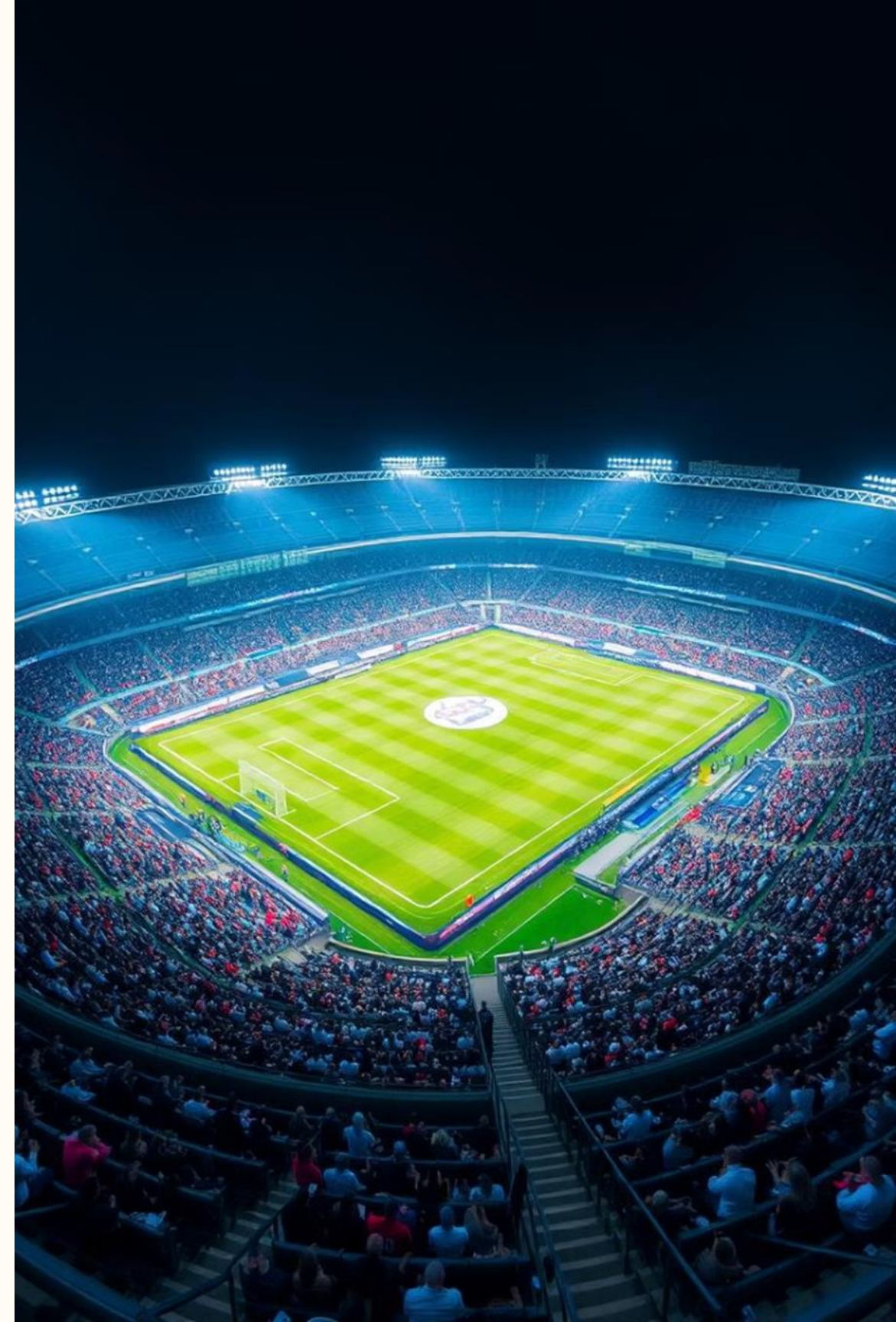


# Final Project Presentation: Football Paradise - Stream Management System

Welcome to our presentation on the Football Paradise Stream Management System. This innovative platform revolutionizes soccer content delivery, enhancing user experience and operational efficiency for a global audience passionate about the beautiful game.

**TEAM FOOTBALL PARADISE**  
**(Stream Management Paradise)**



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# 01. Introduction

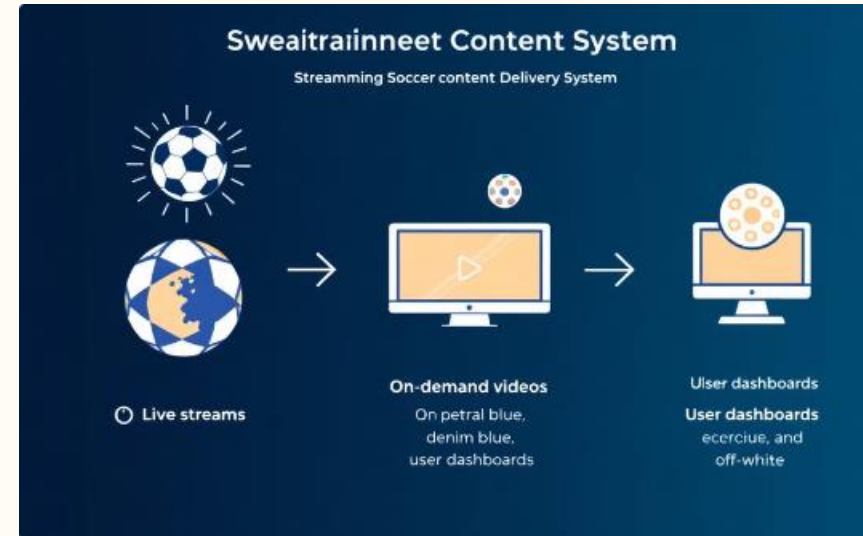
Overview of Football Paradise and project objectives.

# Introduction



## Client Profile

Football Paradise is a literature website dedicated to football narratives, offering in-depth analyses, match reviews, and exclusive interviews to a global fanbase since 2008.



## Problem & Purpose

The absence of a unified platform for handling live streams, pre-recorded content, and user analytics created inefficiencies in content delivery and hindered user engagement.

Our project introduces a centralized stream management system designed to enhance user experience, optimize content workflows, and boost overall engagement.



## Key Stakeholders

The stakeholders include Football Paradise administrators, content uploaders, and football enthusiasts worldwide.

