ELUV.IO

WELCOMES YOU TO IBC 2023

THE CONTENT FABRIC

An open and decentralized streaming, content distribution, and storage network built for the Third Generation Internet.

High Performance 4K Live, PVOD, FAST and Interactive Streaming

State-of-the-Art Blockchain Security, DRM, Authorization and Payments

>10X Cost Savings & Carbon Efficiency at Scale

Simplicity - All Functions In One Dynamic Protocol

Transparent, Tamper-Free, and Web3 Native

Discover the Content Fabric for Premium Streaming

Michelle Munson   CEO/Co-Founder, Eluvio

Serban Simu   President/Co-Founder, Eluvio

The Content Fabric for Premium Streaming

Motivations

Technology Overview

Demonstrations

Premium VoD

Live Streaming

FAST Channels with Personalized Ad Insertion

All Sell Through Models

Video Catalog - Screening, Delivery, AI Clip Search (no file transfer)

Use Cases

Premium Video On Demand Streaming and Sell Through

Film & Television Libraries, Archives, AI Tagging, Clipping & Search

Live streaming at Scale

Web3 Marketing & Engagement

FAST Channels with Personalized Ad Insertion

WHY??

Over 80% of Internet is video $500B/yr $1.5T by 2030

Yet The Internet is not designed for 'content'

Addresses, streams, manages files & bytes ... not 'content'

Media applications are Trapped by Complexity

Multi-tier, Multi-vendor

Full service platforms are just wrappers on top!

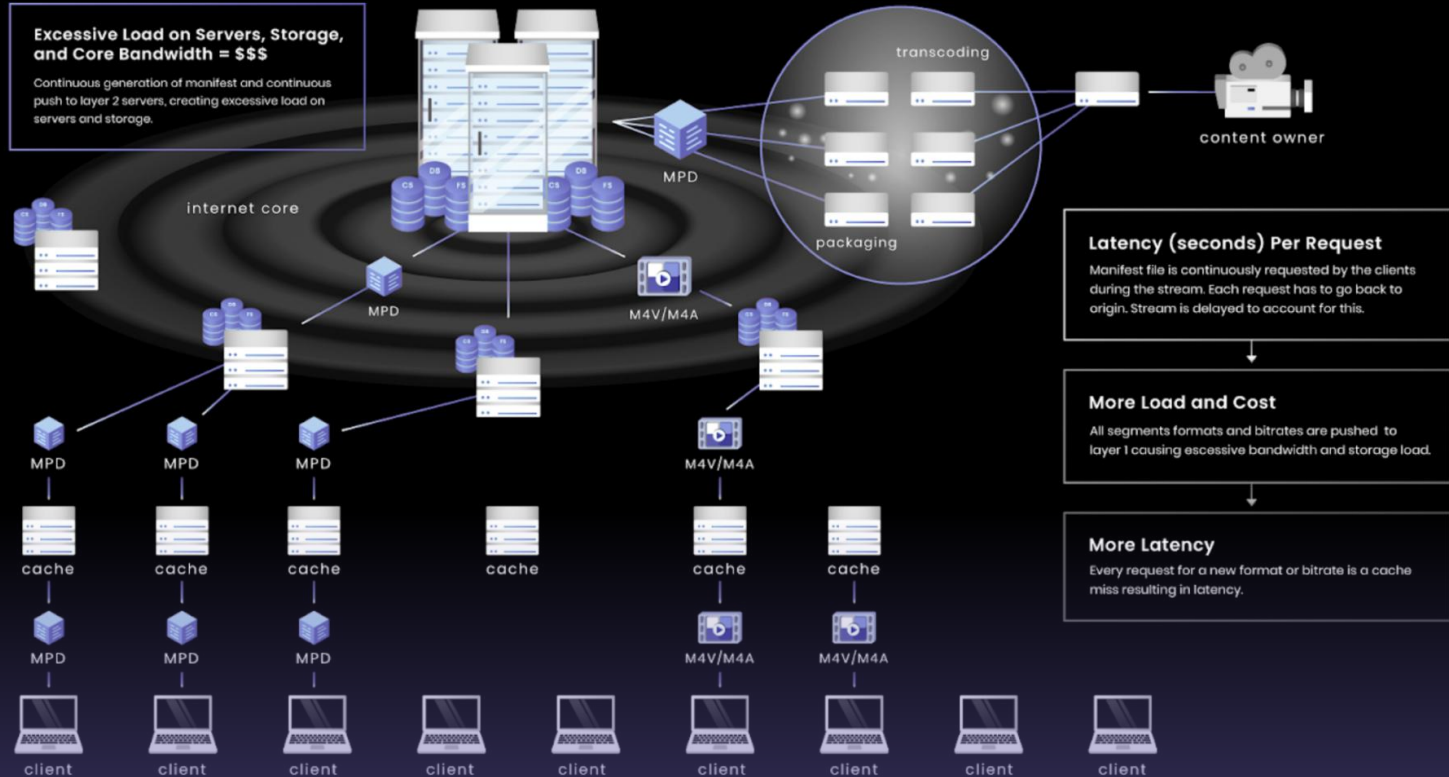**CDNs & Media Clouds are wasteful and limit capability**

Content Native Protocol

Publish, Store, Deliver at Scale
Transform & Personalize
Enforce Access & Protect IP
Prove Engagement
Settle Payments

Video is >80% of Internet Traffic $500B

Yet Little Has Changed since 2000 ...

