ELUV.IO

THE NEW SELL-THROUGH EXPERIENCE

ENABLED BY THE BLOCKCHAIN CONTENT FABRIC

LOTR Case Study

First Feature Film Release as a Web3 Movie Experience on the Blockchain

A Collaboration between Warner Bros Home Entertainment, Pretty Big Monster, and Eluvio, Inc.

ELUV.IO

AGENDA

Michelle Munson, CEO and Co-founder Eluvio, Inc.

Mark Nakano, VP Content Security, Warner Bros. Discovery

ELUV.IO

PBM

Introduction - What is This?

Why and How We Got Here

Technology Platform

Creation of the Immersive and WebXR Experience

Live Demo

Statistics and What's Next?

INTRODUCING
FOR THE FIRST TIME EVER
THE LORD OF THE RINGS
EXTENDED EDITION
WEB3
MOVIE EXPERIENCE

Play Video

INTRODUCTION

Michelle Munson, CEO and Co-founder, Eluvio, Inc.

WB MOVIEVERSE Lord of the Rings

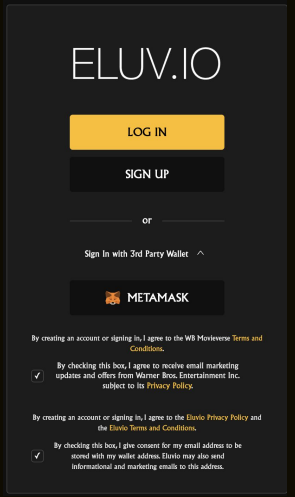
Web3 Living Movie Experience

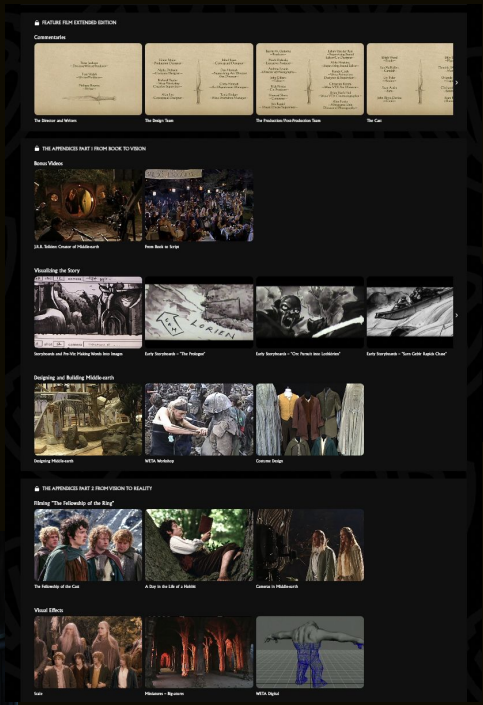
What is this new format?

- ➔ Full Length feature film streaming in 4K UHD
- ➔ Multi-location interactive immersive experience with Hidden WebXR Collectibles
- ➔ Bonus - 8 hours special features, audio commentaries and image galleries
- ➔ **All minted as an NFT**
- ➔ Authorization and DRM access exclusive to token holder and inline Media Wallet
- ➔ **Entertainment & the Fan**

MOVIEVERSE™
Home of Warner Bros. Web3 Movie Experiences
An entirely new way to own, collect and enjoy your favorite movies
THE LORD OF THE RINGS
THE FELLOWSHIP OF THE RING
EXTENDED EDITION
WEB3 MOVIE EXPERIENCE
PREMIERE DROP OCTOBER 21
OPENS 9 AM PACIFIC TIME / 12 PM EASTERN TIME
GET STARTED
WATCH TRAILER

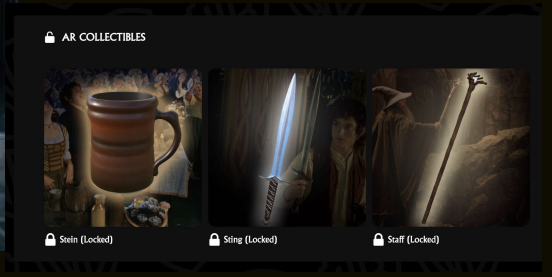
EPIC EDITION
999 MINT


ELUV.IO
LOG IN
SIGN UP
or
Sign In with 3rd Party Wallet
METAMASK
By creating an account or signing in, I agree to the WB Movieverse Terms and Conditions.
By checking this box, I agree to receive email marketing updates and offers from Warner Bros. Entertainment Inc. subject to its Privacy Policy.
By creating an account or signing in, I agree to the Eluvio Privacy Policy and the Eluvio Terms and Conditions.
By checking this box, I give consent for my email address to be stored with my wallet address. Eluvio may also send informational and marketing emails to this address.


FEATURE FILM EXTENDED EDITION
Commentaries
THE APPENDICES PART I FROM BOOK TO VISION
Bonus Videos
Visualizing the Story
Designing and Building Middle-earth
THE APPENDICES PART 2 FROM VISION TO REALITY
Filming "The Fellowship of the Ring"
Visual Effects

THE LORD OF THE RINGS
THE FELLOWSHIP OF THE RING
EXTENDED EDITION
WEB3 MOVIE EXPERIENCE
ENTER
EPIC EXPERIENCE

THE LORD OF THE RINGS
THE FELLOWSHIP OF THE RING
SPECIAL FEATURES
USE MOUSE TO MOVE
PLAY MOVIE


AR COLLECTIBLES
Stein (Locked)
Sting (Locked)
Staff (Locked)

Key Features

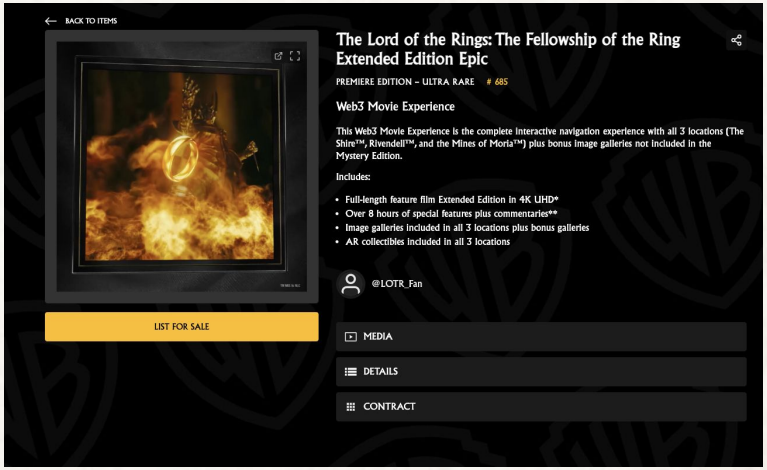
Web3 Living Movie Experience

- ➔ Eluvio Blockchain Content Fabric
  - ◆ Stored, served, owned, versioned, authorized
  - ◆ Web site, store, marketplace, wallet, content
- ➔ ERC-721 NFTs minted to user addresses
  - ◆ On this chain & managed by user wallets
- ➔ Just-in-time configuration and minting
  - ◆ From content objects (all types)
- ➔ 4K content streamed with strong DRM
- ➔ Exclusive on chain authorization
  - ◆ NFT ownership and geo-lock
- ➔ Media Wallet
  - ◆ Video, audio, galleries, webXR, interactive
  - ◆ Embedded, friction free claim
  - ◆ User's on-chain address
- ➔ Diverse payments
  - ◆ Credit Card, Coinbase, Wallet Balance, Direct w/ USDC
- ➔ Secondary marketplace
- ➔ "Evolve content"
  - ◆ Instant global version hash updates to minted tokens

WHY AND HOW WE GOT HERE

How it all started

- ➔ Idea hatched during the 2021 crypto and NFT frenzy
- ➔ Create a digital collectible, similar to the limited edition boxed sets
- ➔ NFT features and functions enabled this



Where we went

- Late 2021, committee formed to investigate this
  - Creatives
  - Marketing
  - Business
  - Analytics
  - ..... And Content Security
- Headache to properly protect a full length movie
- Eluvio presentation

TECHNOLOGY PLATFORM

Michelle Munson, CEO and Co-founder, Eluvio, Inc.

The Content Fabric Protocol

Utility Blockchain Network for Content

Just-in-Time Programmable Hyper Efficient No File Copies

Decentralized Streaming Distribution Storage

On Chain Ownership Versioning Access Control

Unlock the Value of Your Creative IP

Take control of your content and get started creating your first digital offering. Custom sites, channels, stores & resale marketplaces with multi-party sales and royalties for any media type & content release. Harness new revenue opportunities, huge savings, and brand loyalty.