## 02. Development Process

Detailed walkthrough of research, design, implementation phases and challenges.





# Development Process: Research

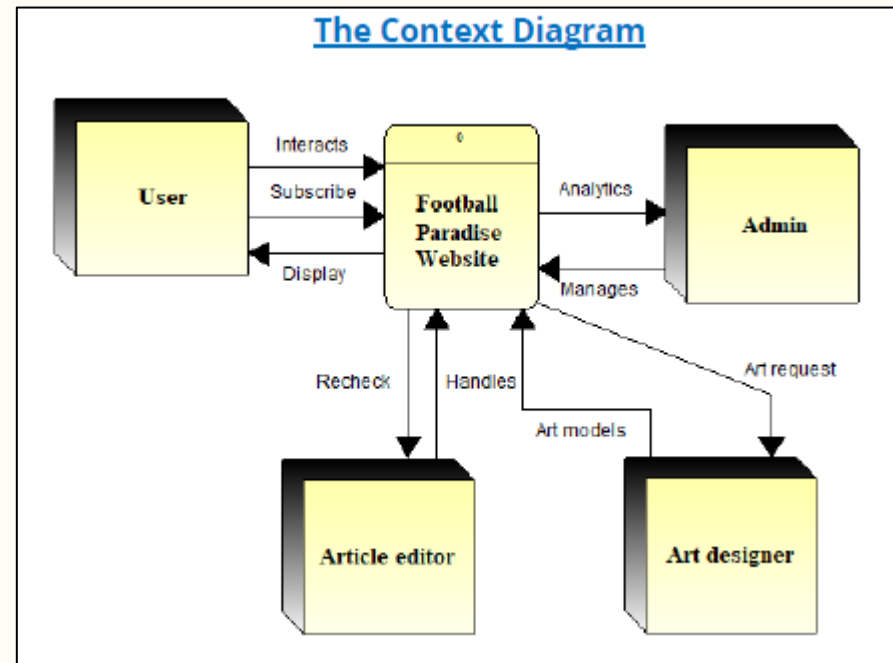
## PIECES Framework Analysis

We used the PIECES framework (Performance, Information, Economics, Control, Efficiency, Service) to assess Football Paradise's needs.

## Stakeholder Interviews and Surveys

Stakeholder feedback highlighted key needs: adaptive streaming, intuitive media management, and advanced analytics.

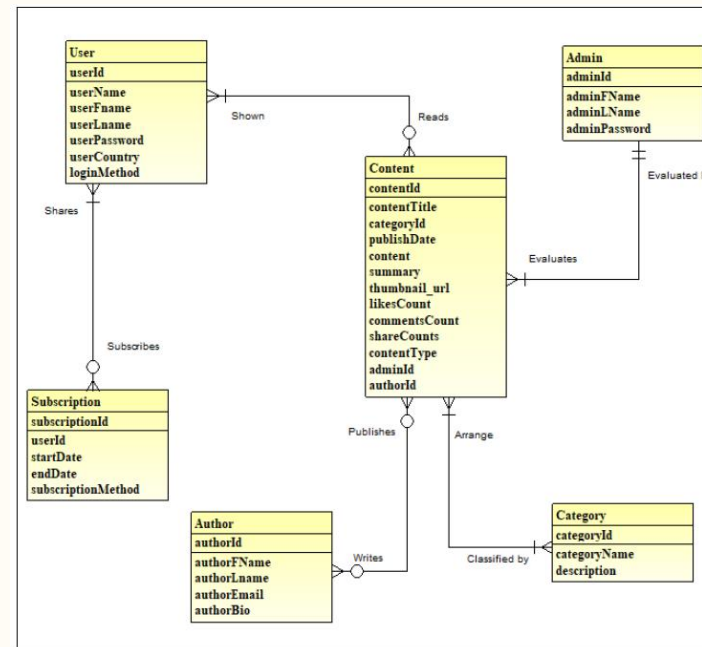
# Development Process: Design



1

## Data Flow Diagrams (DFDs)

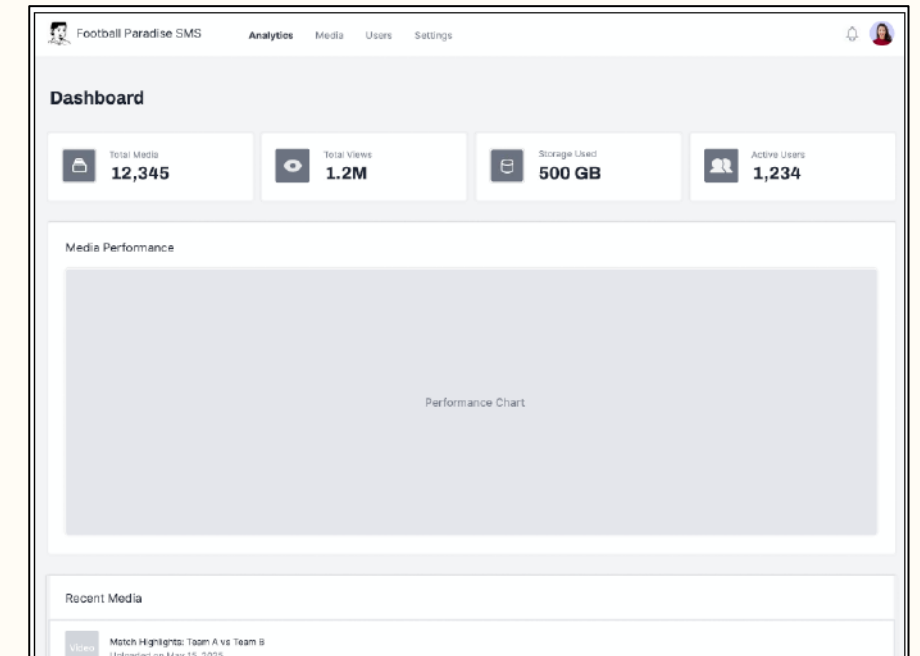
DFDs were used to map the flow of data throughout the system, ensuring efficient processing and communication.



2

## Entity-Relationship Diagram (ERD)

An ERD defined the structure of data entities and their relationships, ensuring data integrity and consistency.



3

## Wireframes and Mockups

Using Figma, we created interactive wireframes and mockups to visualize the user interface, ensuring a seamless user experience.