Excessive Load on Servers, Storage, and Core Bandwidth = $$$

Continuous generation of manifest and continuous push to layer 2 servers, creating excessive load on servers and storage.

transcoding

packaging

content owner

MPD

internet core

MPD

M4V/M4A

Latency (seconds) Per Request

Manifest file is continuously requested by the clients during the stream. Each request has to go back to origin. Stream is delayed to account for this.

More Load and Cost

All segments formats and bitrates are pushed to layer 1 causing escessive bandwidth and storage load.

More Latency

Every request for a new format or bitrate is a cache miss resulting in latency.

MPD | MPD | MPD | M4V/M4A

cache | cache | cache | cache | cache | cache

MPD | MPD | MPD | M4V/M4A | M4V/M4A

client | client | client | client | client | client | client | client | client

Duplication Explosion : Media Cloud, Network, CDN

Multi-language Streamed PVOD

5 bit rates

x N language dubs

x 2 strong DRM
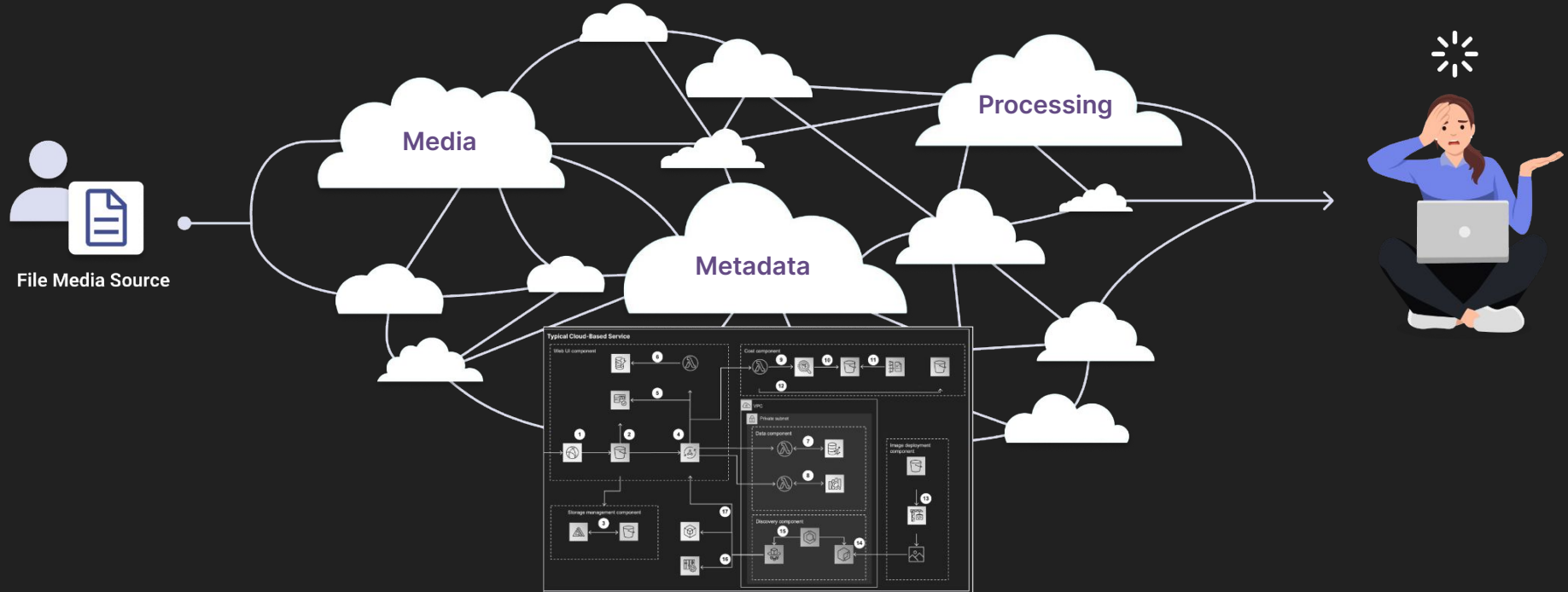
x N device formats

=   40 - 200 + variants!

