ELUVIO @ CALHACKS 2018

Content Fabric / Blockchain & Machine Learning
API Challenges

PRESENTATION OUTLINE

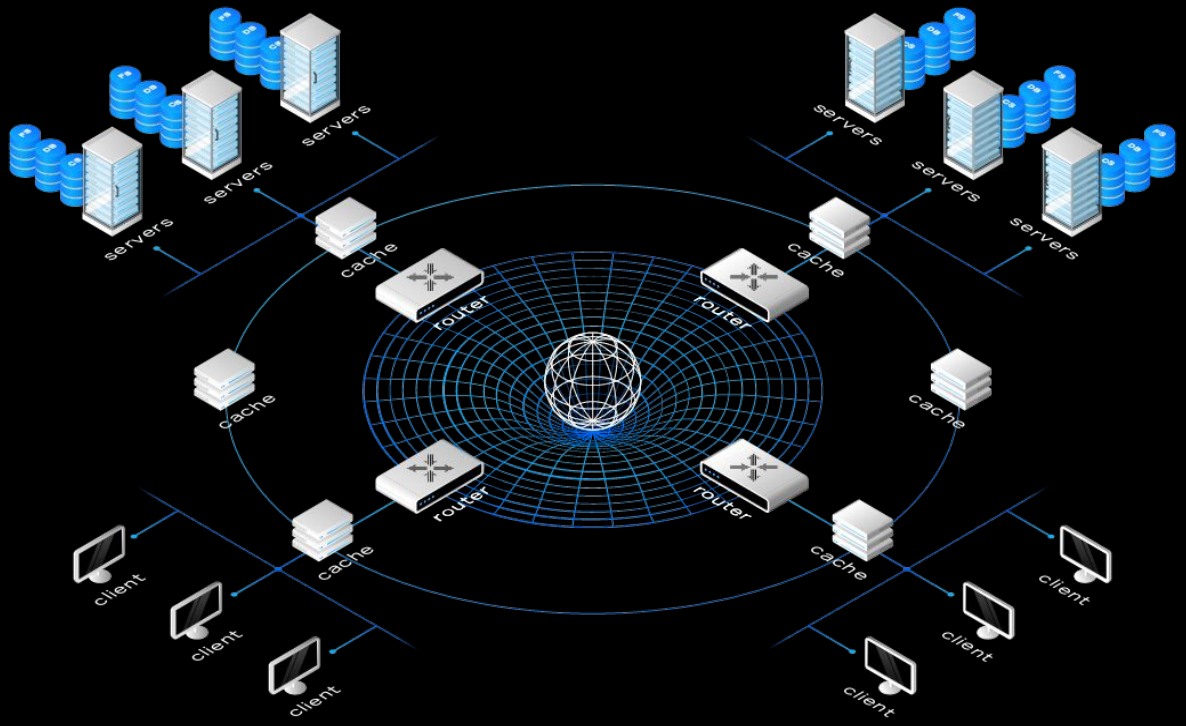
- Background on Eluvio
- Challenge 1 - Eluvio Content Fabric APIs
- Challenge 2 - Machine Learning for Content
- Logistics and Prizes!

WHO IS ELUVIO?

- Berkeley startup creating a “content centric” Internet.
- The Eluvio Content Fabric (ECF) is a novel decentralized platform allowing creators of digital content, viewers, infrastructure providers and app developers to enjoy a fast, low latency infrastructure for distributing, personalizing, selling, and consuming digital content (ala video).