# Major Challenge and Resolution



## Scope & Time Management

Extensive development of a comprehensive system within a constrained timeline (live streaming, media management, real-time analytics).



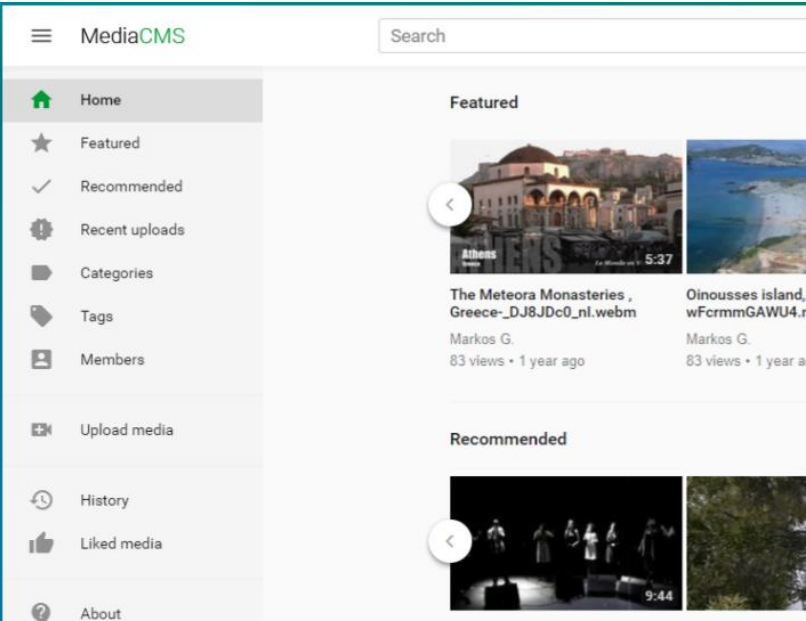
## Leverage Technology & Agile Development

Leveraged MediaCMS and cloud-based solutions for efficiency and scalability.

Agile methodologies prioritized essential features in sprints.



# Decision to Use MediaCMS: A Tailored Approach



## 1 Customizable Platform


MediaCMS's customizable nature perfectly fit Football Paradise's unique needs and workflows, ensuring seamless integration and future adaptability.

## 2 Advanced Features


Its adaptive streaming ensured optimal video quality, centralized management simplified content handling, and advanced analytics offered data-driven insights for better content and user experience.

## 3 Rapid Implementation


MediaCMS's user-friendly interface and APIs enabled quick and efficient development, minimizing disruption and accelerating new feature releases.




Multiple media types support  
Video, audio and image




Multiple media classification options  
Categories, tags and custom




Multiple media sharing options  
Social media share, videos embed code generation




Easy media searching  
Enriched with live search functionality




Complete control over your data  
Host it yourself




Support for multiple publishing workflows  
Public, private, unlisted and custom




Advanced users management  
Self registration, invite only, closed system actions



Extensive configuration options  
Change logos, fonts, styling, add more pages



Responsive design



Light and dark theme

# Development Process: Implementation



## Tech Stack

React.js (frontend), PostgreSQL (database), AWS (infrastructure), Docker (containerization).  
The combination of React.js and Node.js provides a robust and scalable solution for our dynamic application.

## Workflows & Approach

Role-based authentication, metadata tagging, real-time analytics, and Agile sprints for iterative development. We implemented a comprehensive CI/CD pipeline for automated builds and deployments.

## Data Architecture

We designed a robust data architecture utilizing a microservice design pattern that ensures data integrity and scalability. This modular design allows for individual components to be updated independently, reducing risks of large-scale updates disrupting service.



# Development Process: Testing

## 1 Comprehensive Testing

We performed extensive testing to validate user workflows, error handling, and performance benchmarks in the localhost environment.

## 2 Scalable Deployment

The system can be deployed on AWS, leveraging scalable infrastructure to handle varying user loads and ensure high availability.

# 03. Data Flow of the Project

Interaction between components of MediaCMS



# Understanding the System's Core

1

## 1. User Interaction

Users interact via web browser, requesting media or data through Nginx.

---

2

## 2. Media Retrieval

Nginx retrieves media from local storage or cloud, streaming back to users.

---

3

## 3. Transcoding (If Necessary)

Nginx requests transcoding from FFmpeg; FFmpeg returns processed files.

---

4

## 4. Metadata Management

PostgreSQL sends metadata to Elasticsearch, Redis caches frequently accessed data.