LOW LATENCY 4K LIVE AND ON DEMAND STREAMING

LARGE LIBRARY SERVICING & DECENTRALIZED CDN

WEBXR AND IMMERSIVE CONTENT SERVING

AI-DRIVEN & DYNAMIC TRAITS

CUSTOMIZABLE EVENTS, DROPS AND MARKETPLACES

SELL THROUGH, ROYALTIES & PAYMENT GATEWAYS

MARKET MAKING CURATION & MATCHING

DATA WITHOUT MIDDLE PARTIES

Cost Savings

Eluvio Cost Savings: Streaming Comparisons

Efficiency driving your ROI

AWS Livestream Stack - BASIC

- AWS Elemental MediaLive
- AWS Elemental Media Package
- Amazon CloudFront

Basic Comparison Inputs	
Inputs per channel	1
Input Resolution	UHD (H.264/AVC 3840p <= 20 Mbps)
Ingest bitrate	10mbps
Cache/Hit Ratio	98%
Territory	North America
Output average	1.23 MB/s

Eluvio Price as % of AWS + Cloudfront CDN Price					
	NUMBER OF VIEWERS				
LIVESTREAM	**100**	**1,000**	**10,000**	**100,000**	**1,000,000**
1 Hour		91%	71%	79%	62%
10 Hours	90%	71%	79%	62%	**26%**
50 Hours	75%	76%	76%	33%	**21%**
100 Hours	73%	80%	62%	**26%**	**21%**
250 Hours	75%	81%	44%	**23%**	**20%**
500 Hours	78%	77%	33%	**21%**	**20%**
730 Hours	80%	70%	**29%**	**21%**	**20%**

Eluvio Cost Savings: Streaming Comparisons

Efficiency driving your ROI

AWS Livestream Stack + 3rd Party CDN - BASIC

- AWS Elemental MediaLive
- AWS Elemental Media Package
- 3rd Party CDN

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	NUMBER OF VIEWERS				
LIVESTREAM	100	1,000	10,000	100,000	1,000,000
1 Hour	47.44%	51.04%	64.13%	51.51%	25.29%
10 Hours	54.53%	64.45%	51.56%	25.30%	8.84%
50 Hours	63.43%	57.82%	34.04%	10.76%	6.61%
100 Hours	67.20%	52.13%	25.41%	8.46%	6.38%
250 Hours	65.76%	43.05%	15.42%	7.08%	6.53%
500 Hours	61.72%	34.91%	10.89%	6.62%	6.20%
730 Hours	59.04%	30.23%	9.44%	6.48%	6.18%

Eluvio Cost Savings: Streaming Comparisons

Efficiency driving your ROI

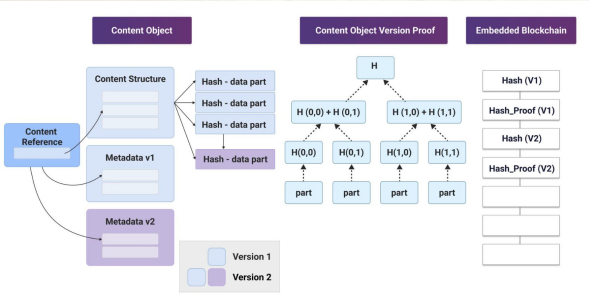
Assumptions								
Region	**US West (N. California)**							
MediaLive Compute			**MediaPackage Compute**			**Cloudfront or 3rd Party CDN**		
Inputs/Channel	1		**Inputs per Channel**	1	input	**Territory**	US	
Term	On Demand		**Ingest Bitrate**	10	mbps	**Output Ratio**		
Pipeline	Standard		**Average Bitrate/Viewer**	9.8	mbps	15	mbps	25.00%
Input Type	AVC		**Cache/Hit Ratio**	98%		10	mbps	50.00%
Input Resolution	UHD					5	mbps	20.00%
Bitrate	10-20	mbps				1	mbps	5.00%
Frame Rate	30-60	fps				**Average mbps**	9.80	
# SD Outputs	2							
# HD Outputs	1							
# UHD Outputs	1					**MB/s**	1.23	

Content Fabric Storage and Distribution

Utility Blockchain Network for Content

Content Fabric Protocol

Programmable Hyper Efficient No File copies	Storage Distribution Streaming	On Chain Ownership Versioning Access



A Blockchain Content Fabric: Enabling Web3 Media

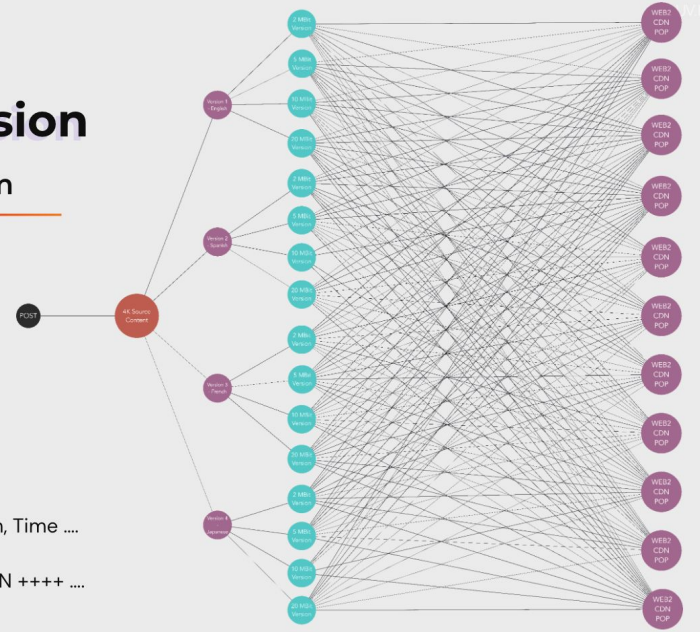
Duplication Explosion

Multi-language Streamed Film

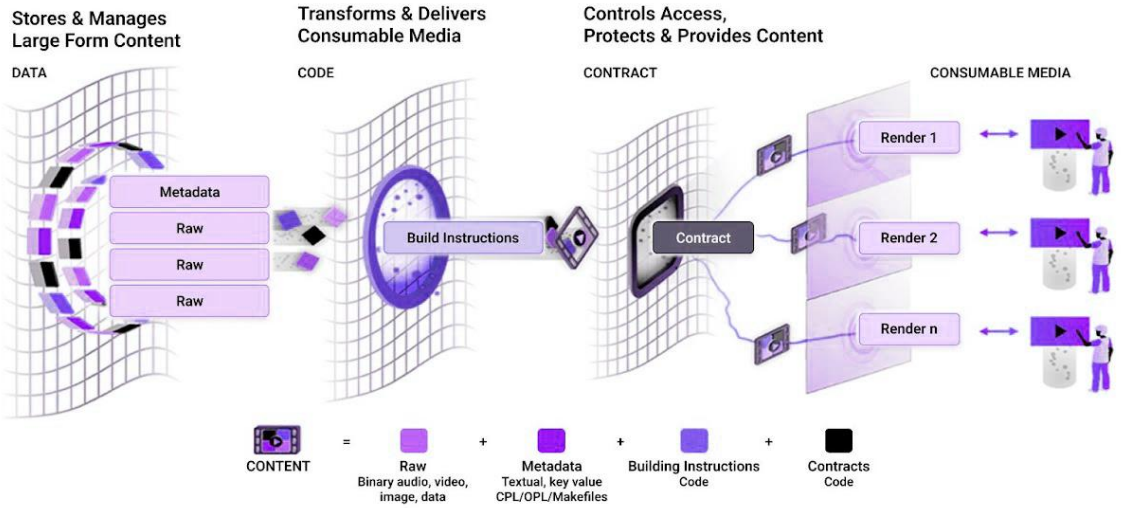
- → 5 bit rates
- → X N language dubs
- → X 2 strong DRM
- → X N device formats
- = 40 - 200+ variants!

Carbon: Storage, Transcoding, Core Bandwidth, Time ....