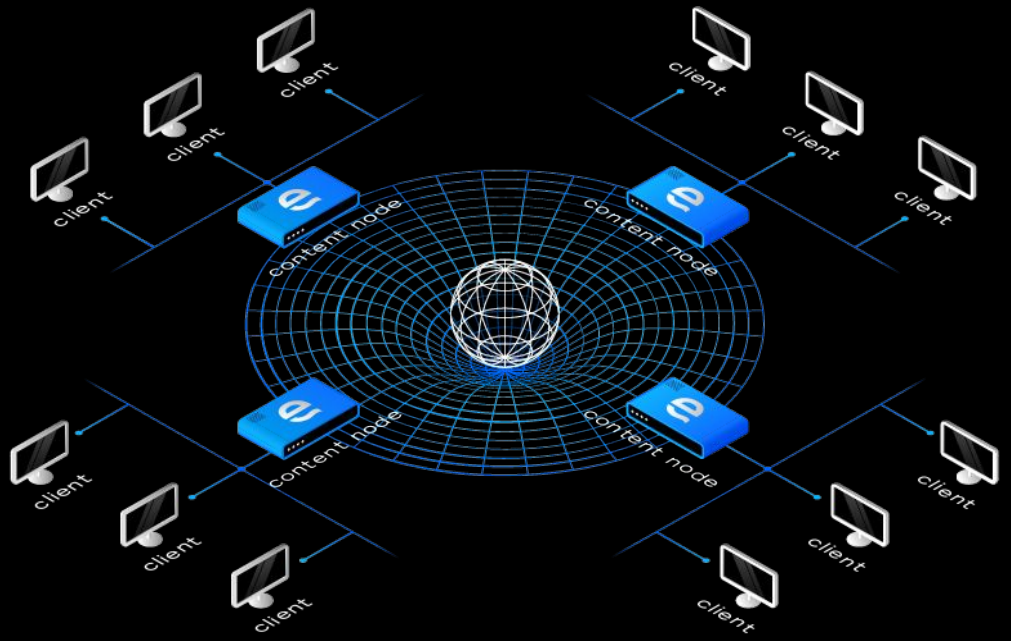
DID YOU EVER WISH WE COULD (RE-)BUILD THE INTERNET FOR VIDEO?

CHANGING THIS



INTO THIS ...