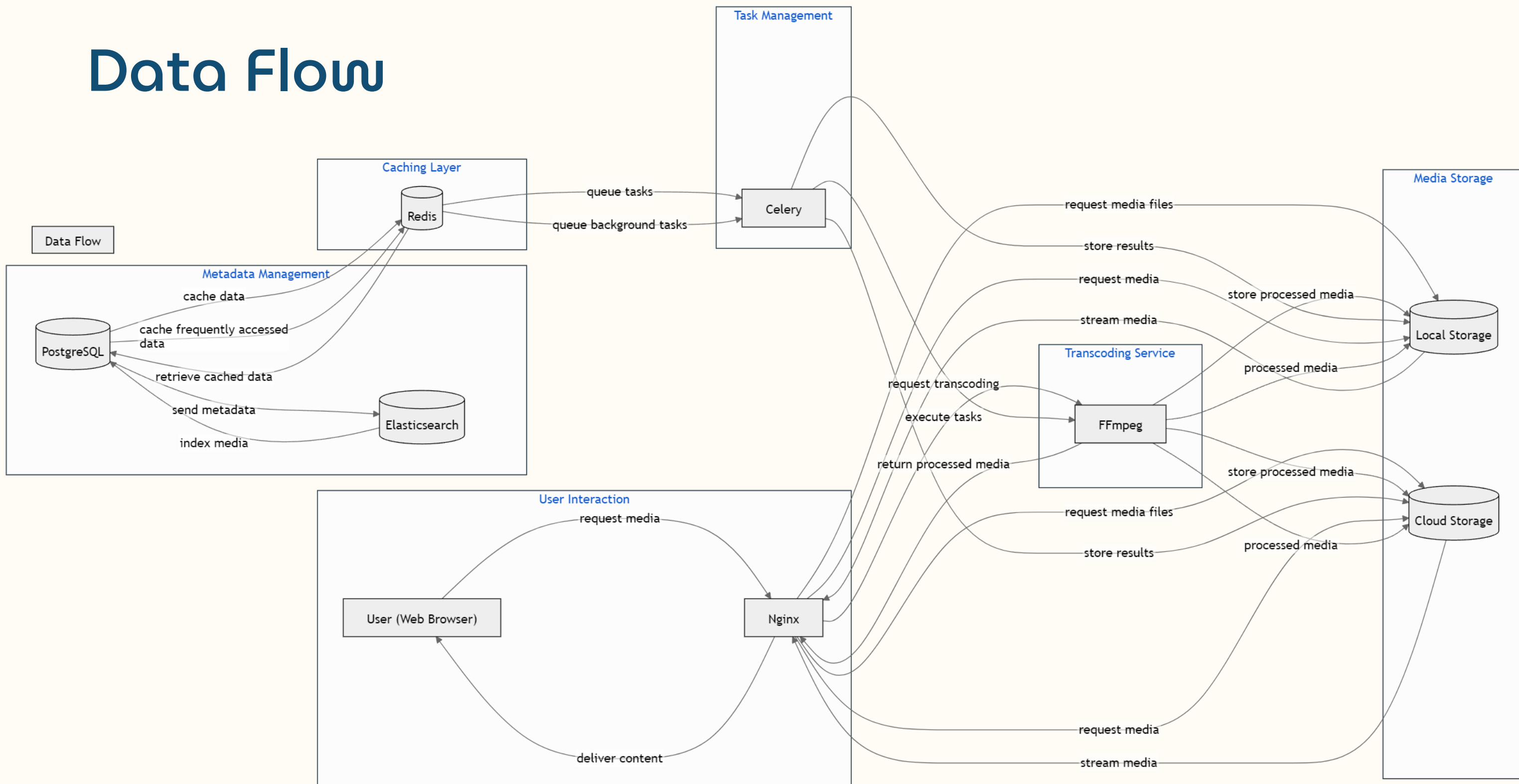
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5

## 5. Background Task Management

Celery manages background tasks, including transcoding via FFmpeg and storing results.

# Data Flow



## 04. Live Demo

Showcase of key system features and workflows.

# Live Demo

1

## User Authentication

Secure login process with role-based access.

2

## Media Management

Streamlined upload and organization of content.

3

## Live Streaming

Adaptive streaming technology showcase.

4

## Error Handling

Demonstration of robust error management.





# 05. Results & Recommendations

Project outcomes and future enhancement suggestions.



# Results

## Centralized Management

Successfully implemented content management system. Introduced new operational efficiencies for administrators.

## Adaptive Streaming

Ensured high-quality streams across various network conditions. This will improve user satisfaction and engagement.

## Enhanced Security

Implemented role-based access controls. Streamlined management workflows and protected sensitive data.

## Scalable Infrastructure

Cloud-based solution handles varying user loads. Ensures consistent performance during peak usage times.



# Recommendations



## External Partnerships

Explore collaborations with streaming API providers. Expand content diversity and create new monetization opportunities.



## Interactive Features

Implement live chat and integrated polls. Foster community engagement and enhance user experience.



## Advanced Analytics

Develop in-depth user behavior analysis tools. Provide actionable insights for content strategy and user retention.



**Thank You!**

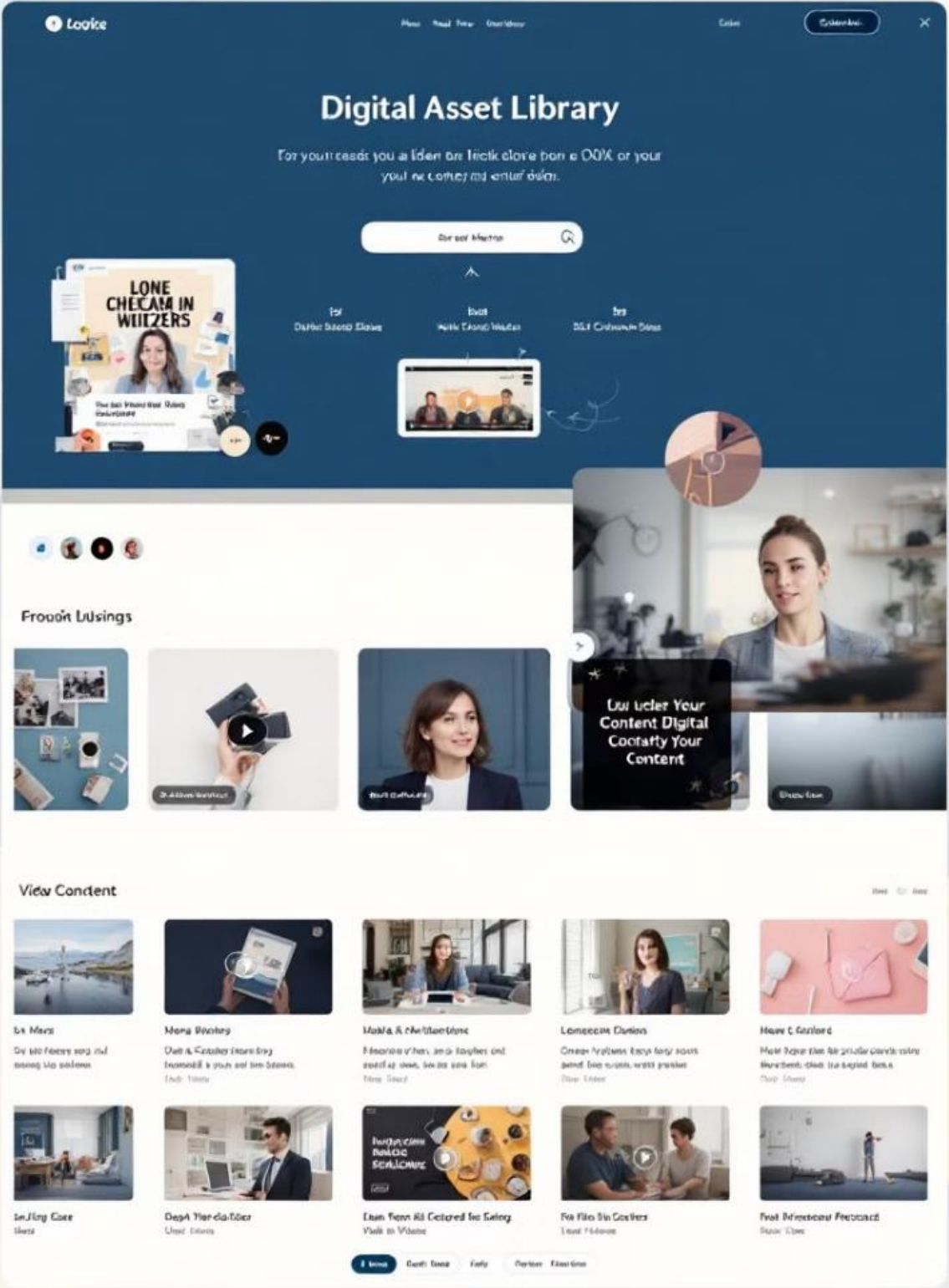
We appreciate your time & attention.