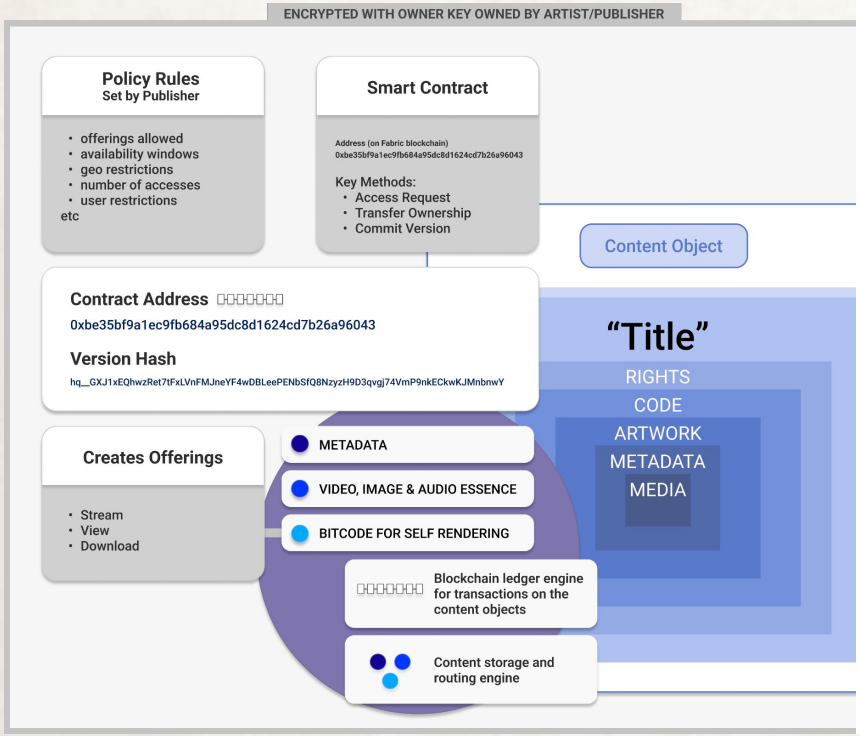
$$$$: Cloud Storage + Cloud Transcoder + CDN ++++ ....

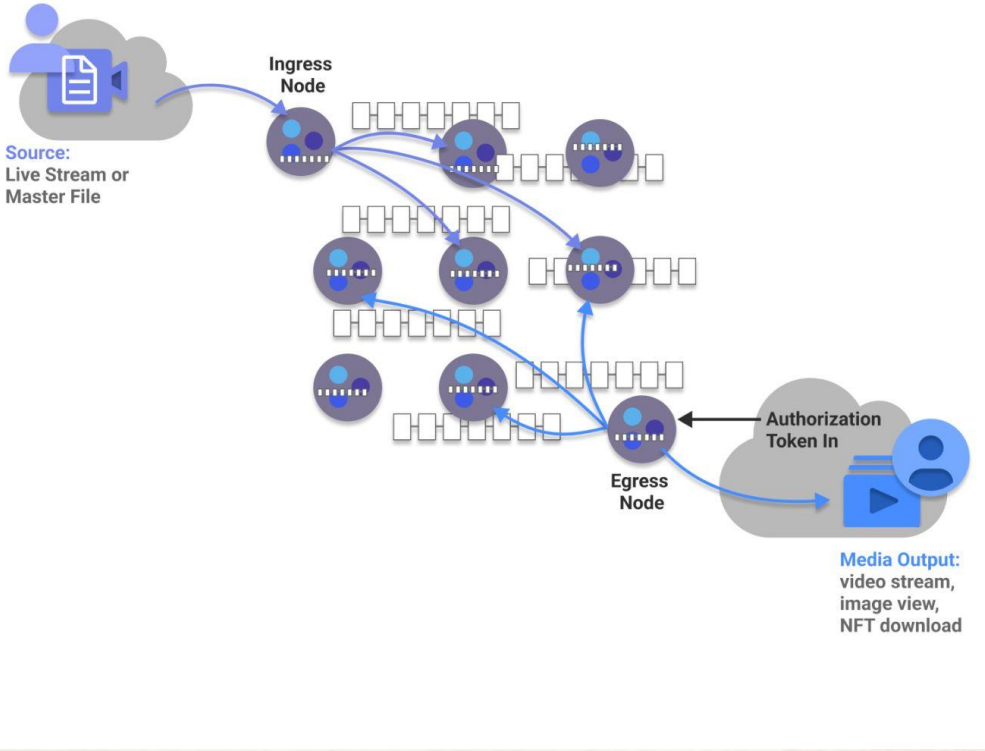


Content Fabric Pipeline



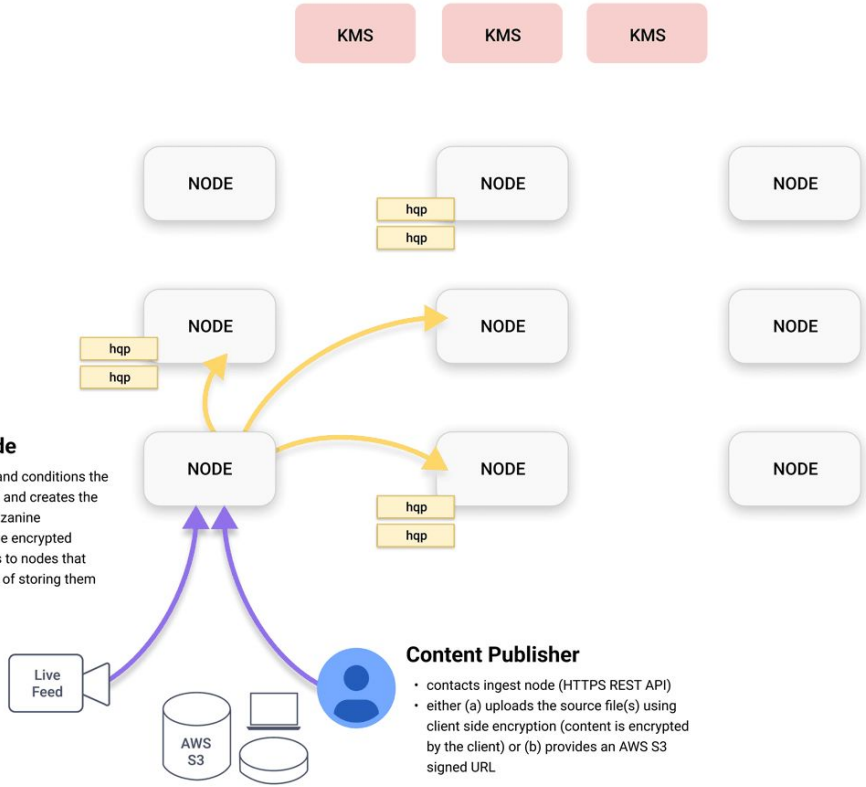
Blockchain Authorization & JIT Distribution





Eluvio Content Fabric System Diagram - Ingest and Playout VOD

Content ingest and playback happen asynchronously



Ingest Node

- transcodes and conditions the source file(s) and creates the playable mezzanine
- distributes the encrypted content parts to nodes that are in charge of storing them

Content Publisher

- contacts ingest node (HTTPS REST API)
- either (a) uploads the source file(s) using client side encryption (content is encrypted by the client) or (b) provides an AWS S3 signed URL

Player

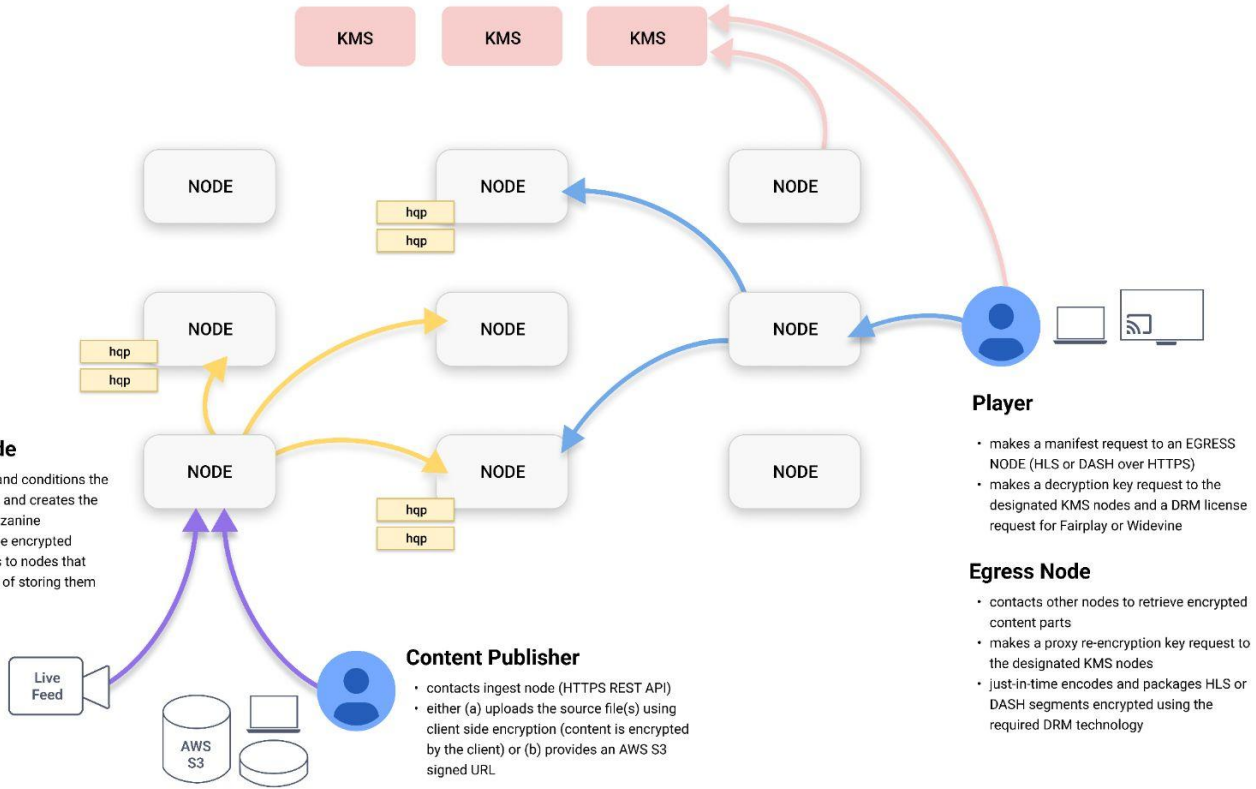
- makes a manifest request to an EGRESS NODE (HLS or DASH over HTTPS)
- makes a decryption key request to the designated KMS nodes and a DRM license request for Fairplay or Widevine

