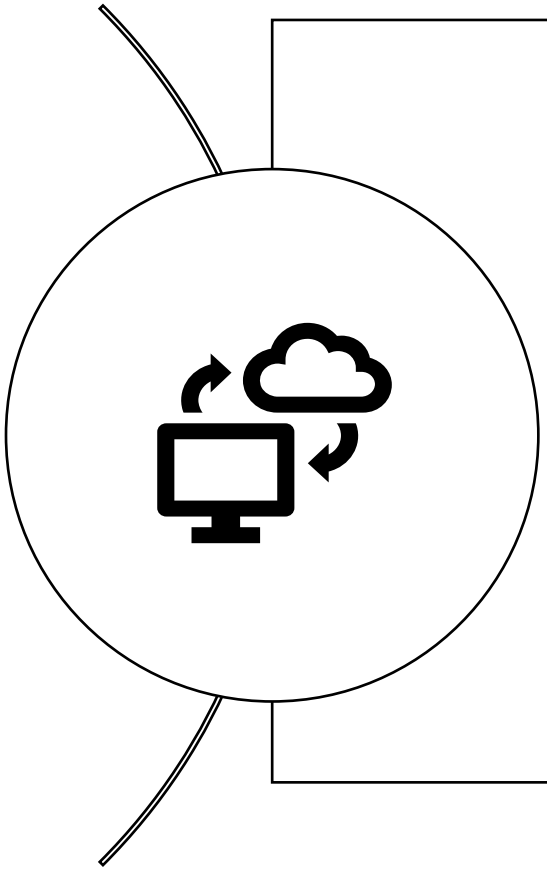
MEDIA STREAMING WITH IBM CLOUD STREAMING

PHASE-5 FINAL PROJECT SUBMISSION



AGENGDA

- **Outline the project's objective, design thinking process and development phases.**
- **Describe the platform features, user interface design,video upload process and streaming integration.**
- **Explain how the platform provides a seamless and immersive movie-watching experience.**

Title: Virtual Platform for Interactive Video Streaming on IBM Cloud

OBJECTIVE:

The goal of this project is to create a virtual platform that leverages IBM Cloud Video Streaming to facilitate interactive and secure video experiences. The platform will cater to use for primarily Virtual cinema broadcasting.

CREATE A VIRTUAL CINEMA PLATFORM

VIRTUAL CINEMA PLATFORM
Conceptualization
Market Research
Design and User Experience
Technological Implementation
Interactive Features
Social Integration
Monetization
Quality Assurance
Content Licensing and Legal Compliance
Launch and Marketing
Continuous Improvement

Step 1: Define Virtual Platform Features:

Live Video Streaming:

- **Utilize IBM Cloud Video Streaming services for seamless and reliable live video streaming.**
- **Support for high-quality video with adaptive bitrate streaming.**

Interactive Features:

- **Real-time chat for audience interaction.**
- **Q&A sessions and polls during live events.**
- **Integration with social media platforms for sharing and engagement.**

User Management:

- **User profiles with customizable avatars.**

- **User roles (e.g., viewer, presenter, moderator) for different levels of access.**
- **Personalized content recommendations based on user preferences.**

Virtual Rooms:

- **Creation of virtual rooms for specific events or topics.**
- **Ability to schedule and manage multiple concurrent events.**

Recording and Playback:

- **Automatic recording of live sessions for later playback.**
- **User-friendly interface for accessing and managing recorded content.**

Step 2: Design an Intuitive User Interface:

Dashboard:

- **Overview of upcoming events and recommended content.**
- **Quick access to ongoing live sessions and recorded content.**

Event Pages:

- **Clean and intuitive design for each virtual event page.**
- **Information about speakers, agenda, and participant list.**

User Profile:

- **Editable user profiles with personalization options.**
- **History of attended events and saved content.**

Interactive Elements:

- **Intuitive chat interface with emoji support.**
- **Clear options for submitting questions and participating in polls.**

Responsive Design:

- **Ensure compatibility across various devices (desktop, tablet, mobile).**

Step 3: Set Up User Registration and Authentication:

User Registration:

- **Secure registration process with email verification.**
- **Option for social media login (OAuth) for convenience.**

Authentication Mechanisms:

- **Implement multi-factor authentication for added security.**
- **Token-based authentication for API access.**

Role-Based Access Control:

- **Define roles such as viewer, presenter, and moderator.**
- **Different levels of access based on user roles.**

Privacy and Data Security:

- **SSL encryption for data in transit.**
- **Compliance with data protection regulations.**

Step 4: IBM Cloud Integration:

IBM Cloud Video Streaming Service:

- **Set up and configure the IBM Cloud Video Streaming service.**
- **Integrate APIs for live streaming and content management.**

Scalability and Performance:

Optimize the platform for scalability during peak usage.

Implement CDN integration for efficient content delivery.

Monitoring and Analytics:

- **Use IBM Cloud monitoring tools for real-time performance insights.**
- **Implement analytics to track user engagement and content popularity.**

Continuing to build the virtual platform with video streaming services and on-demand playback, as well as enabling users to upload their movies and videos, and integrating IBM Cloud Video Streaming services is crucial for creating a comprehensive video platform. Here are the steps to achieve this:

Step 5: Implement On-Demand Playback:

On-Demand Video Library:

- **Create a dedicated section of the platform for on-demand content.**
- **Users can browse, search, and access a variety of movies, videos, and recorded live sessions.**

Video Upload and Encoding:

- **Develop an upload feature that allows users to upload their videos.**
- **Implement video encoding services to ensure compatibility with various devices and bandwidths.**

Content Management:

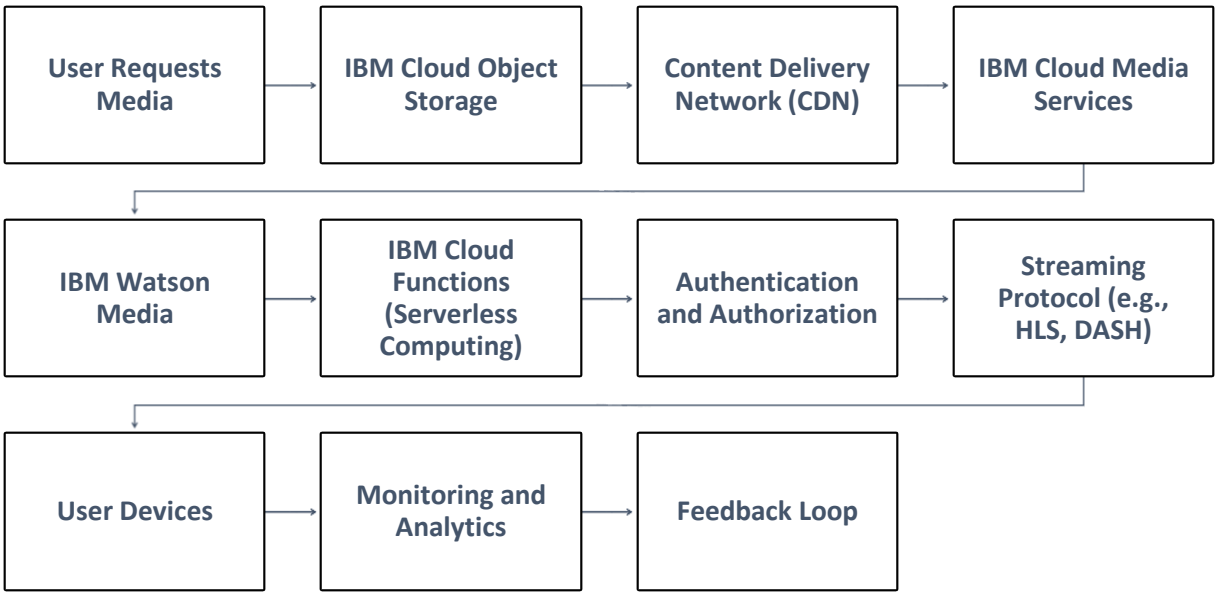
- **Provide users with tools to manage their uploaded content.**
- **Options for adding descriptions, categorizing videos, and setting access permissions.**

Custom Thumbnails and Metadata:

- **Enable users to upload custom thumbnails and metadata for their videos.**
- **Rich metadata improves content discoverability.**

Step 6: Integrate IBM Cloud Video Streaming Services:

Flow Diagram for Media Streaming using IBM Cloud



IBM Cloud Video API Integration:

- **Leverage IBM Cloud Video APIs for creating, managing, and delivering video content.**

- **Utilize features like video playback, streaming, and access control.**

Content Delivery Network (CDN):

- **Integrate a CDN to optimize video delivery and ensure low-latency streaming.**
- **This improves the performance and user experience.**

Video Quality and Adaptive Streaming:

- **Utilize IBM Cloud Video Streaming services to deliver high-quality videos with adaptive bitrate streaming.**
- **Ensure smooth playback across varying network conditions.**

Content Security:

- **Implement IBM Cloud Video's security features to protect content from unauthorized access.**
- **Use encryption and access control mechanisms.**

Step 7: User Video Upload Workflow:

Upload Process:

- **Create an intuitive upload process for users to add their videos.**
- **Support various video formats and sizes.**

Transcoding and Optimization:

- **Automatically transcode uploaded videos to different resolutions and bitrates.**
- **Optimize video files for streaming.**

Thumbnail Selection:

- **Allow users to select or upload custom thumbnails for their videos.**
- **Enable video preview for confirmation.**

Privacy and Permissions:

- **Define access control settings for user-uploaded videos.**
- **Options for public, private, or restricted access.**

Step 8: User Interaction and Engagement:

Comments and Ratings:

- **Implement a commenting system for user engagement and feedback.**
- **Enable users to rate and review videos.**

User Recommendations:

Implement a recommendation engine that suggests videos based on user behavior and preferences.

Increase user engagement through personalized content.

Social Sharing:

Enable users to share videos on social media platforms.

Implement social sharing buttons and metadata optimization.

Step 9: Content Monetization (Optional):

Subscription Models:

- **Implement subscription-based models for premium content access.**
- **Enable users to subscribe to specific channels or content creators.**

Advertising Integration:

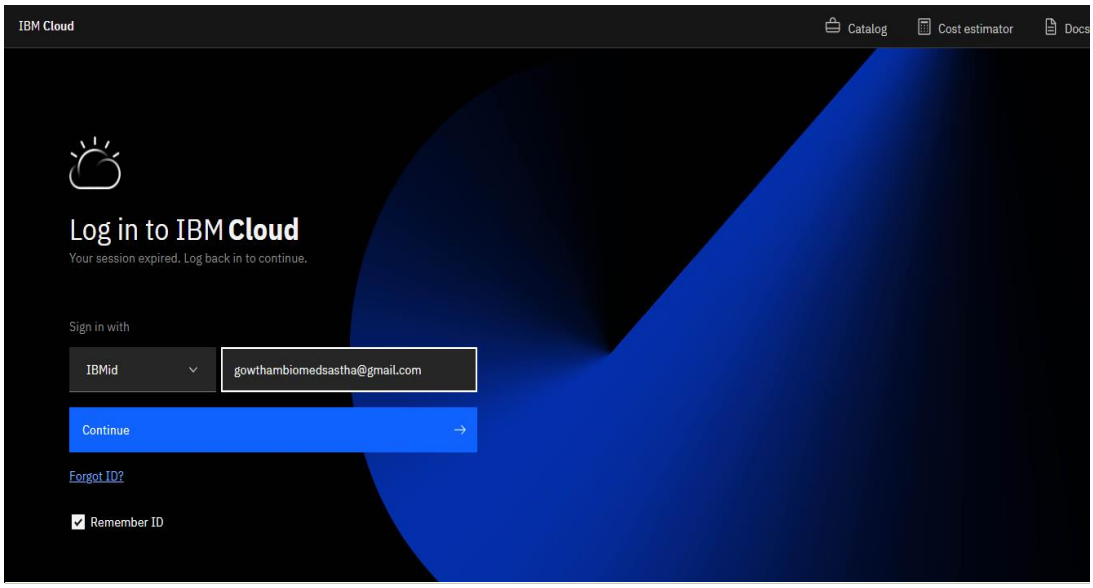
- **Integrate advertising platforms to monetize free content through ad revenue.**
- **Offer ad-free options for premium subscribers**