Please ask questions.

**TEAM FOOTBALL PARADISE**  
**(Stream Management Paradise)**

**BUDT 748 -0504 -**  
**Industry Practicum-Fall 2024 Dr. P Shapiro**





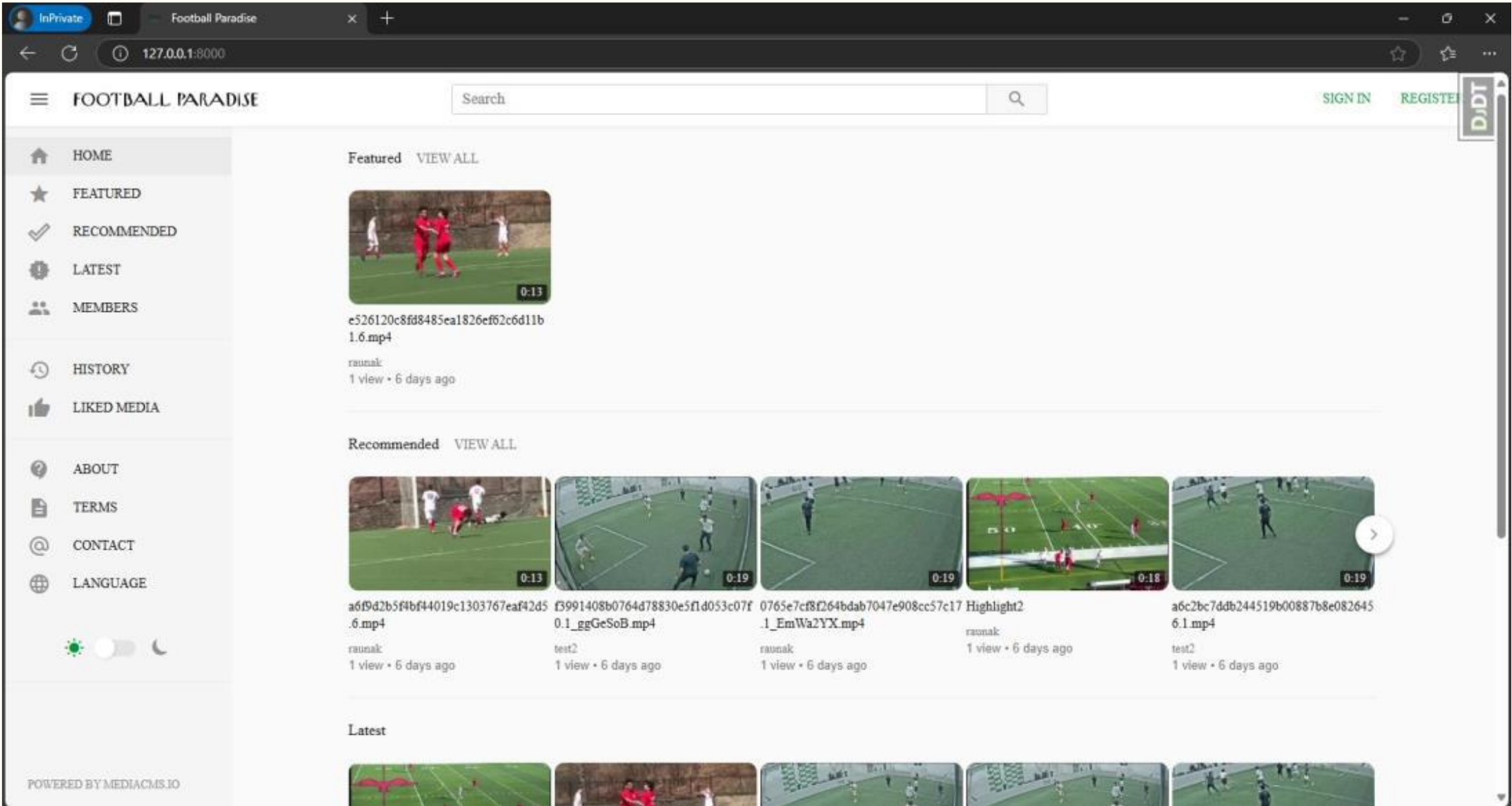
# 6. Appendix

| Component                | Description                            | Purpose                                 |
|--------------------------|----------------------------------------|-----------------------------------------|
| Mockups<br>(Screenshots) | Annotated designs of<br>key interfaces | Illustrate admin tools<br>and analytics |