Egress Node

- contacts other nodes to retrieve encrypted content parts
- makes a proxy re-encryption key request to the designated KMS nodes
- just-in-time encodes and packages HLS or DASH segments encrypted using the required DRM technology

Eluvio Content Fabric System Diagram - Live Streaming

Content ingest and playback happen simultaneously



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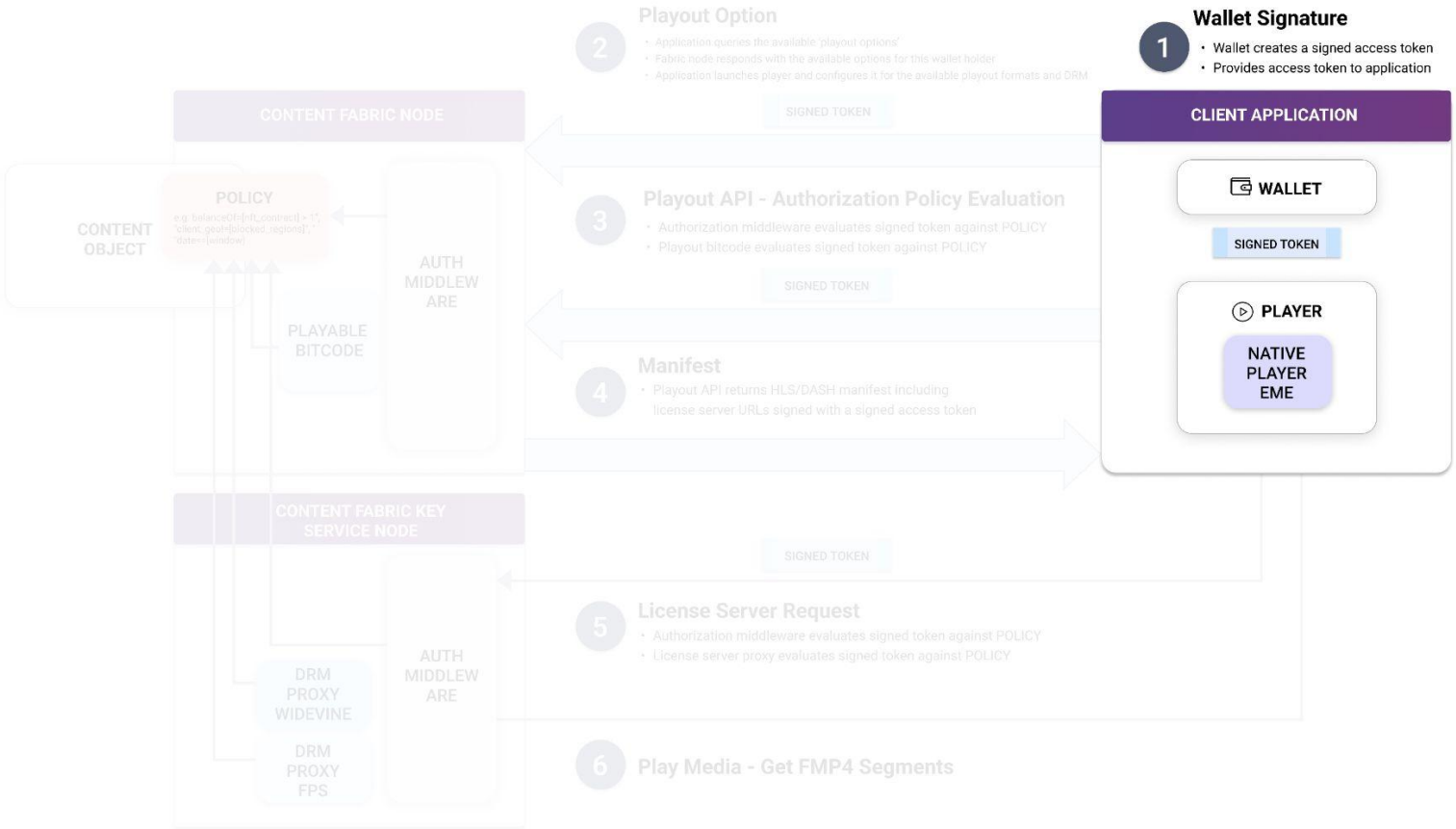
Application and Player API and Security Flow



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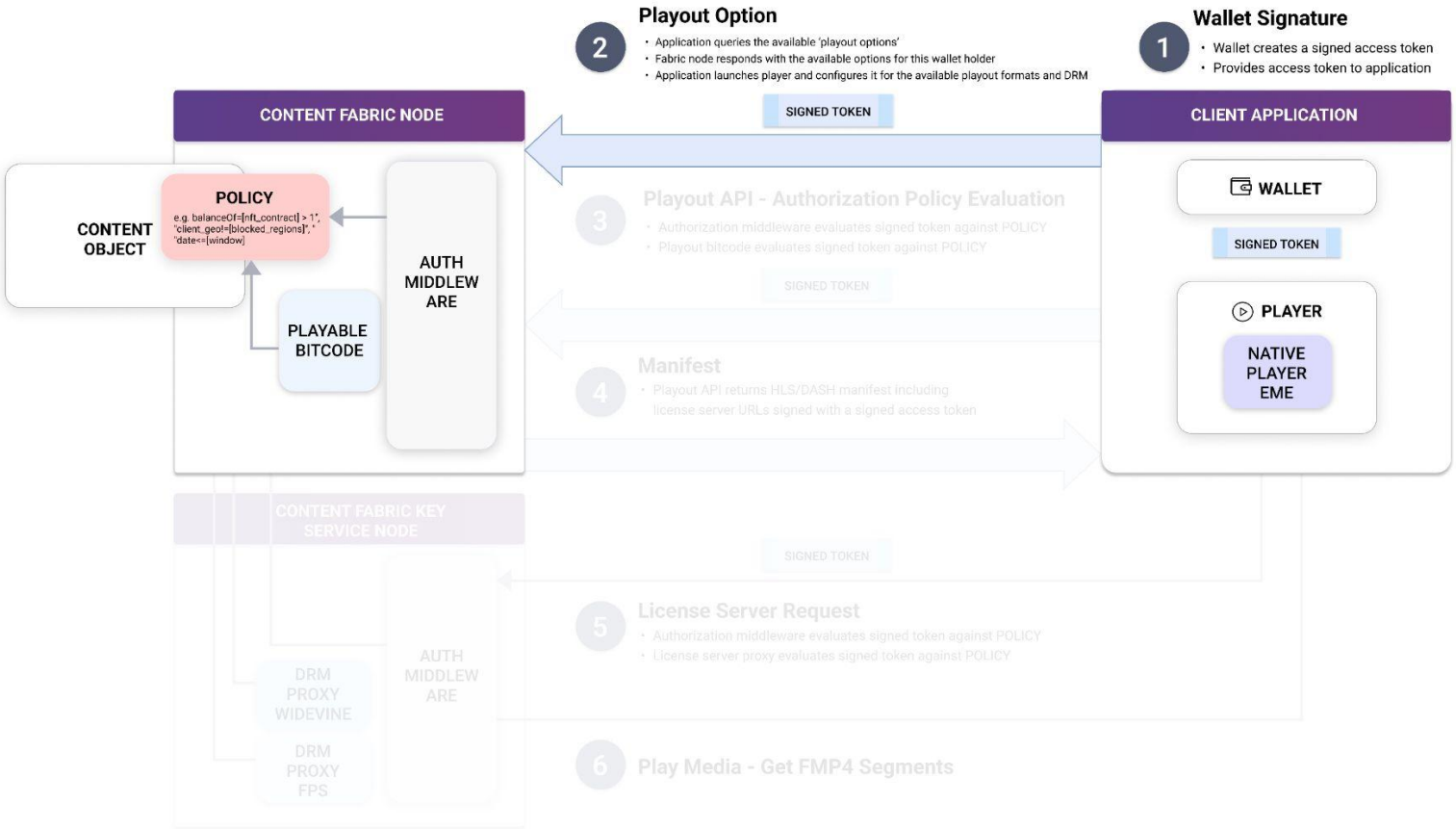