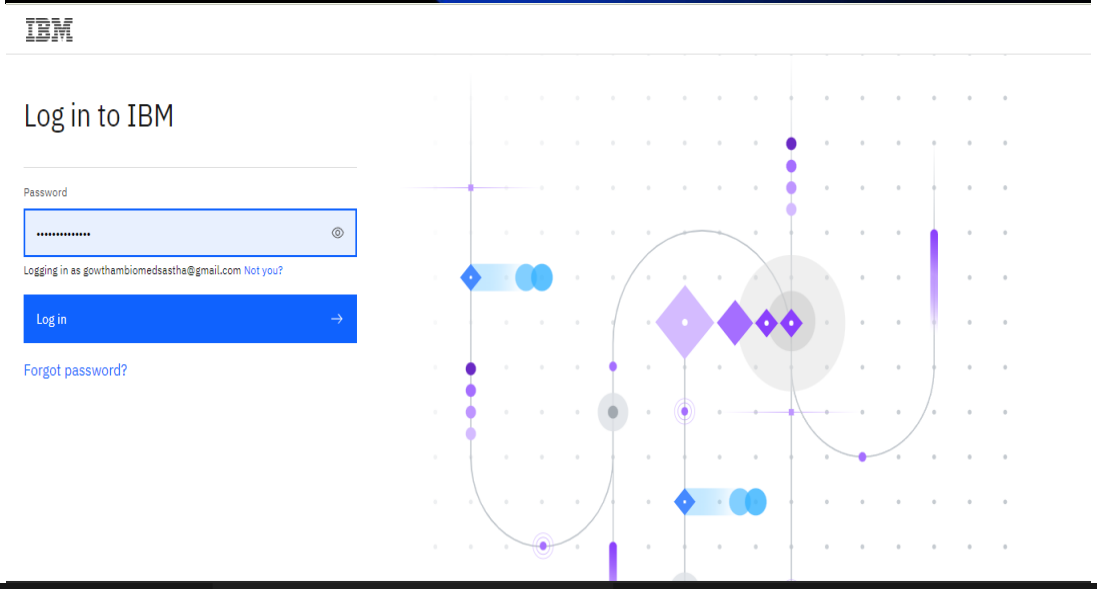
Building a virtual platform using IBM Cloud Video Streaming involves several steps, including setting up an IBM Cloud account, creating a video streaming instance, configuring your streaming settings, and integrating the streaming service into your application or website. Here's a general guide to help you get started:

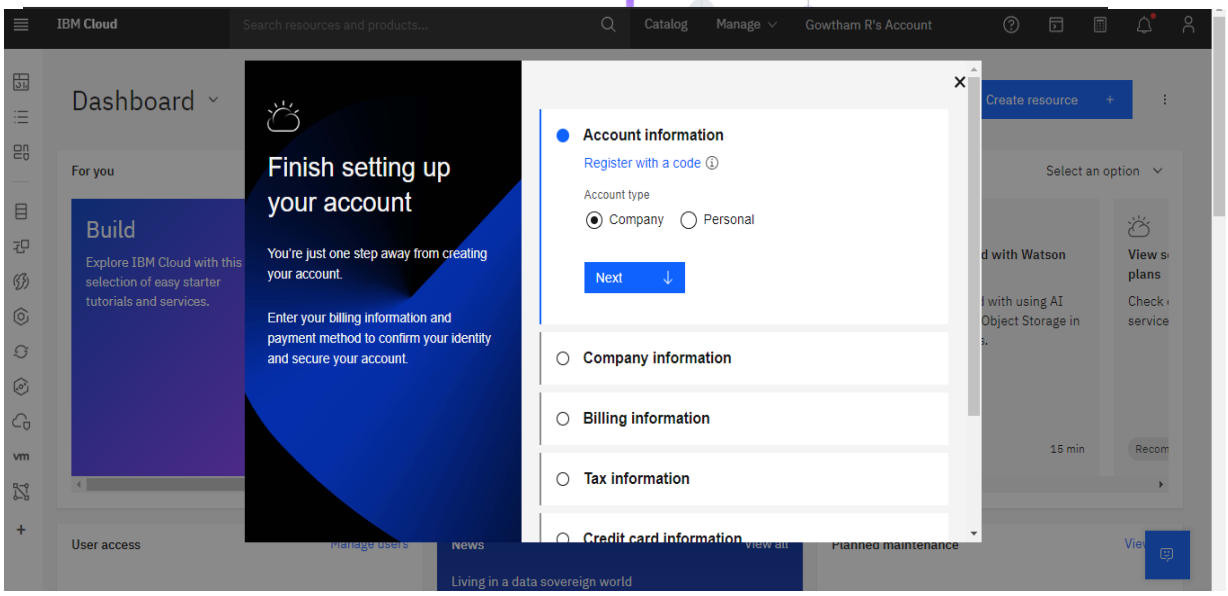
Step 1: Sign up for IBM Cloud

- **Go to the IBM Cloud website**: IBM Cloud
- **Sign up for an account**: Follow the registration process to create an IBM Cloud account if you don't have one.