Carbon: Storage, Transcoding,
Core Bandwidth, Time ....
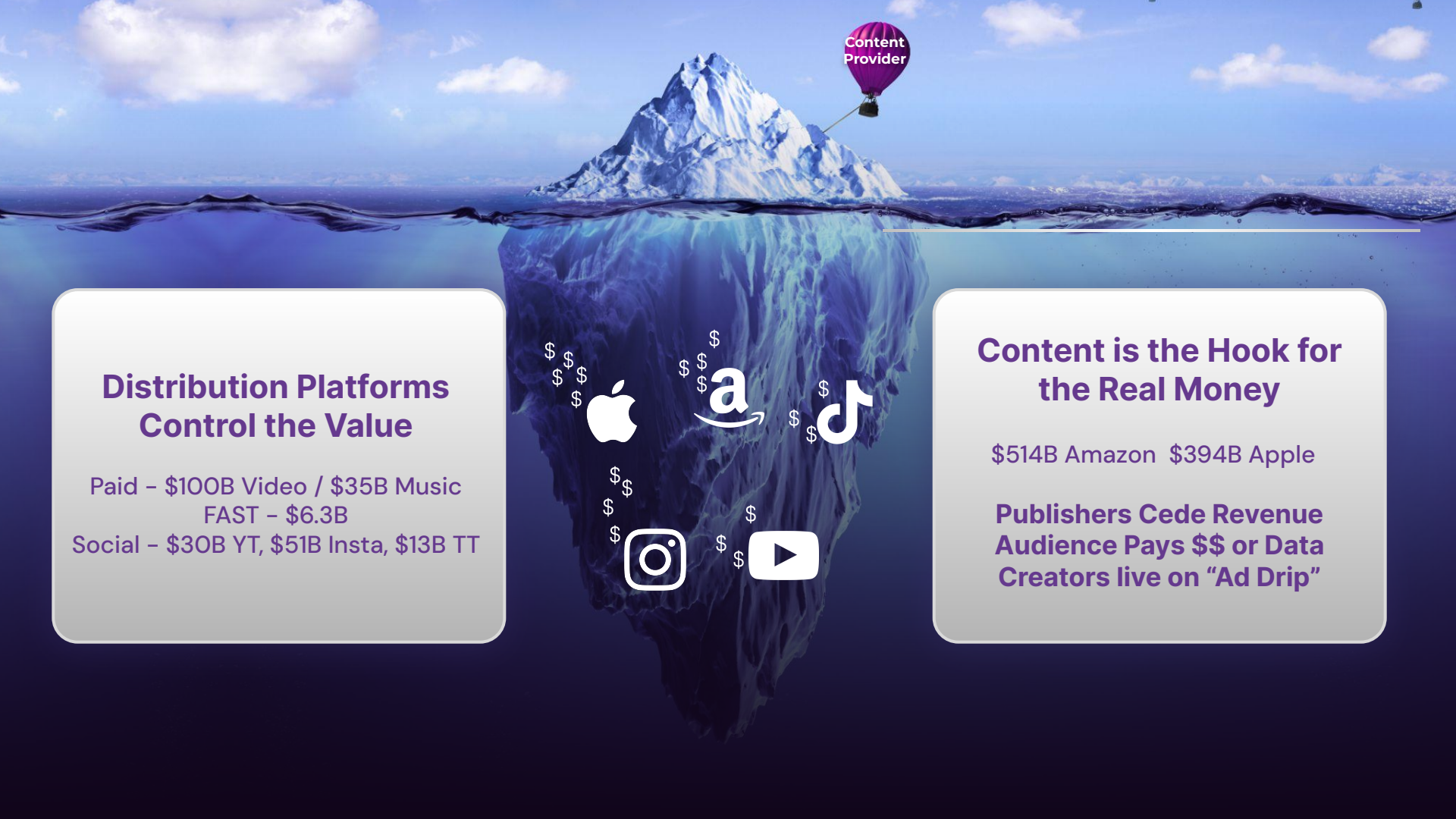**$$$$** : Cloud Storage +
Cloud Transcoder + CDN +++ ....

Typical Cloud-Based Service

Media, Metadata, and Processing are separated and have to move around to come together.

Content Economics

Distribution Platforms Control the Value

Paid – $100B Video / $35B Music
FAST – $6.3B
Social – $30B YT, $51B Insta, $13B TT

Content is the Hook for the Real Money

$514B Amazon $394B Apple

**Publishers Cede Revenue
Audience Pays $$ or Data
Creators live on "Ad Drip"**
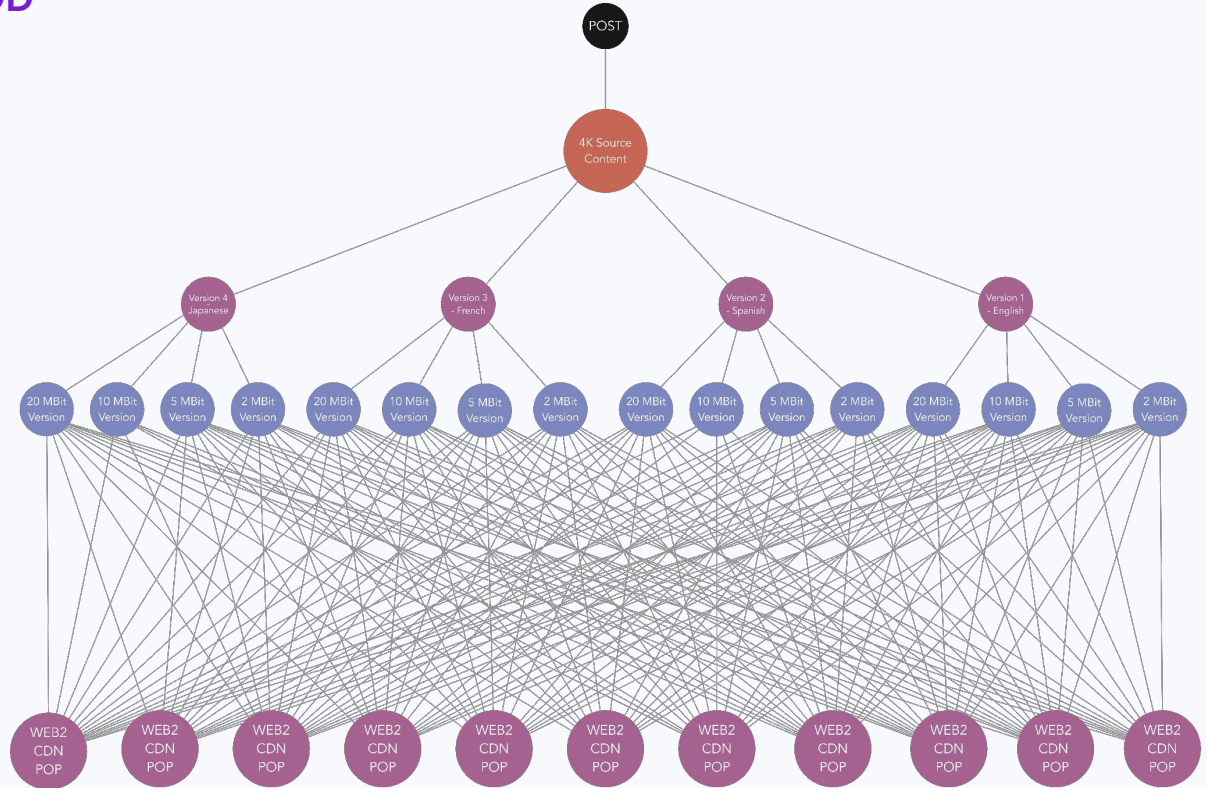
Content Provider