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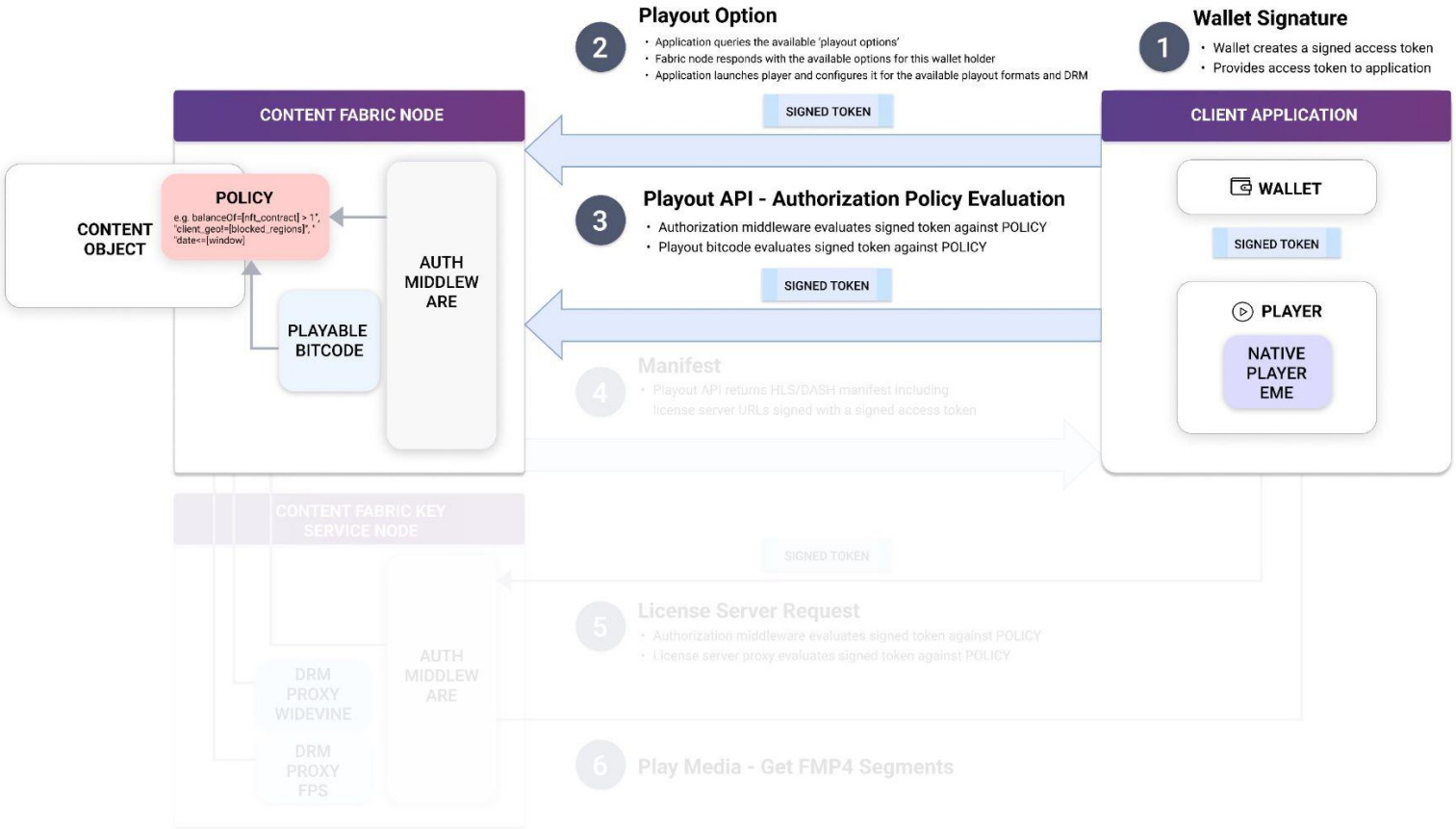

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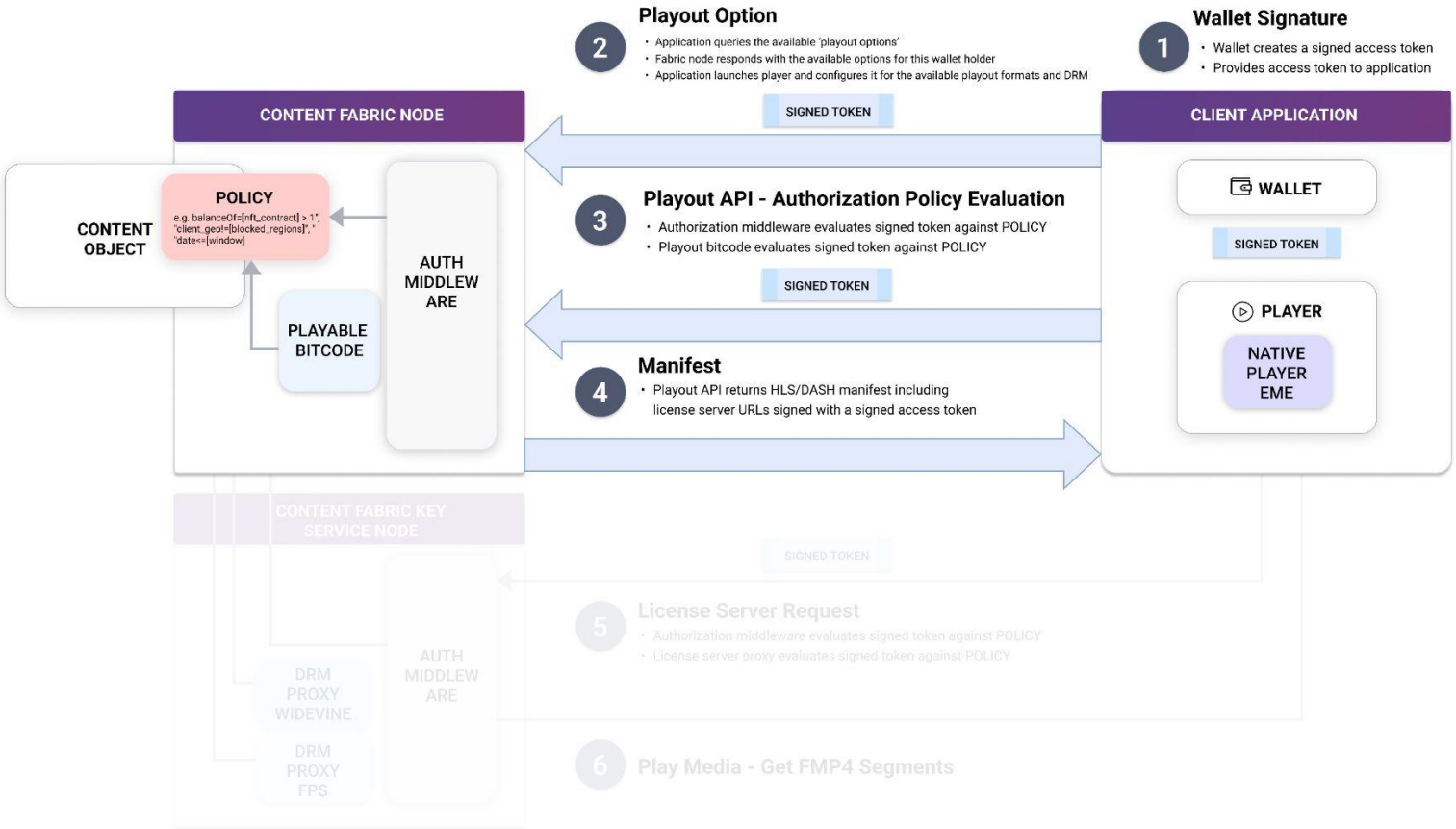