IBM – CLOUD APPLICATION DEVELOPMENT







Step 2: Create an IBM Cloud Video Streaming Instance

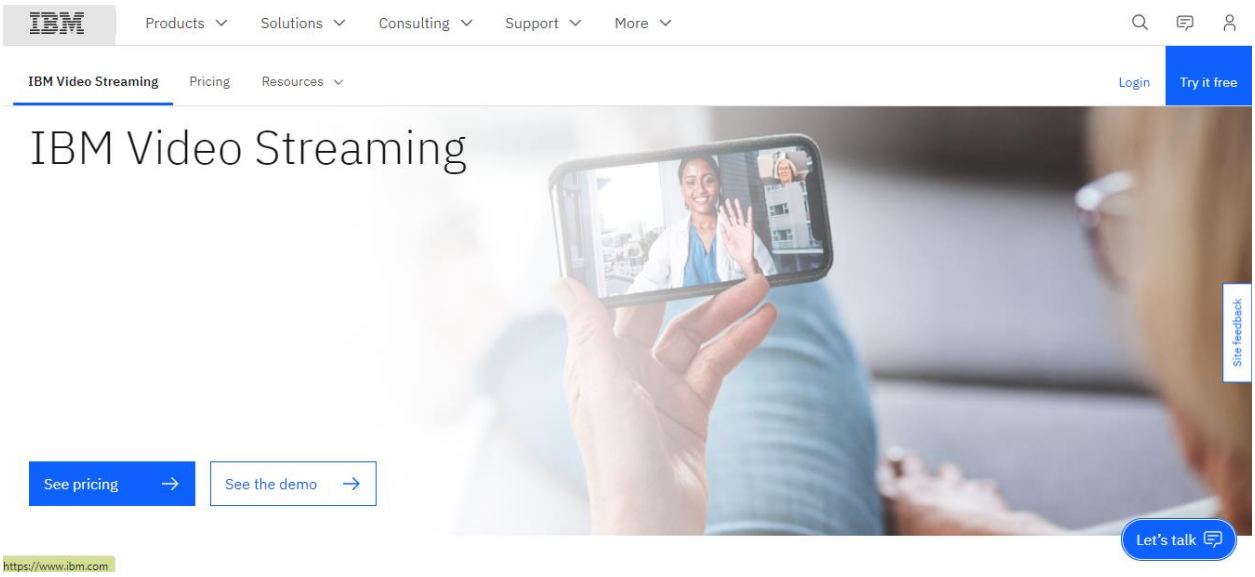
1. Log in to your IBM Cloud account.

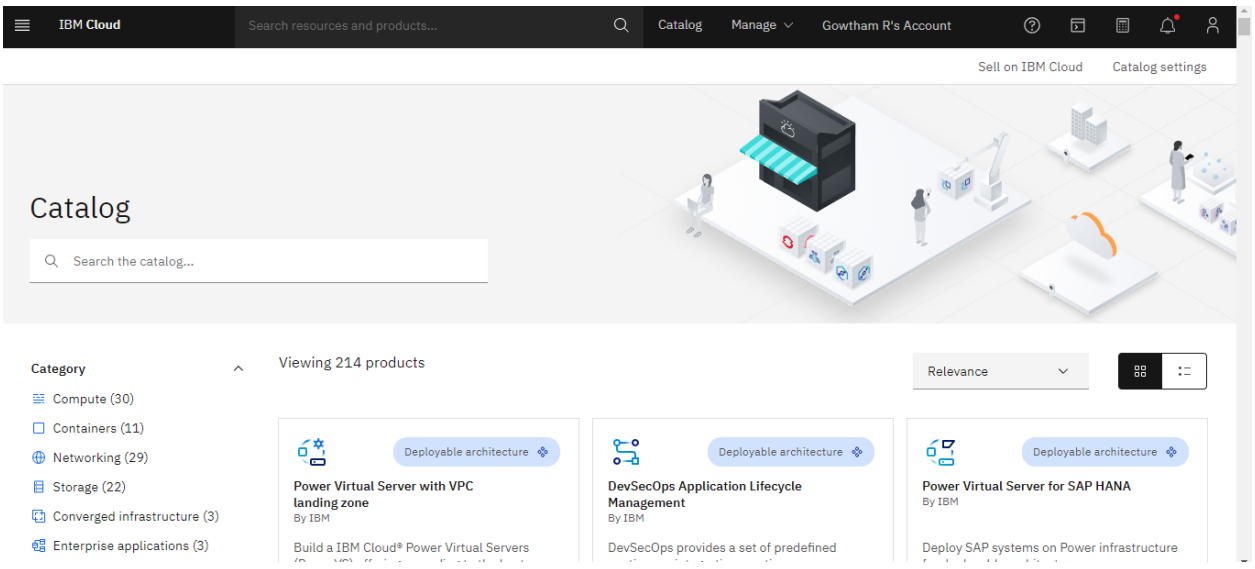
2. Navigate to the IBM Cloud Video Streaming service:

- In the IBM Cloud Dashboard, click on "Catalog" in the top navigation bar.
- Search for "Video Streaming" in the catalog.
- Select the "Video Streaming" service from the results.

3. Create an instance:

- Click "Create" to create a new instance of the Video Streaming service.
- Choose your pricing plan and configure the instance settings.





Step 3: Configure Video Streaming

1. Access your Video Streaming instance:

- After creating the instance, go to the IBM Cloud Dashboard.
- Find your Video Streaming service instance and click on it to access its settings.

2. Configure your video settings:

- Set up your streaming configurations, including video quality, security settings, and any other preferences you have.

Step 4: Get Your API Key and Secret

1. Generate API Key and Secret:

- In your IBM Cloud Dashboard, go to "Manage" for your Video Streaming instance.
- Under "Service credentials," create a new set of credentials that include an API Key and Secret.

Step 5: Integrate Video Streaming into Your Virtual Platform

1. Use the API Key and Secret in your application:

- In your application's code, use the API Key and Secret to authenticate and interact with the IBM Cloud Video Streaming API.