The Content Fabric

The Technology

Open - An open network of nodes running the Content Fabric Protocol as a utility blockchain network

Fast - Decentralized, Low Latency Streaming, Distribution and Storage including 4K Live, PVOD, Interactive

Simple - All 'Media Cloud' + 'CDN' Functions in One Dynamic Protocol

Hyper Efficient - 20X Cost Saving and Carbon Saving at Scale

Secure - Trustless Content Encryption, DRM, Watermarking and Access Control Built In and End-to-End

Transparent - Tamper-free, Web3 Native, and PII Neutral

Just-in-Time and Personalizable - Content Insertion and Composable at scale (FAST)

The Content Fabric Protocol

Content Native, Blockchain Controlled

**High Performance
Streaming
Content Distribution
Tamper Proof
Storage**

**Just-in-Time
Programmable
Content-Addressed
Hyper Efficient
No File Copies**

**On-chain
Ownership
Versioning
Access Control
Payments**

The Team

We are a team of innovative technologists specializing in scalable content distribution, real time video, trust-less security, and blockchain ownership.

Led by founders Michelle Munson and Serban Simu who previously created Aspera FASP

https://en.wikipedia.org/wiki/Fast_and_Secure_Protocol

Open architecture, full-stack Ethereum blockchain, open-source github.com/eluv-io

Adopted by major media companies
Over 10 US Patents
HQ in Berkeley, CA
UC Berkeley Xcel

Advanced Full-Feature Media Platform & API

Consumer Grade with No CDN or Media Cloud Needed

All-in-one Content Management, Distribution, Authorization, and DRM from source asset to audience.

Next level CDN, Media Cloud & Aggregator in one Fabric protocol for Video, App & Static Content.

Low Latency 4K Streaming, Live and On Demand with Beautiful Quality & Advanced Features.

Scalable JIT Server-side Transformation, Content Insertion, and Personalization (Any HLS/DASH Player)