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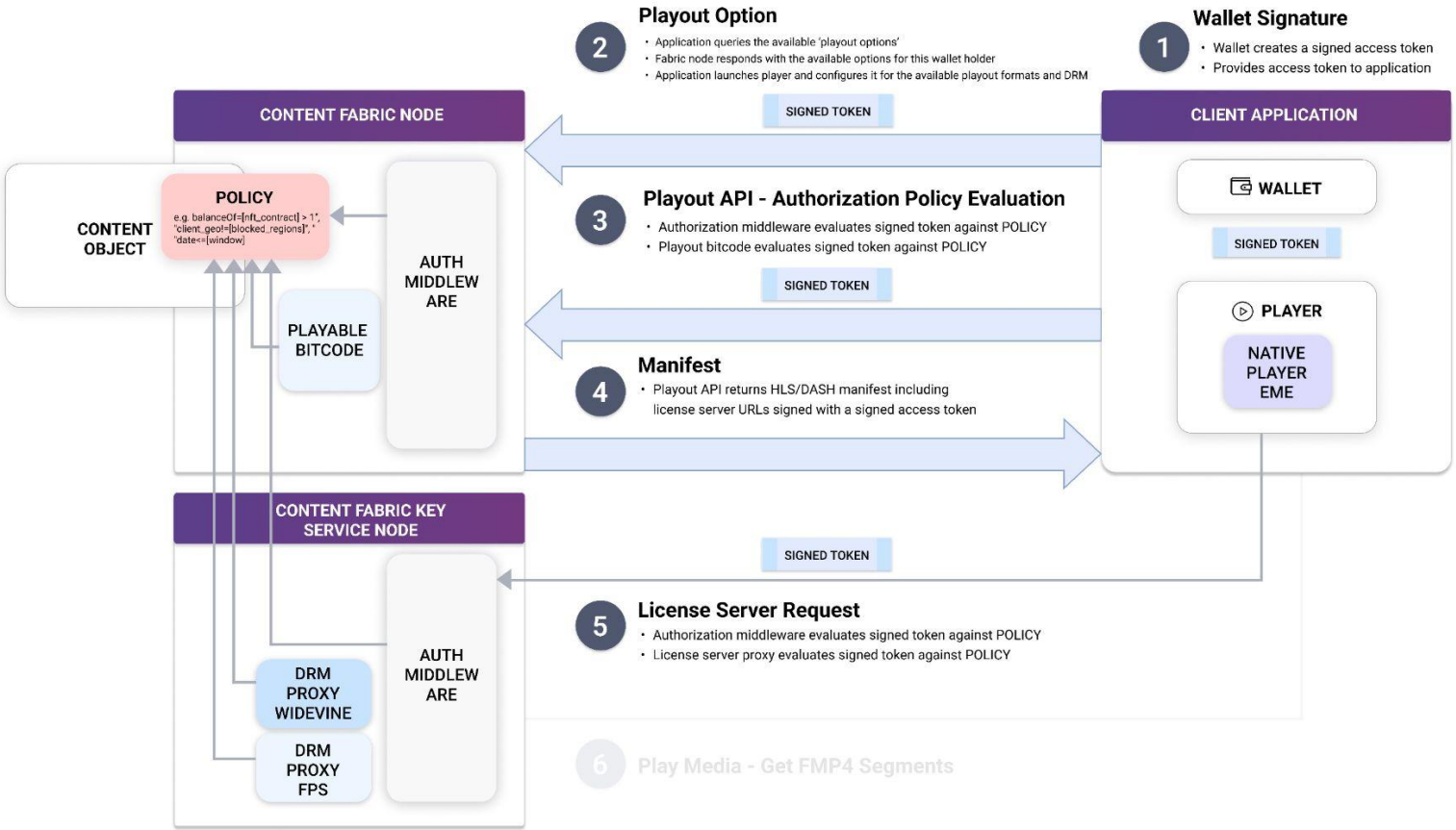

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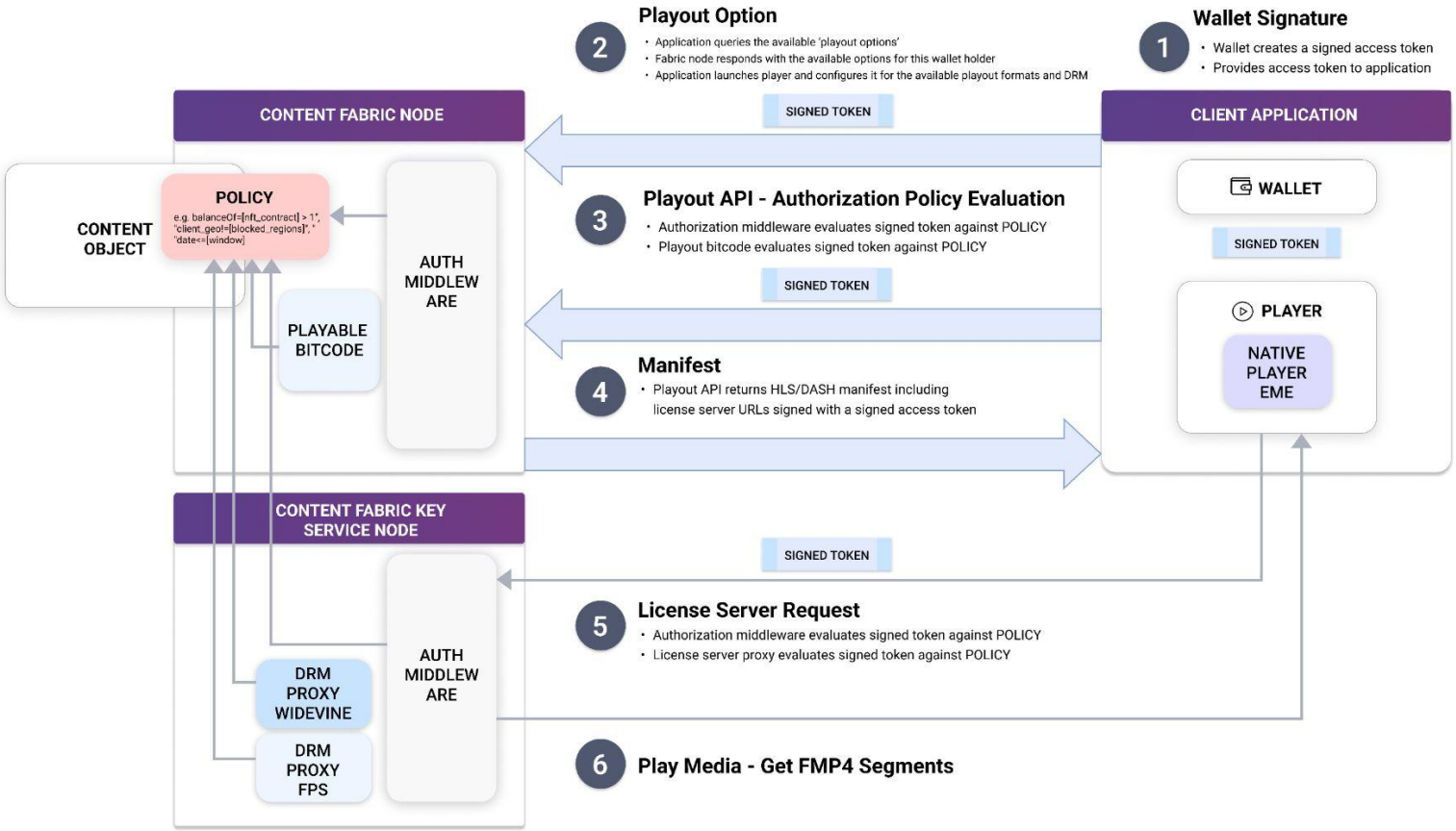
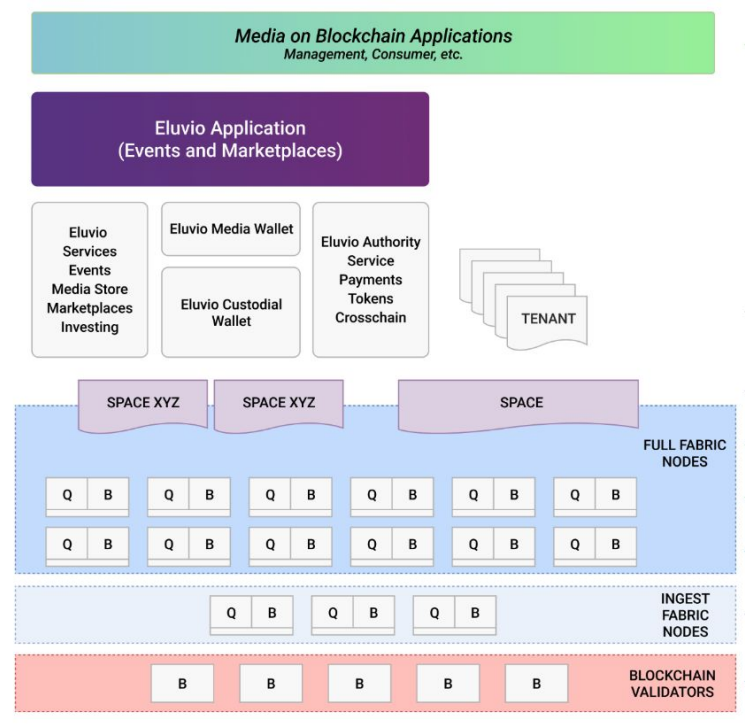
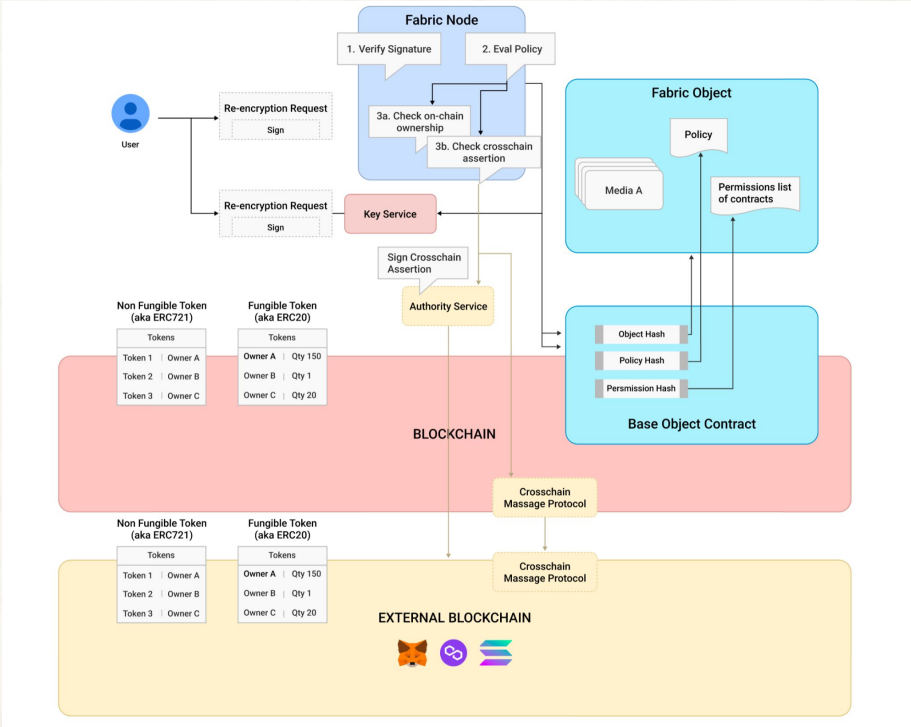