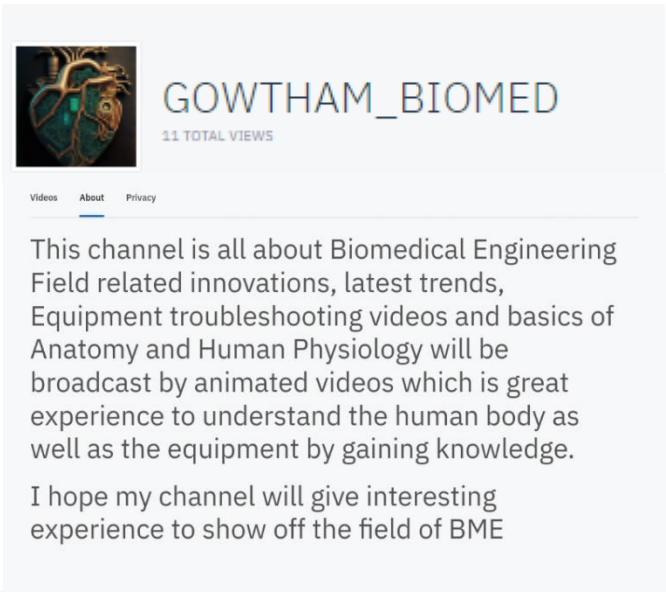
2. Follow IBM's documentation:

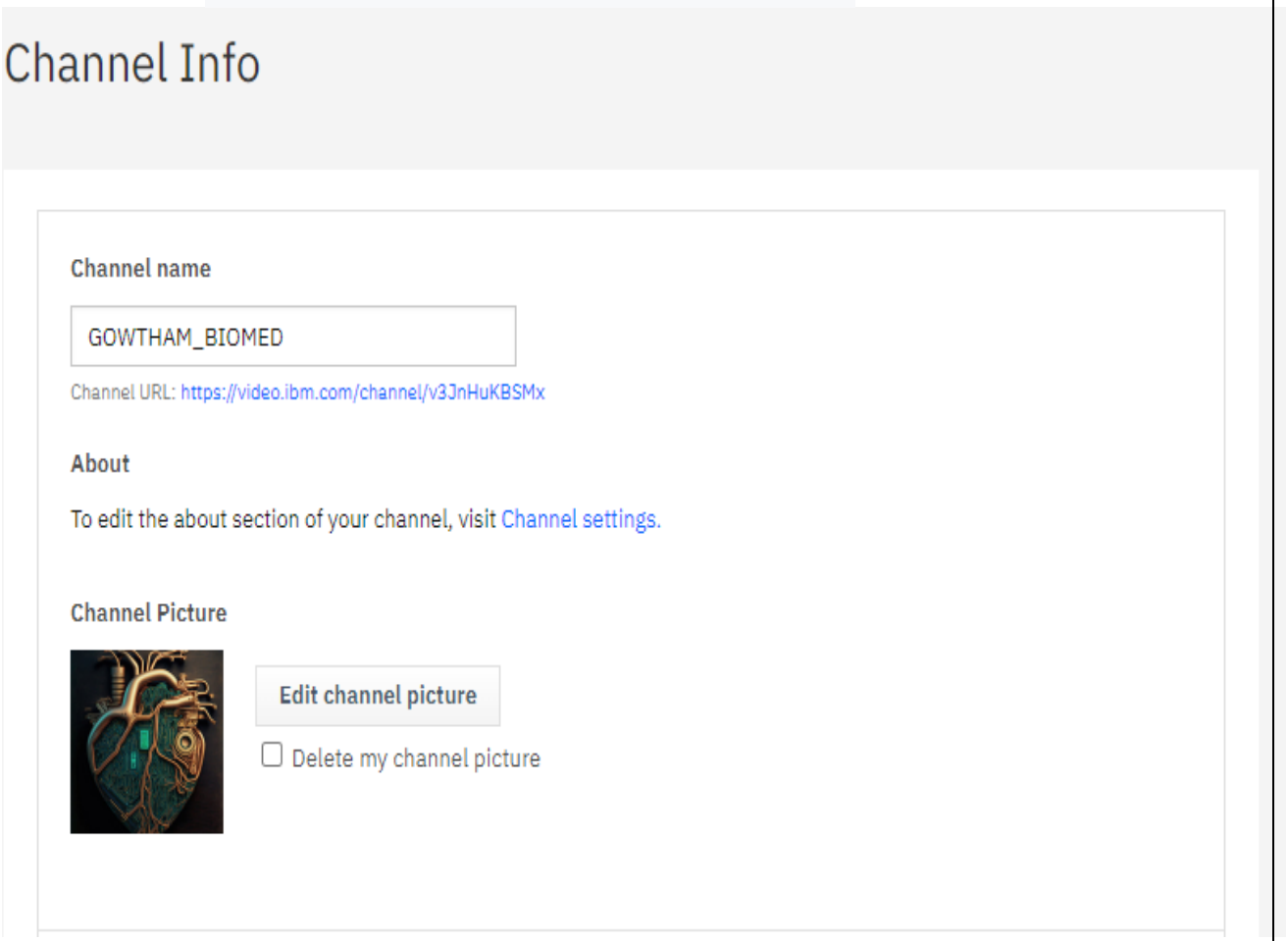
- Refer to the official IBM Cloud Video Streaming documentation for detailed information on API endpoints, integration options, and best practices.

Step 6: Test Your Virtual Platform

1. Test the video streaming:

- Integrate video streaming into your virtual platform and test it to ensure that the streaming service is working as expected.
  I hereby attach my channel link and the broadcasted video also\