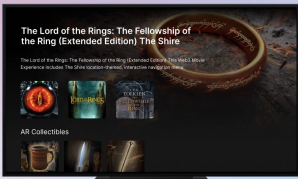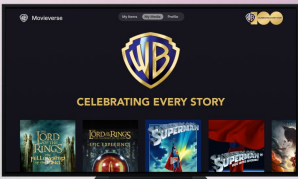Built in Blockchain Monetization and Web3 Native. Tokens, payments, tickets, wallets, and more.
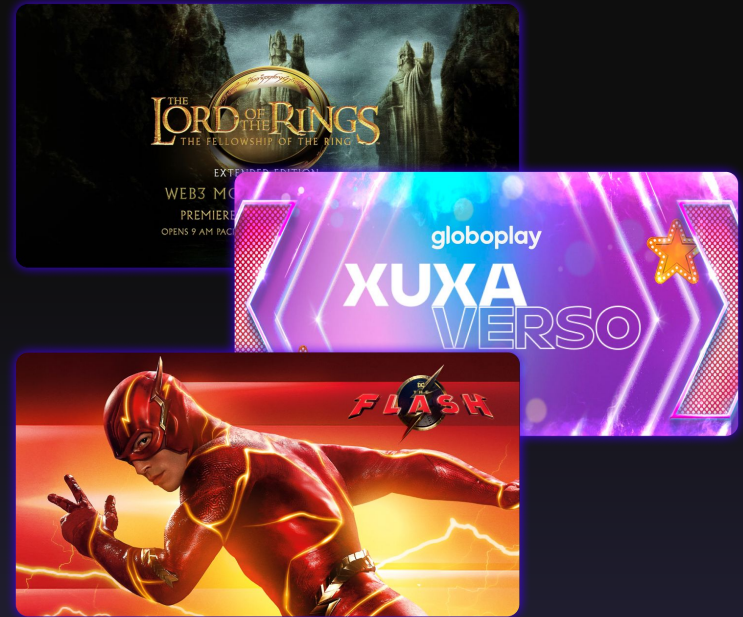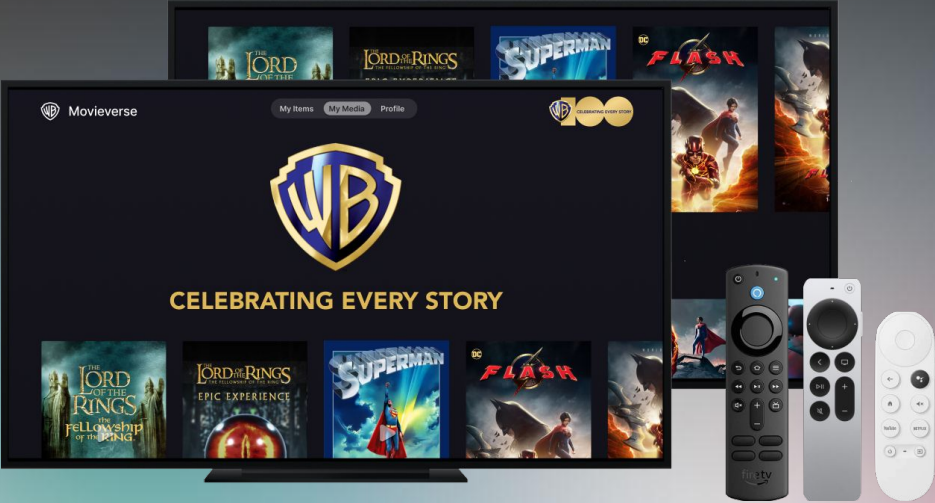
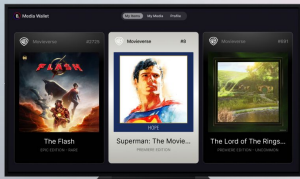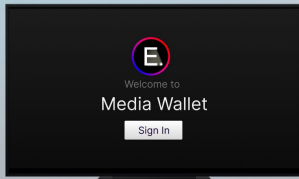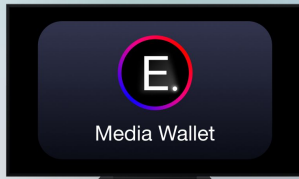# Eluvio Media Wallet

Enjoy your personal media collection stored and streamed from the Eluvio Content Fabric

▶ See how to get started

Download on Apple TV

GET IT ON Google Play

available at amazon appstore

🖥 See full list of devices

Movieverse

My Items My Media Profile

CELEBRATING EVERY STORY

Media Wallet

Welcome to Media Wallet

Sign In

The Flash

Superman: The Movie...

The Lord of The Rings...

Movieverse

CELEBRATING EVERY STORY

The Lord of the Rings: The Fellowship of the Ring (Extended Edition) The Shire

AR Collectibles

Videos

The Flash
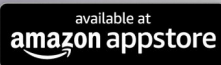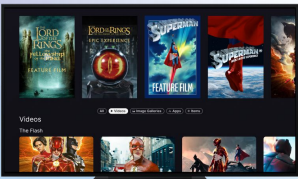
Leverage the Power of the Eluvio Media Wallet

Watch, buy, enjoy and gift your media from anywhere

Sign Up

Access your media assets anytime with high performance 4K streaming, with the assurance of tamper proof content storage, and state-of-the-art blockchain security.

Enjoy your personal media collection stored and streamed from the Eluvio Content Fabric including Web3 movies, live channels, interactive apps, books and more.

A full 'EVM' crypto wallet, sign on to your Eluvio Content Fabric address with your own private keys via Metamask or via email, Google or Apple ID. Manage all of your assets, NFTs and tokens that prove your media ownership and your rewards.

Content Applications

Powered by the Content Fabric

LOW LATENCY 4K LIVE, PREMIUM VOD, IMMERSIVE/XR STREAMING AT SCALE

ALL SELL THROUGH: FREE, SUBSCRIPTION, TRANSACTION, ROYALTIES, PAYMENTS

FAST CHANNELS WITH DYNAMIC CONTENT INSERTION AT SCALE

PERSONALIZED ADS AND CONTENT WITH MIN PII

LARGE VIDEO LIBRARY SERVICING, DISTRIBUTION & DECENTRALIZED CDN

CUSTOMIZABLE EVENTS, DROPS, RELEASES AND MARKETPLACES, WEB3 NATIVE

TRANSPARENT PER USER ENGAGEMENT, PURCHASE, AND REDEMPTION DATA

ML/AI CONTENT TAGGING, SEARCH AND CLIPS DATA DRIVEN CONTENT MARKETPLACES

Built for the New Video Economy

Distribute & Monetize Stunning Experiences at Scale

Publishers and Creators

Deliver your content with beautiful, fast streaming and complete security

Control your assets and maximize profitability
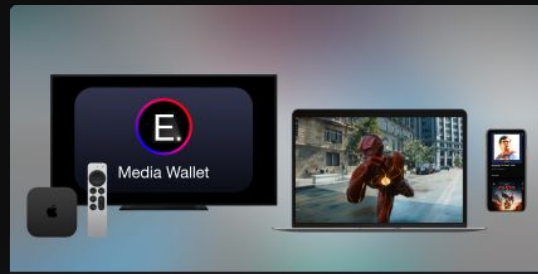
Engage directly with your users and sponsors