Fabric Network & Blockchain Controlled Access





Core Utilities

Content Distribution Features

- Global Streaming (ABR) Just-in-Time on Publishing
- Watermarking
- File Download API
- Dynamic Clip Generation
- Built-in Rights/Availability Management On Chain via Authorization Policy
- Permission and Avails Management by Tickets, Groups, NFTs
- On Chain Token-Gating, Tickets, Cross-Chain Token Gating, Redeemable Coupons
- Dynamic Packaging and Download of Mezzanine & Asset Deliverables (BtoB)

Web3 Capabilities

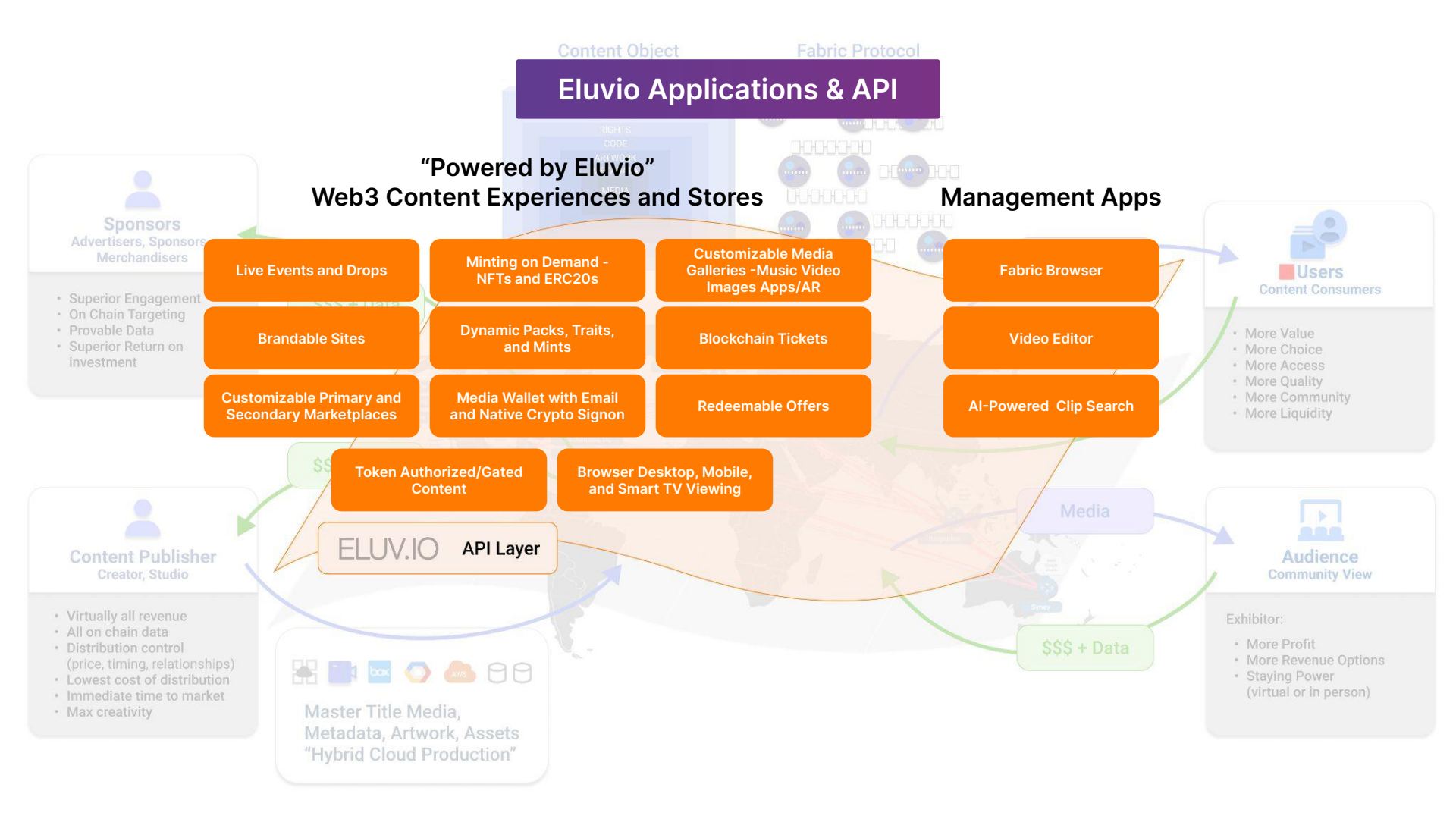
- On Chain Audience Access and Engagement Data
- Wallet Transaction Analytics
- Enterprise OAuth Integration
- Automatic Collection Burn and Mint Reward
- Flexible Payments Gateway
- Dynamic and Generative Mints
- Extensible Smart Contracts
- Blockchain Ticketing & Unique Authorization Codes
- On Chain Redeemable Offers
- Automatic Collection Burn and Mint Reward
- Universal Media Wallet and Flexible Web2/Web3 Sign On Compatible with all EVM Wallets
- Turnkey Marketplaces for Primary and Secondary Media Sales
- Token Gated Content with Flexible Policy - On Fabric Blockchain or Cross-Chain Ethereum, Solana, etc.
- Native ERC721, ERC1155, ERC20 Token Minting/Transfers