GOWTHAM_BIOMED
11 TOTAL VIEWS
Videos
About
Privacy
This channel is all about Biomedical Engineering Field related innovations, latest trends, Equipment troubleshooting videos and basics of Anatomy and Human Physiology will be broadcast by animated videos which is great experience to understand the human body as well as the equipment by gaining knowledge.
I hope my channel will give interesting experience to show off the field of BME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GOWTHAM_BIOMED
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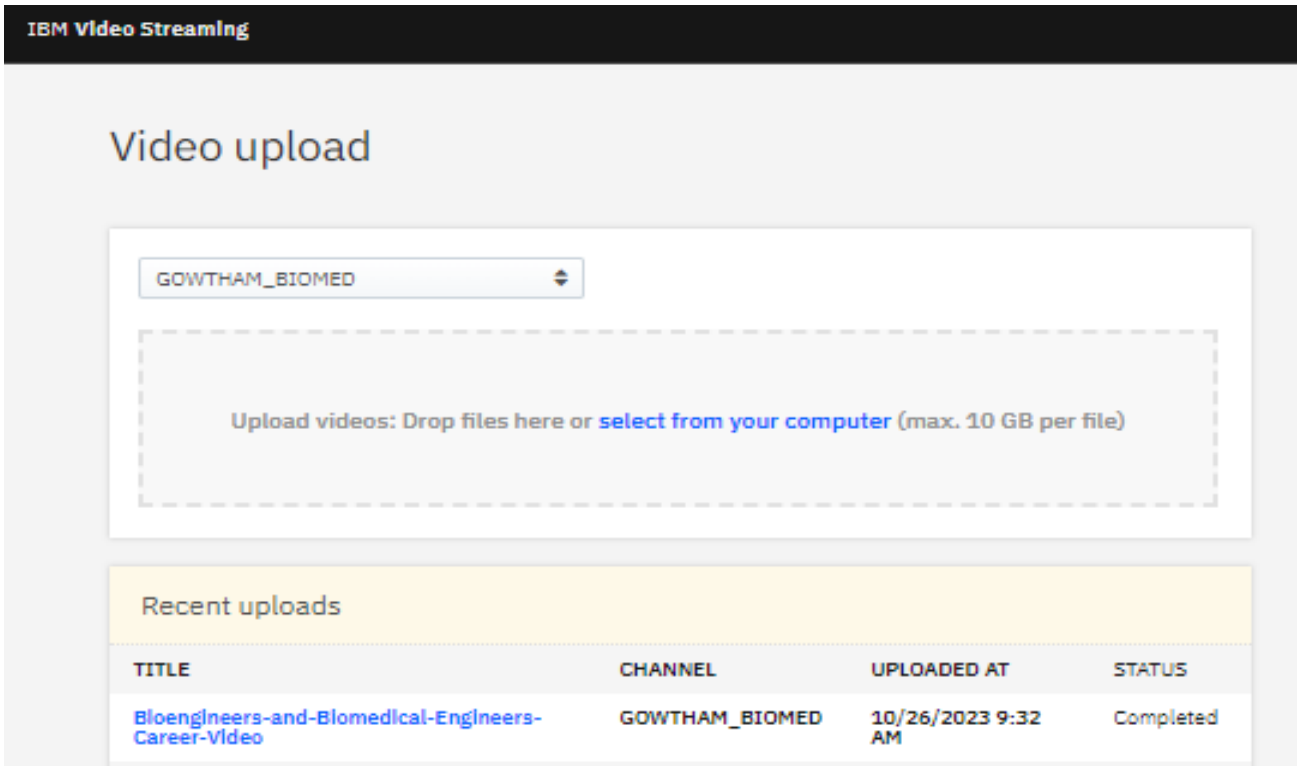
About
To edit the about section of your channel, visit Channel settings.
Channel Picture
Edit channel picture
Delete my channel picture


IBM Video Streaming
Video upload
GOWTHAM_BIOMED
Upload videos: Drop files here or select from your computer (max. 10 GB per file)
Recent uploads
TITLE
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UPLOADED AT
STATUS
Bioengineers-and-Biomedical-Engineers-Career-Video
GOWTHAM_BIOMED
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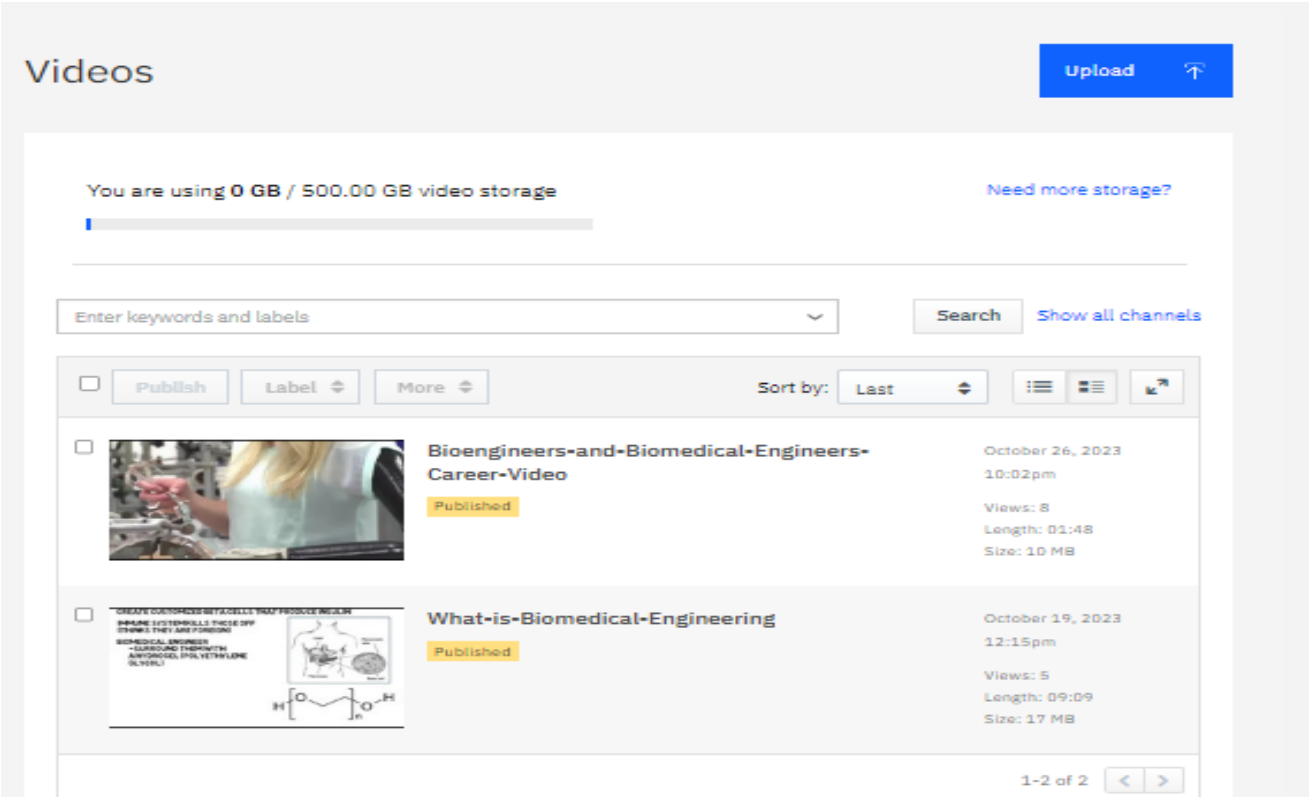
Completed