API Developers & Node Providers

Earn utility fees for contributing Fabric nodes

Develop any media application with personalization and interactivity

Unlock the creative potential of your project with the Fabric APIs

Consumers & Users

Leverage the power of your Media Wallet

All of your assets stored and streamed from the Content Fabric

Sign on with your own private keys or secure email and control your data

Enjoy on any connected TV or browser

Cost Savings vs Media Cloud + CDN

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		88.06%	63.80%	62.73%	32.94%
10 Hours	80.40%	63.44%	62.67%	32.94%	**22.65%**
50 Hours	65.27%	62.57%	45.34%	**23.97%**	**21.54%**
100 Hours	60.43%	62.16%	32.98%	**22.66%**	**21.40%**
250 Hours	57.74%	53.77%	**26.42%**	**21.83%**	**21.31%**
500 Hours	58.96%	45.23%	**24.07%**	**21.55%**	**21.28%**
730 Hours	58.48%	38.01%	**23.26%**	**21.46%**	**21.27%**

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

Basic Comparison Inputs	
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Eluvio Price as a % of AWS + 3rd Party CDN Price					
	NUMBER OF VIEWERS				
LIVESTREAM	**100**	**1,000**	**10,000**	**100,000**	**1,000,000**
1 Hour	44.38%	49.64%	57.76%	40.70%	13.39%
10 Hours	48.92%	57.52%	40.71%	13.39%	7.57%
50 Hours	54.86%	47.31%	20.24%	7.93%	6.69%
100 Hours	55.54%	40.74%	13.44%	7.24%	6.62%
250 Hours	50.52%	28.62%	9.35%	6.83%	6.89%
500 Hours	46.63%	20.62%	7.99%	6.70%	6.57%
730 Hours	43.10%	16.41%	7.56%	6.65%	6.56%

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	

Features & Apps

Core Utilities

Media Management

- 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
- Turnkey Marketplaces for Primary and Secondary Media Sales

Streaming & Distribution

- Global Streaming (ABR) Just-in-Time on Publishing
- File Download API
- Built-in Rights/Availability Management On Chain via Authorization Policy
- On Chain Token-Gating, Tickets, Cross-Chain Token Gating, Redeemable Coupons
- Personalized and Dynamic Content Insertion
- Wallet Transaction Analytics
- Watermarking
- Dynamic Clip Generation
- Permission and Avails Management by Tickets, Groups, NFTs
- Dynamic Packaging and Download of Mezzanine & Asset Deliverables (BtoB)
- On Chain Audience Access and Engagement Data
- Enterprise OAuth Integration

Web3 Native

- Flexible Payments Gateway
- Extensible Smart Contracts
- On Chain Redeemable Offers
- Universal Media Wallet and Flexible Web2/Web3 Sign On Compatible with all EVM Wallets
- Token Gated Content with Flexible Policy - On Fabric Blockchain or Cross-Chain Ethereum, Solana, etc.
- Blockchain Ticketing & Claim Codes
- Automatic Collection Burn and Mint Reward
- Native ERC721, ERC1155, ERC20 Token Minting/Transfersz, Dynamic and Generative Mints

Fabric Management Apps

Management Apps

Eluvio Fabric Browser

Media Ingest

Media Ingest

Video Editor

"Powered by Eluvio" Experiences, Stores, Wallets

|		
Turnkey Marketplaces for Media Sales	Browser Desktop, Mobile, and Smart TV Viewing	Redeemable Offers
Brandable Sites	Email and Native Crypto Signon	Dynamic Packs, Traits, and Mints
Live Events and Drops	Customizable Media Galleries - Music Video Images Apps/AR	Token Authorized/Gated Content
Minting on Demand - NFTs and ERC20s	Blockchain Tickets	Payment Gateway Fiat, Crypto, and Balance
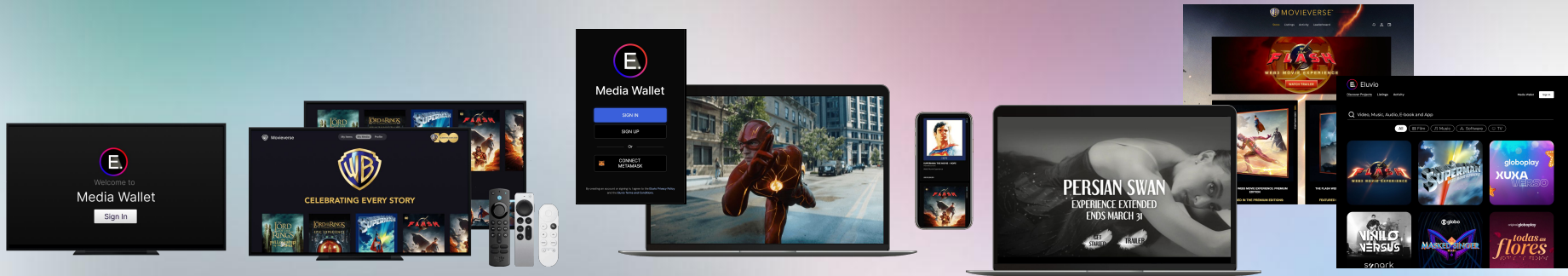
Enabling
New Media Economies