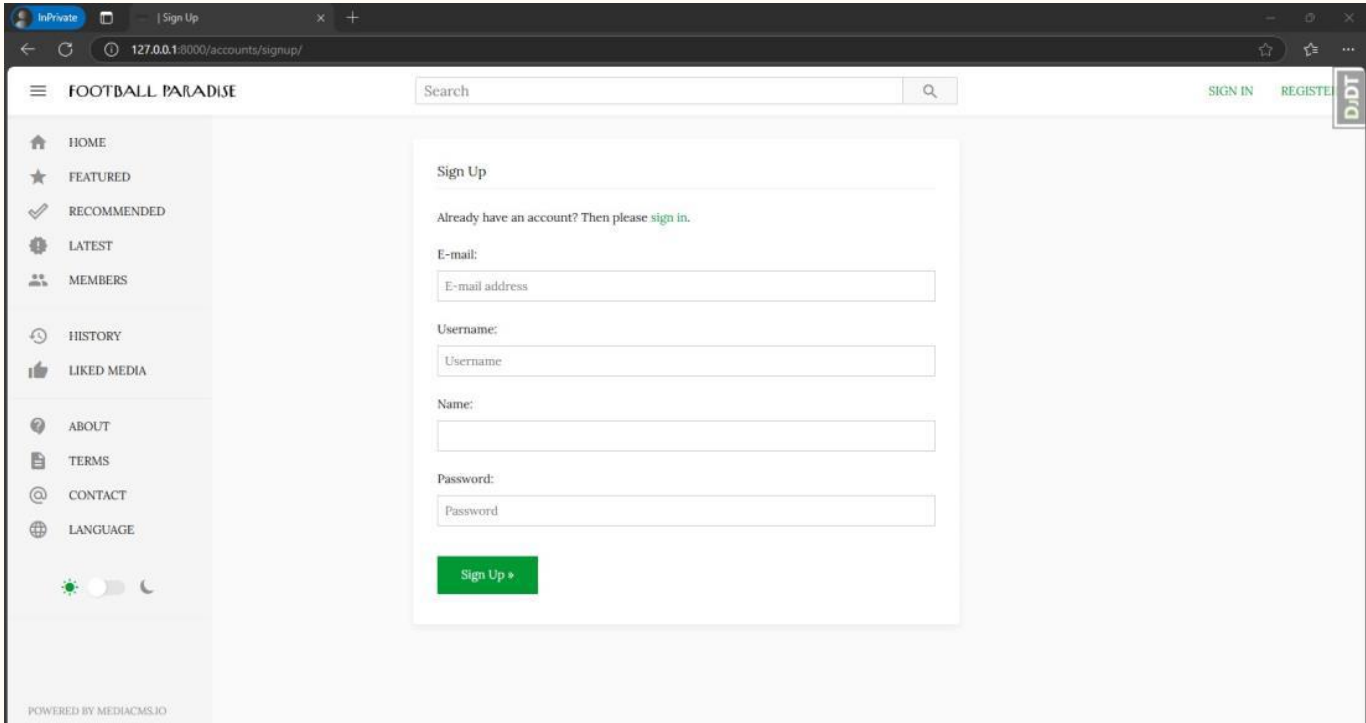
# Login and Authentication Flow:

User journey from login to successful dashboard access, or error handling for failed login attempts.