MAXIMALLY EFFICIENT, INFINITELY SCALABLE, PROGRAMMABLE, SECURE

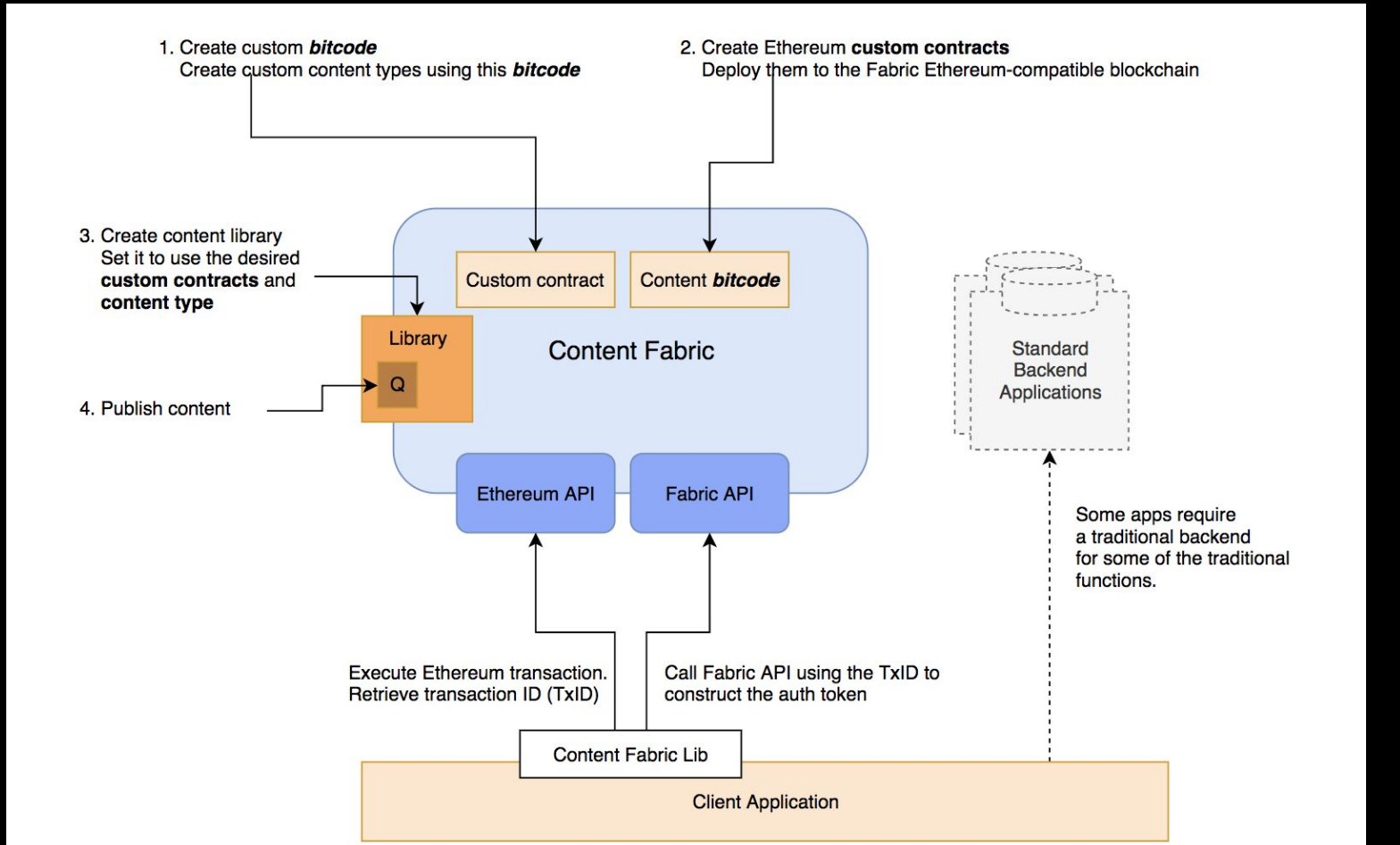


EIUVIO CONTENT FABRIC KEY NEW TECH

- Fast, machine learning driven content routing and low-latency media streaming
- Decentralized storage of media and metadata without duplication
- Programmable, just-in time composition
- Trustless content protection from creator to consumer
- Blockchain-controlled content access
- Smart contracts for multi-party transactions

WHAT CAN YOU DO WITH THE ECF APIs?

- Distribute (stream and download) digital content from source without pre-transcoding/pre-packaging of outputs (low cost, fast)
- Create multi-app personalized outputs for smart TVs, mobile or desktop applications from one source
- Personalize the media for each user through programmable bitcode
- Tag/classify the media (for anything!), including with ML
- Create marketplaces of content, user engagement and sponsorship using the smart contracts, metadata, and blockchain security built in
- Allow users to transparently, securely share their data in exchange for their attention
- Prove the integrity and version history of media served


1. Create custom **bitcode**
Create custom content types using this **bitcode**
2. Create Ethereum **custom contracts**
Deploy them to the Fabric Ethereum-compatible blockchain
3. Create content library
Set it to use the desired **custom contracts** and **content type**
4. Publish content
Library
Q
Custom contract
Content **bitcode**
Content Fabric
Ethereum API
Fabric API
Standard Backend Applications
Some apps require a traditional backend for some of the traditional functions.
Execute Ethereum transaction. Retrieve transaction ID (TxID)
Call Fabric API using the TxID to construct the auth token
Content Fabric Lib
Client Application

CHALLENGE #1 - CONTENT FABRIC APIS

CREATE NEW APPS UTILIZING THE ECF APIS IN THE MANAGEMENT, DISTRIBUTION, CONSUMPTION OR MONETIZATION OF DIGITAL CONTENT.

APIS:

- Create, Update, Access/View content objects - REST API
- Set content value, custom hooks in Access, Finalize - BC Smart Contracts (Solidity JS, native Go APIs)
- Create MPEG DASH streamable content using provided bitcode and customize bitcode for content ops: marking, clipping, insertion (LLVM/WASM with C/C++)
- Verify content versions through blockchain-backed version proofs

EVALUATION CRITERIA:

- Creative, correct use to publish, stream, personalize and create monetary value around dig content
- Benefit to participants in the network - publishers, consumers, sponsors, and resource contributors
- Quality of user experience - desktop, mobile or SmartTV clients

CHALLENGE #2 - MACHINE LEARNING IN ECF

CREATE AN END-TO-END LEARNING SOLUTION FOR AUTOMATICALLY

TAGGING VIDEO CONTENT BY LABELLING ITS AUDIO CONTENT

DATASETS

- A set of news audios (data/audio/*.wav) with their associated tag(s) (.json) will be provided, plus textual subtitles for each to assist your modeling.

EVALUATION CRITERIA

- For each audio in an(unlabeled) testset, predict the identifying tags and their corresponding confidence scores.
- Solutions with the highest Global Average Precision will be deemed the winners.
- Solutions must include the inference program to repeat the results.
- For details, see the Wiki.

LOGISTICS AND SUPPORT

Challenge Details: https://github.com/eluv-io/calhacks/wiki

- Sample Code and ML DataSets to be published by 12 AM Thurs, Nov 1

Slack: calhackseluvio.slack.com

- To subscribe, email calhacks@eluv.io

Prizes!

- 1st place: Xiaomi Mi Electric Scooter or SainSmart 3-D Printer
- 2nd place solution: JVC Noise Cancelling Wireless Headphones
- 3rd place solution: Premium OGIO Rockwell Backpacks
- All winners: Trip to Eluvio HQ and Internship/Full Time Opps

Happy Hacking!

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