Discover Web3 Media Projects.
All built on the Blockchain Content Fabric.
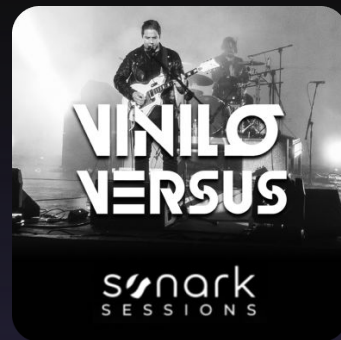
Content Fabric Protocol

Content Fabric Protocol

One software stack

- Open + intelligent protocol on top of TCP/IP, network of nodes, organized as a utility network

Content Addressable

- Content **ingests, stores, and distributes** across nodes in a hashed binary representation, "parts"

- Assignment of "parts" enables **fast publishing and fast lookup**

- Parts are linked together in objects called **"content objects"**

Just-in-Time Composed Output

- Output – such as streaming – is generated on demand from these parts by executing the code **(no file copies)**

Blockchain Security, Authorization, Veracity, Settlement

- Version history is stored **per object, on chain**

- Access control including re-encryption are **blockchain transactions**

- All actions are **transactional** and provable - engagement, redemption, node work, etc.

Pipelined Operations

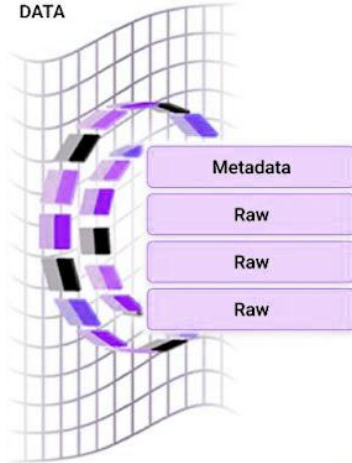- Network transport, transcoding, packaging, etc. is **pipelined** and real-time

Content Fabric Storage & Distribution
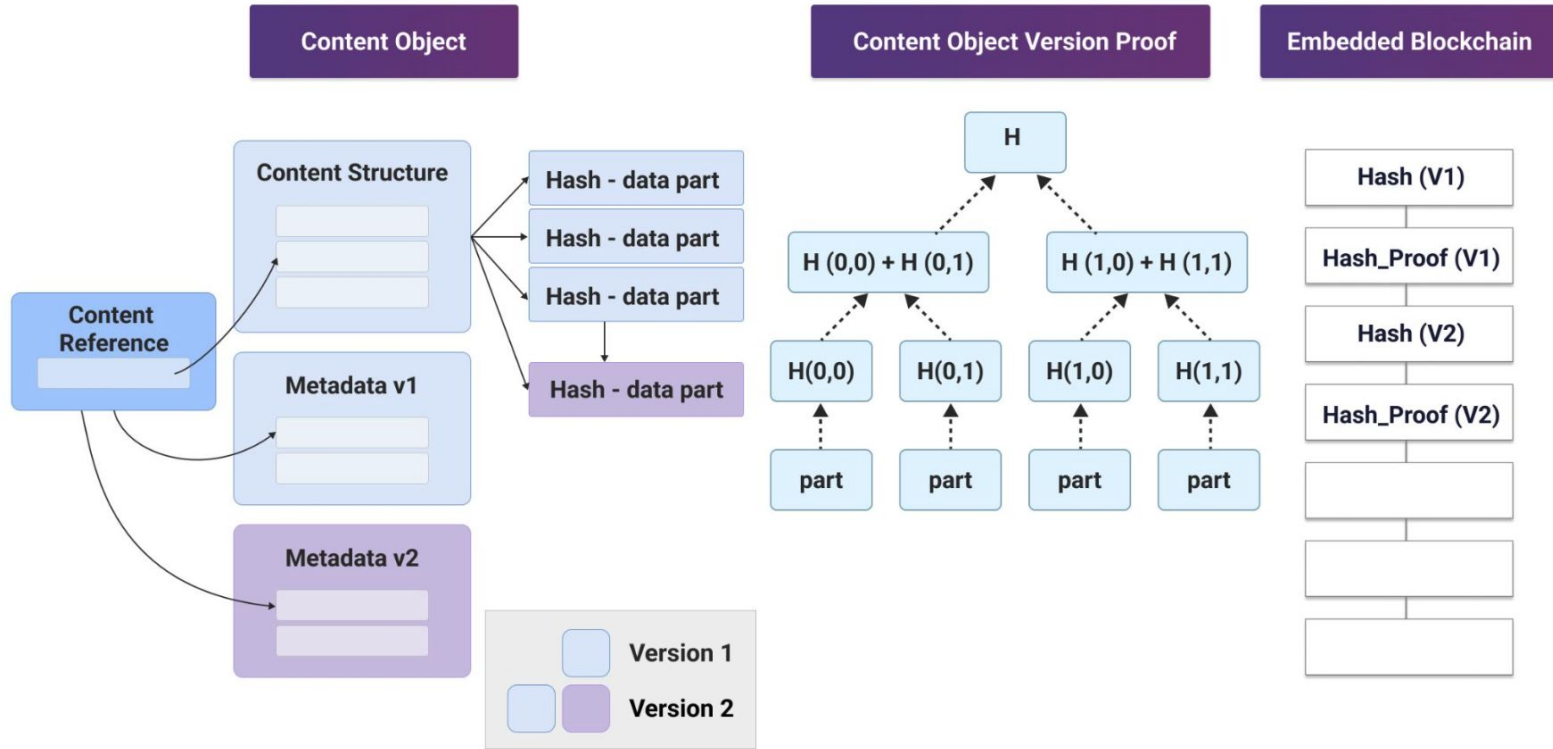
Content Fabric Pipeline
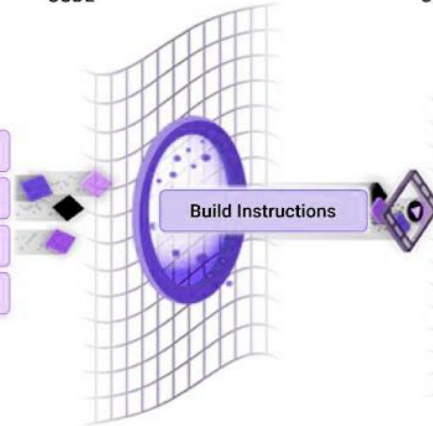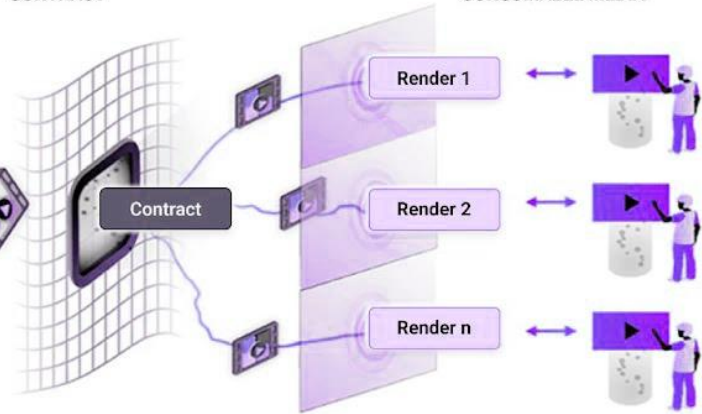
Blockchain Authorization & JIT Distribution