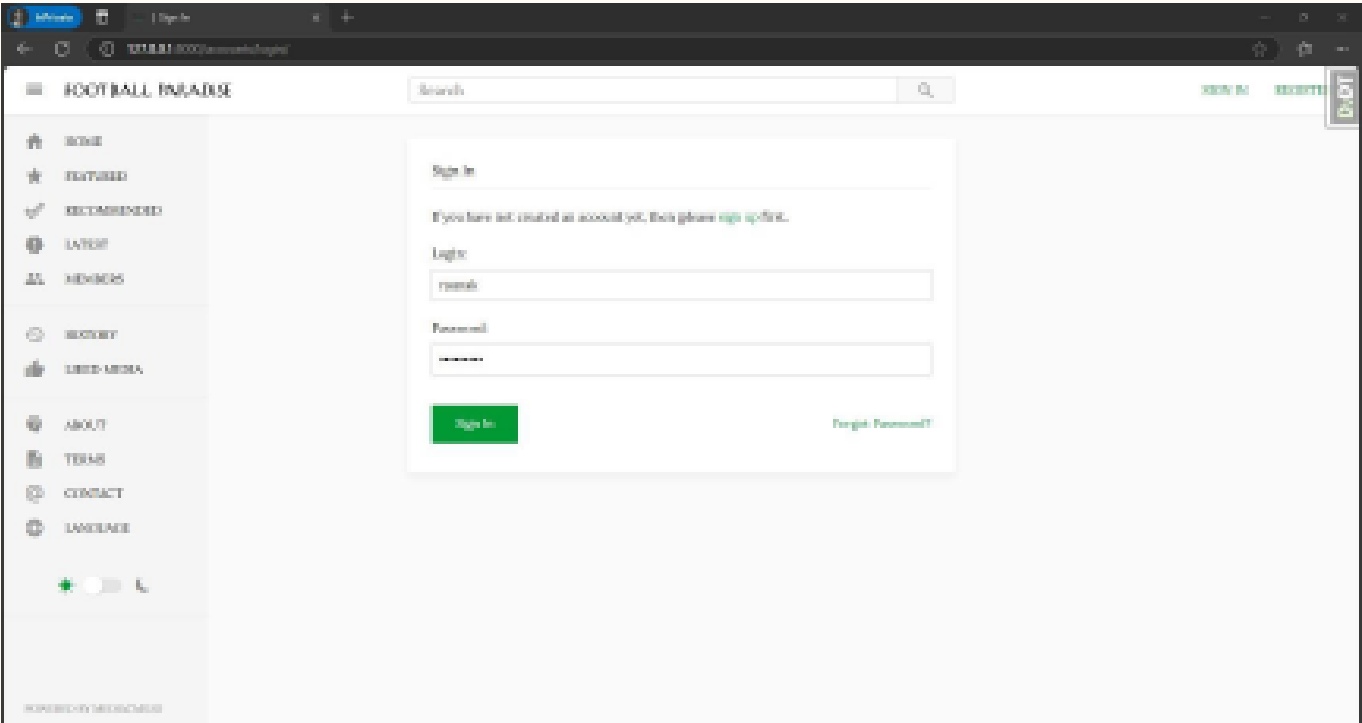
## Homescreen



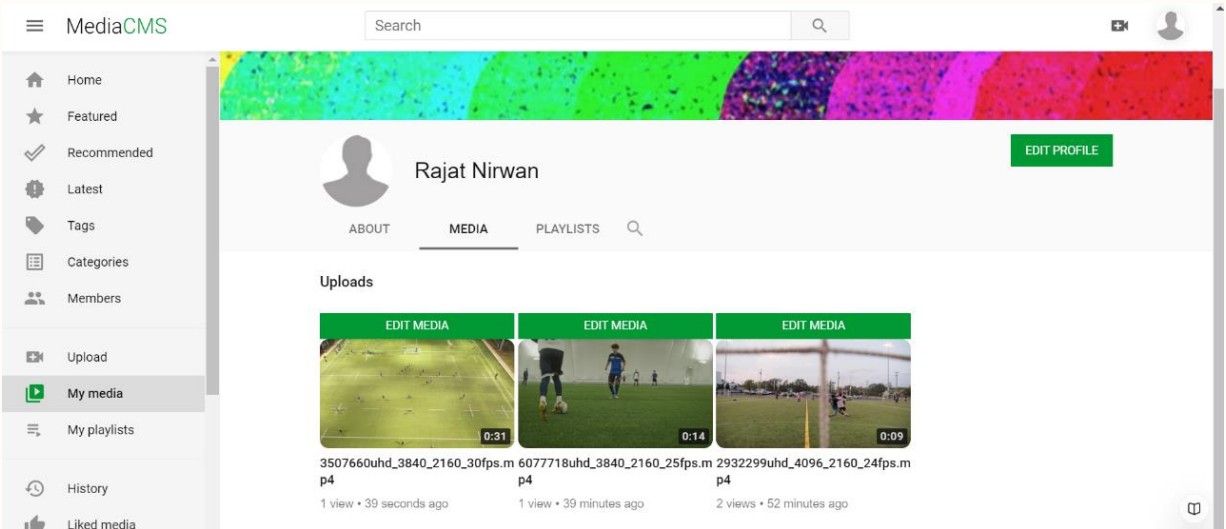
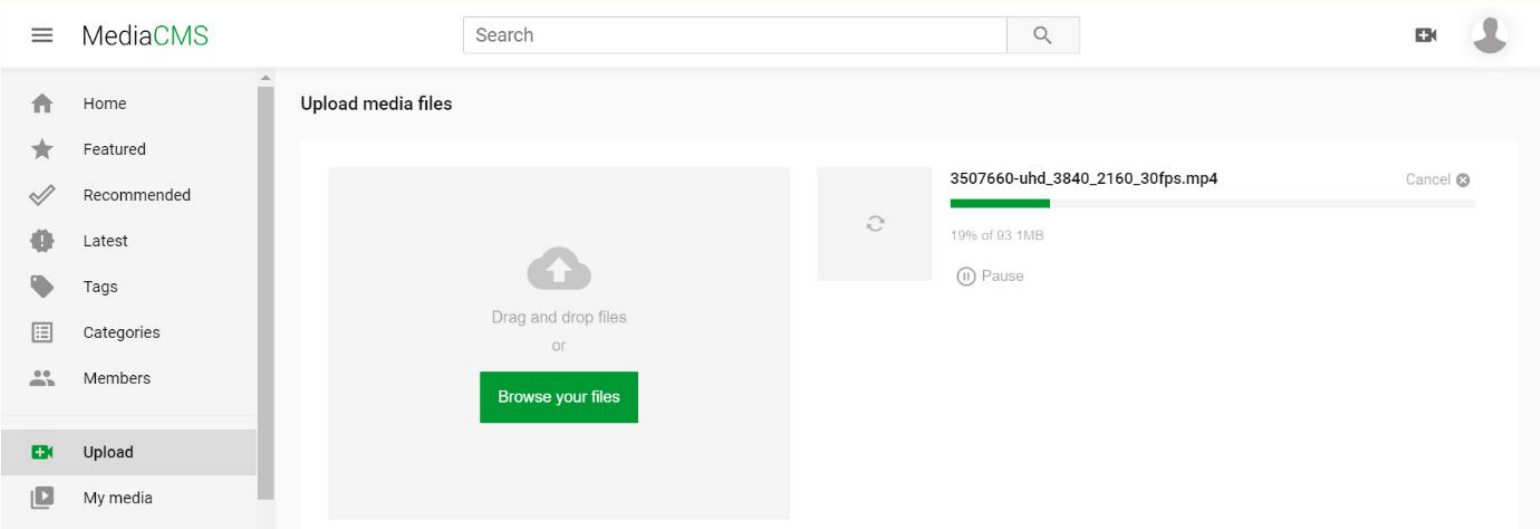
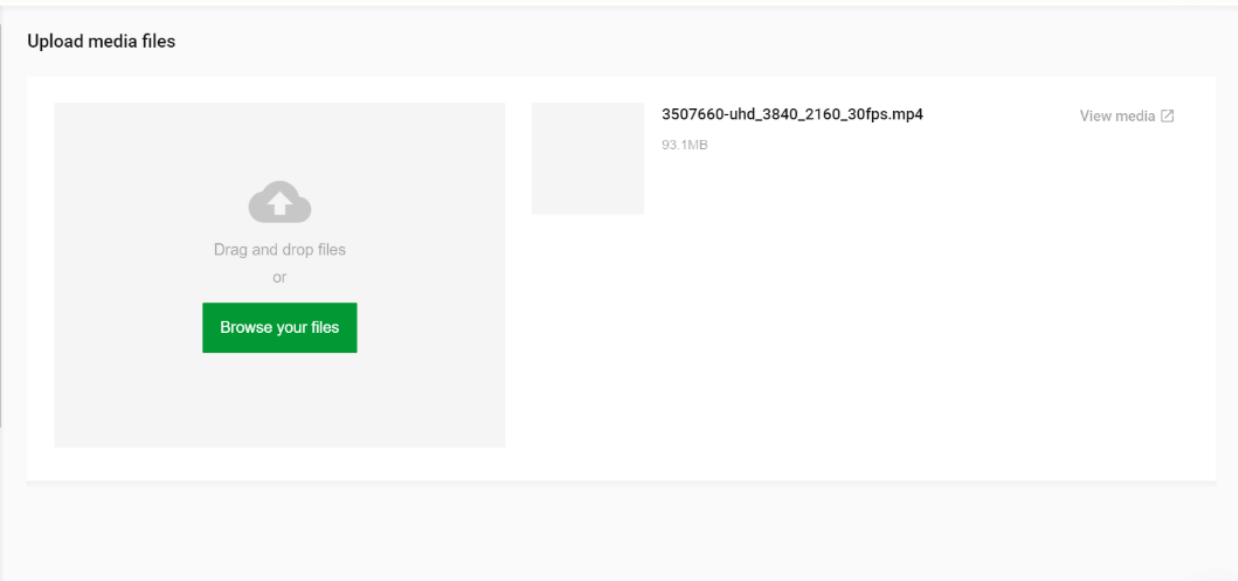
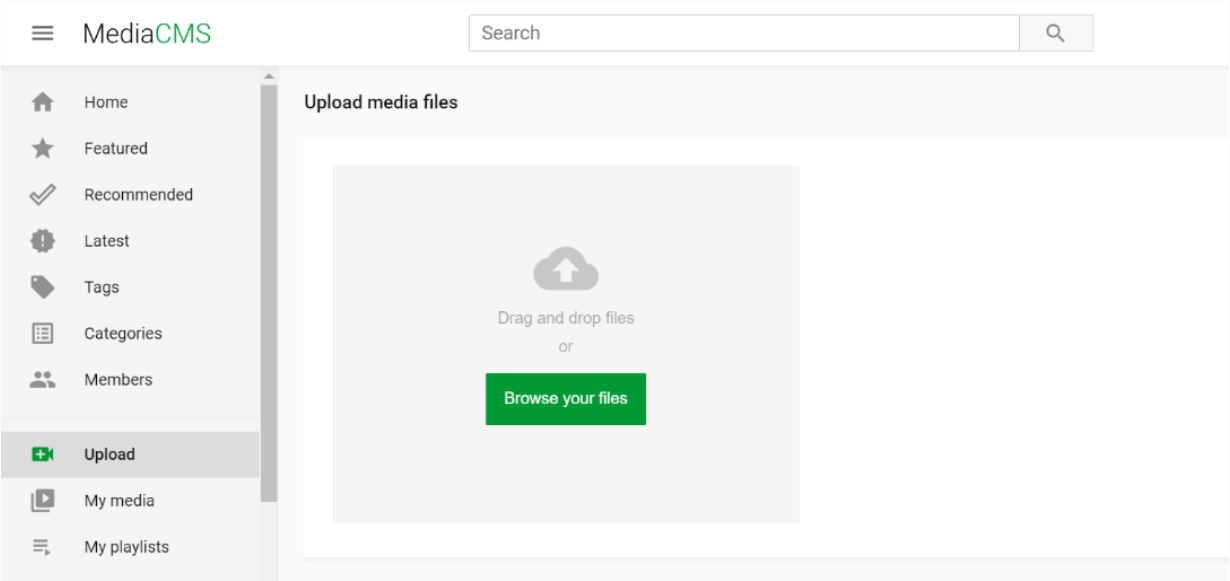
# Sign Up Screen