Media Management Features

- Content Tag & Video Search
- Automatic Tagging of Asset using AI/ML
- Site API & Static Content Delivery
- Direct Ingest of Any Master Video/Audio/File Format or Live Stream
- Dynamic Bitcode API: Channels, Sequences, Ad Insertion, Multi-view, Personalization, Hot Spots
- Metadata and Advanced Video Variants
- Automatic Versioning of Content w/ Metadata

Content Fabric Utility Services

Master Title Media, Metadata, Artwork, Assets
"Hybrid Cloud Production"


Content Object
Fabric Protocol
Eluvio Applications & API
"Powered by Eluvio"
Web3 Content Experiences and Stores
Management Apps
Live Events and Drops
Minting on Demand - NFTs and ERC20s
Customizable Media Galleries -Music Video Images Apps/AR
Brandable Sites
Dynamic Packs, Traits, and Mints
Blockchain Tickets
Customizable Primary and Secondary Marketplaces
Media Wallet with Email and Native Crypto Signon
Redeemable Offers
Token Authorized/Gated Content
Browser Desktop, Mobile, and Smart TV Viewing
ELUV.IO API Layer
Fabric Browser
Video Editor
AI-Powered Clip Search
Sponsors
Advertisers, Sponsors Merchandisers
Superior Engagement
On Chain Targeting
Provable Data
Superior Return on investment
Users
Content Consumers
More Value
More Choice
More Access
More Quality
More Community
More Liquidity
Content Publisher
Creator, Studio
Virtually all revenue
All on chain data
Distribution control (price, timing, relationships)
Lowest cost of distribution
Immediate time to market
Max creativity
Media
$$$ + Data
Audience
Community View
Exhibitor:
More Profit
More Revenue Options
Staying Power (virtual or in person)
Master Title Media, Metadata, Artwork, Assets
"Hybrid Cloud Production"

THE LORD OF THE RINGS
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web3.wb.com
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PBM

TRANSPORTING FANS TO MIDDLE EARTH

Creating a collectible, immersive experience

Creative Goals

- ➔ Celebrate the Film
- ➔ Frictionless Enjoyment
- ➔ Surprise & Delight
- ➔ Pride of Ownership

Process

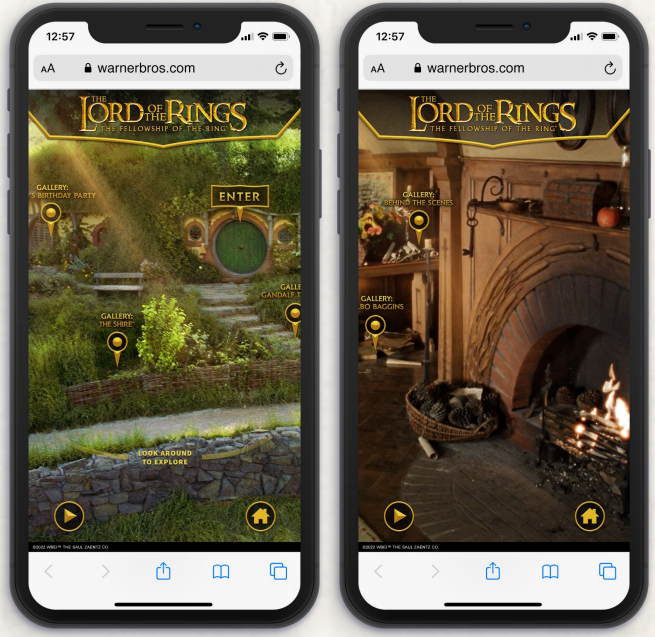
- ➔ Communicate the Vision
- ➔ Assess the Available Assets
- ➔ Define Technical Architecture
- ➔ Craft the Storytelling
- ➔ Layer in Engagement
- ➔ Publish & Deliver

CONJURING MAGIC

Making the imaginary appear real, on WiFi

MINDING TOLKIEN AND JACKSON

Transforming a beloved film into an immersive, interactive experience



THE LORD OF THE RINGS
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LIVE DEMO
web3.wb.com
ELUV.IO
PBM

STATISTICS & WHAT'S NEXT

Engagement … And What's to come 2023

Statistics

- 11,250 wallets affiliated
- 3,100 unique owners; 6,200 NFTs
- 2,500 hours video; 40% 4K UHD
- 7,500 hours immersive WebXR
  - Staff - 2,812; Sting - 2,593; Stein - 2,100
- Post-mint user videos "*I love this NFT …*"
- Ave Price $187.51 for Epic today (after 120 days)
- $135,000 secondary
- Profitable

What's Next?

- Warner 100 Year Anniversary
- Slate of films underway
- Interactive will expand beyond WebXR, pushing creative and technology boundaries in every film
- Extending content security to per-wallet forensic marking
- Premium VoD ….

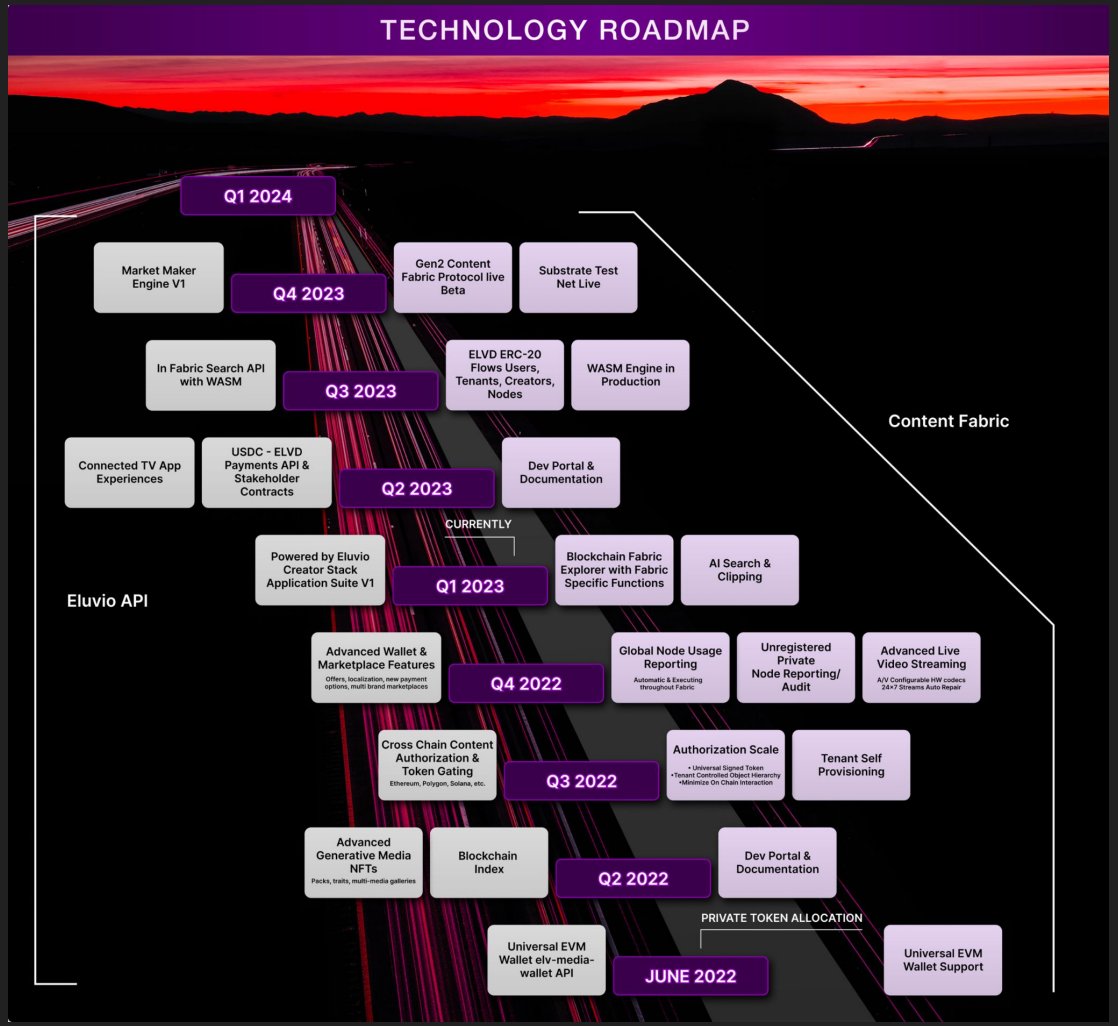
MOVIEVERSE™ Home of Warner Bros. Web3 Movie Experiences

An entirely new way to own, collect and enjoy your favorite movies

CELEBRATING EVERY STORY

Sign up to receive email updates
and offers for WB Movieverse

SIGN UP



Link to Full Roadmap on Eluvio Website