Source:
Live Stream or Master File

Ingress Node

Egress Node

Authorization Token In

Media Output:
video stream, image view, NFT download

ENCRYPTED WITH OWNER KEY OWNED BY ARTIST/PUBLISHER

Policy Rules
Set by Publisher

- offerings allowed
- availability windows
- geo restrictions
- number of accesses
- user restrictions

etc

Smart Contract

Address (on Fabric blockchain)
0xbe35bf9a1ec9fb684a95dc8d1624cd7b26a96043

Key Methods:
- Access Request
- Transfer Ownership
- Commit Version

Content Object

Contract Address
0xbe35bf9a1ec9fb684a95dc8d1624cd7b26a96043

Version Hash
hq__GXJ1xEQhwzRet7tFxLVnFMJneYF4wDBLeePENbSfQ8NzyzH9D3qvgj74VmP9nkECkwKJMnbnwY

"Title"

RIGHTS
CODE
ARTWORK
METADATA
MEDIA

Creates Offerings

- Stream
- View
- Download

- METADATA
- VIDEO, IMAGE & AUDIO ESSENCE
- BITCODE FOR SELF RENDERING

Blockchain ledger engine for transactions on the content objects

Content storage and routing engine

Content Fabric Just-in-Time Distribution

Seattle

Silicon Valley

Los Angeles

Toronto

Chi

Washington, DC

Miami

London 1

London 2

Amsterdam

Frankfurt

Paris

Ingress Node

Source:
Live Stream or
Master File

Authorization Token In

Media Output:
video stream,
image view,
file download

Egress Node

Authorization Token In

Media Output:
video stream,
image view,
file download

Egress Node

Authorization Token In

Media Output:
video stream,
image view,
file download

Egress Node

Authorization Token In

Media Output:
video stream,
image view,
file download

Sydney

Results

Flexible, just-in-time content, high quality

Any media "rep" from the same source - images, live streams, data, files …

Super fast (2 seconds end-to-end live)

Resource efficient (50X less carbon)

Tamper proof content / Inherent chain of ownership & Complete security

Built-in Rights Management - "On chain" hashes of rights data (as well as media) & native royalty contracts

Pluggable, global media pipelines

- Live Streaming

- Self-Enforcing Premium VoD

- Personalized SS Ad Insertion (FAST)

- Add New Insertion Opps In-Stream

- Auto Search/Clip/Stream Archives

- Interactive content/XR governed by on-chain ownership

- Factories for Media via NFTs and Tokens

Use Cases

[WB logo]	**Premium Video On Demand Streaming and Sell Through**	[MGM SONY logos]	**Film & Television Libraries, Archives, AI Tagging, Clipping & Search**
[Telstra logo]	**Live streaming at Scale**	[globo logo]	**Web3 Marketing & Engagement**
[FOX logo]	**FAST Channels with Personalized Ad Insertion**		

CONTACT US

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