# Sign In Screen

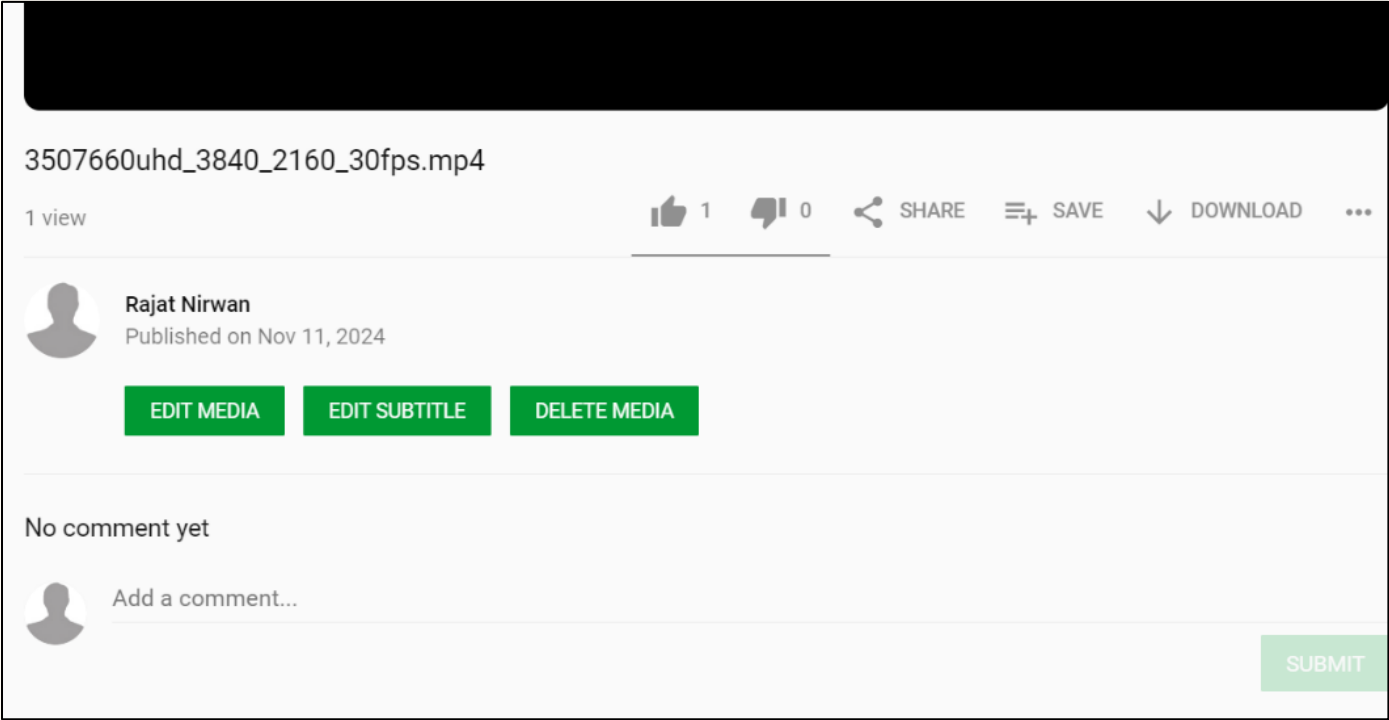


# Media Upload





# Media Management Flow



# Storage and Categorization Flow

Edit Media

Title

3507660uhd\_3840\_2160\_30fps.mp4

media title

Category

Art

Documentary

Experimental

Film

Media can be part of one or more categories

Tags

a comma separated list of new tags.

# Backend Management

Django administration

Site administration

ACCOUNTS

Email addresses

+ Add

✎ Change

AUTH TOKEN

Tokens

+ Add

✎ Change

AUTHENTICATION AND AUTHORIZATION

Groups

+ Add

✎ Change

FILES

Categories

+ Add

✎ Change

Comments

+ Add

✎ Change

Encode profiles

+ Add

✎ Change

Encodings

+ Add

✎ Change

Languages

+ Add

✎ Change

Recent actions

My actions

None available

Live Steaming