Videos
Upload
You are using 0 GB / 500.00 GB video storage
Need more storage?
Enter keywords and labels
Search
Show all channels
Publish
Label
More
Sort by:
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Bioengineers-and-Biomedical-Engineers-Career-Video
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10:02pm
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Size: 10 MB
What-is-Biomedical-Engineering
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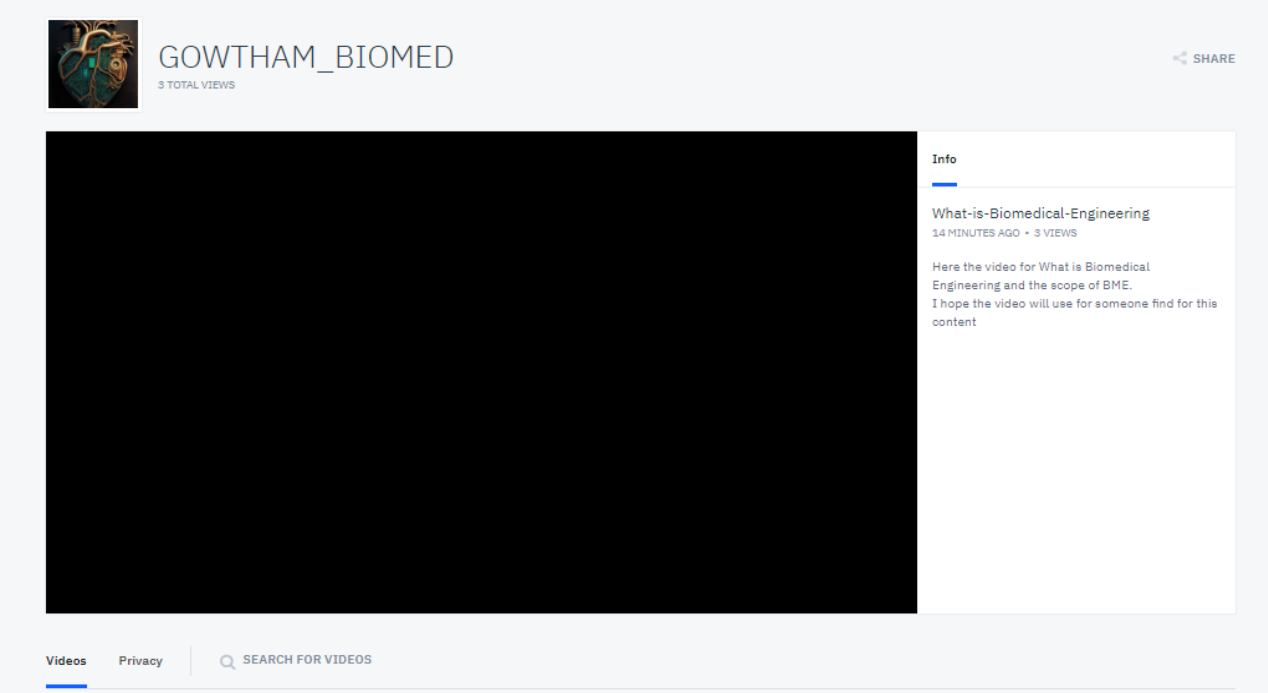
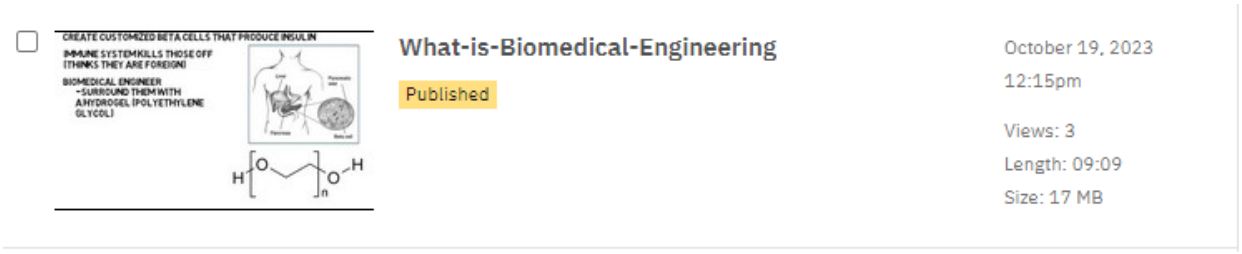
OFF-AIR BROADCASTING AREAS





