title/rep/playout/default/options.json
```

- Dynamic bitrate functions on objects, e.g. playout options, image resize at run time

```
GET .../q/hq__0123/rep/playout/default/options.json
```

```
.../seasons/1/titles/the-first-episode-title/sources/default
```

```
.../rep/images/files/MyPoster.jpg?height=120 or
```

```
.../images/poster/thumbnail?height=120
```

```
...images/poster/thumbnail
```

# Inter Object Linking for Presentation (cont)

- Simple API with static/dynamic URLs
  - Links between objects with traversal from “site” down

```
GET .../q/hq__0123/rep/playout/default/options.json
```

```
.../q/iq__abcd/.../seasons/1/titles/the-first-episode-title/sources/default
```

- Published versions with controlled updates
- Automatic dependency resolution
- No Syncing with CMS, Minimal CMS
- Simple Tools

The screenshot displays two overlapping web forms. The background form is titled "Managing 'Site - mgm.com'" and has tabs for Info, Credits, Clips, Trailers, Titles, Images, Gallery, and Playlists. The "Credits" tab is active, showing a list of credits with columns for role, title, and year. The foreground form is titled "Managing 'Creed II'" and also has tabs for Info, Credits, Clips, Trailers, Titles, Images, Gallery, and Playlists. The "Credits" tab is active, showing a form for adding or editing credits. It includes fields for Group Name, Talent Type, Character, First Name, Last Name, Other Credits, and Sales Display Order. Two credit entries are visible: one for "Jesse Rosenthal" with a sales display order of 01, and another for "Bernardo Duran Jr." with a sales display order of 01.

Role	Title	Year
primary	8 Heads In A Duffel Bag (EIK)	
primary	12 Angry Men (1957) (TWEL)	
primary	21 Jump Street (21JUMPST)	
primary	22 Jump Street (22JUMP)	
primary	633 Squadron (633SQUAD)	
primary	1984 (1984_)	
primary	Much Ado About Nothing (v)	
primary	Murphy's Law (MURPHYSL)	
primary	Bridge Too Far, A (BRIDGET)	
primary	Chorus Line, A (CHORUSLI)	
primary	Family Thing, A (FAMILYTH)	
primary	Fish Called Wanda, A (FISH)	

Character	First Name	Last Name	Other Credits	Sales Display Order
Jesse	Rosenthal			01
Bernardo	Duran Jr.			01

# Content Security Does not Trust Infrastructure

- Instead of Isolating Content in “Secured” Infrastructure ...
- Content object backed by contract
- Parts encrypted with Content (AES) and Owner (AFGH) keys
- Proxy re-encryption on access
  - New cryptographic primitive
  - Multiple ‘access windows’ for multiple portals (or people) operating on same content
  - Re-encryption to DRM keyspace for consumer
- Public versus private metadata enforced through authorization

# Access Control & Rights Builtin

- Custom Smart contract + re-encryption = “Avails”
  - Okta group, time range, geo etc.
- Fabric auth int. with Enterprise OAuth
- Public access via fast state channel
- Blockchain record of all events
- Provable audience streaming data
  - per 2 sec
- Secured per-user wallet
  - favorite content, watch history, etc.

Screener managers > Screener 3

Display Content Info Groups

Screener availability manager configuration

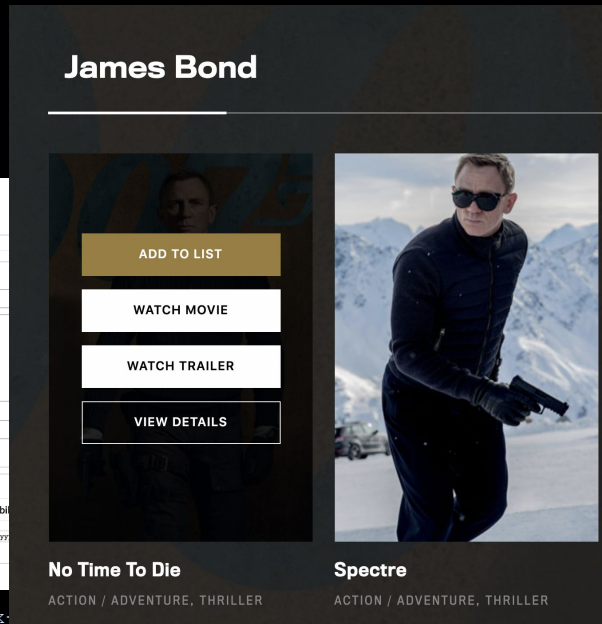
Name Screener 3

Description

Screener group Screeners

Availability

Asset Name	Status	Availability
ADDAMS18 - Mez	<input checked="" type="checkbox"/>	mm/dd/yyyy



<https://host-xx-xxx-xxx...>  
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mdoX3BrIjo iIn0%3D

**Q&A / Thanks**