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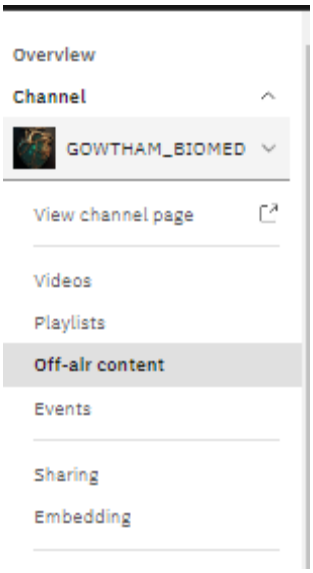
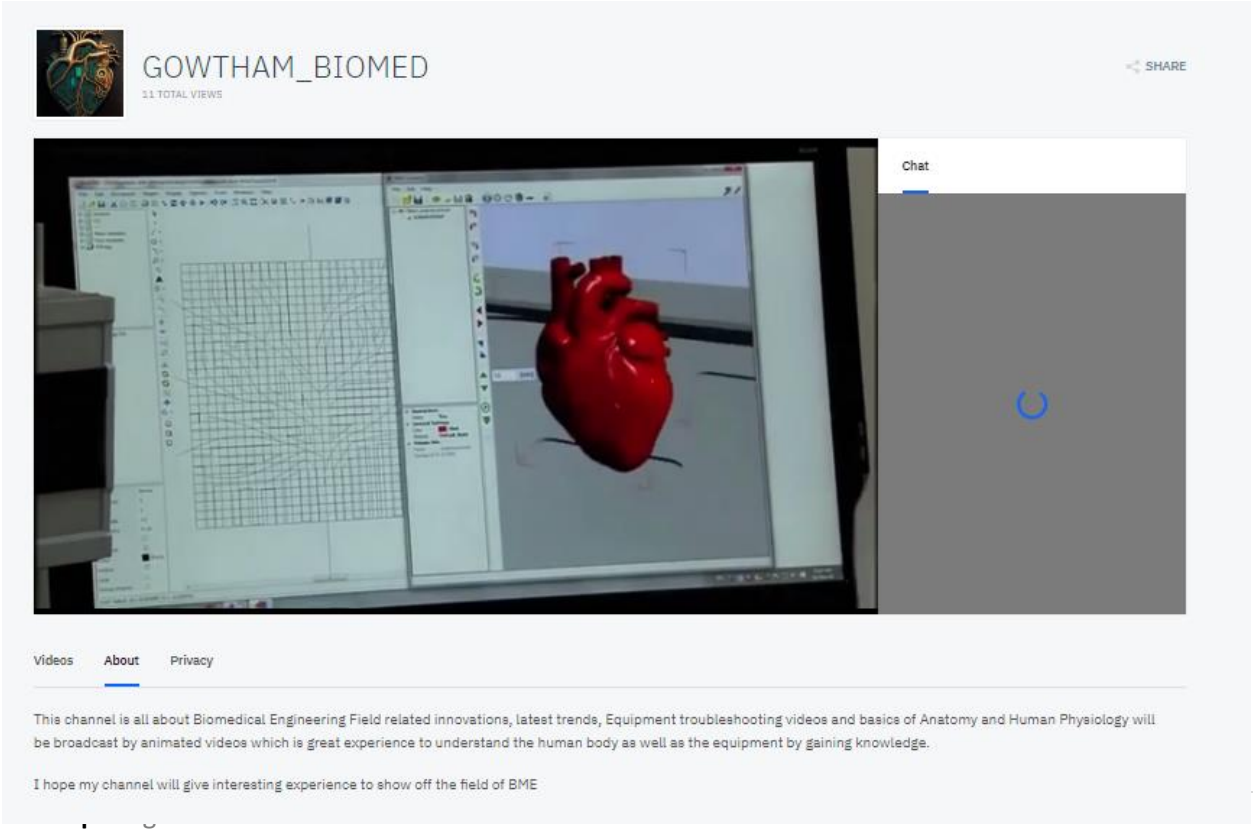
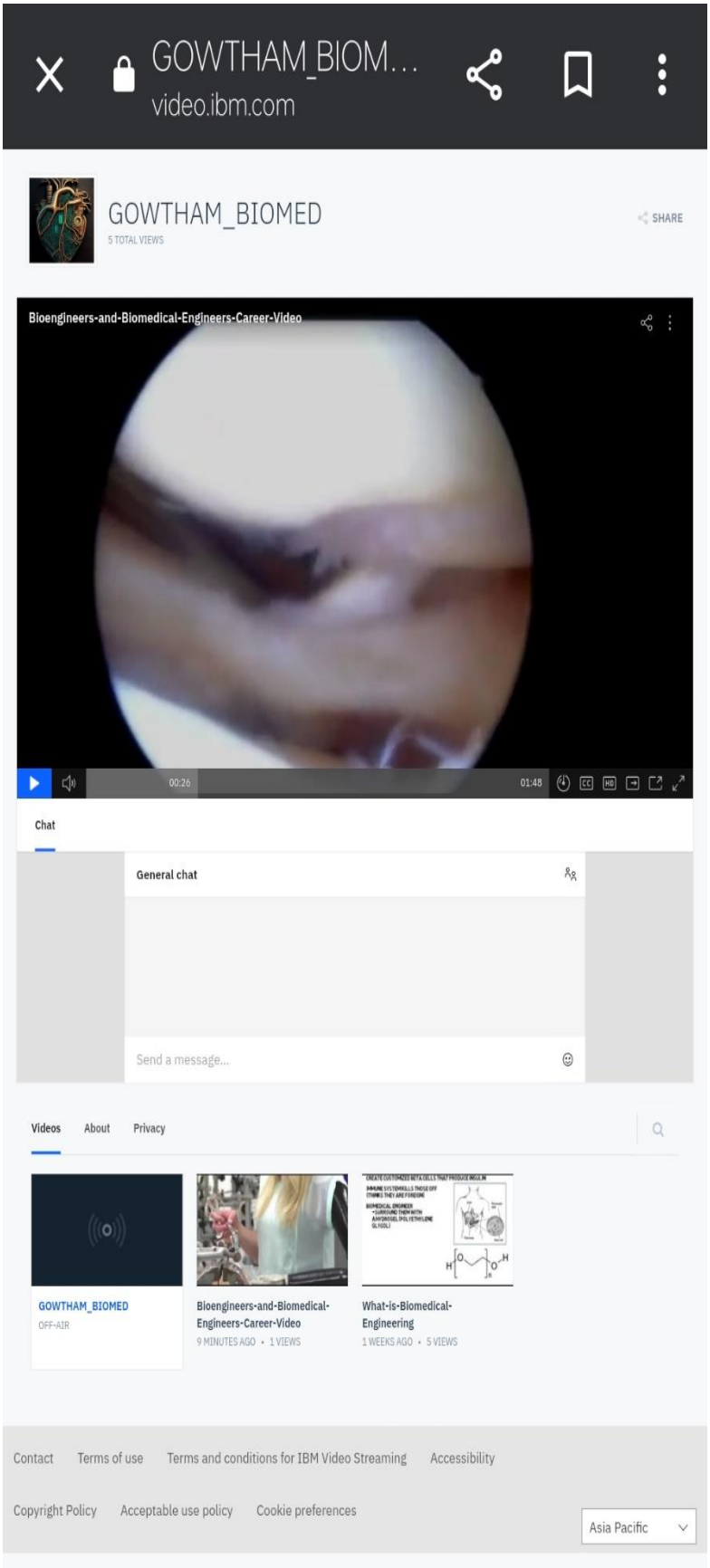


WATCH THE NEW VIDEO

https://video.ibm.com/channel/v3JnHuKBSMx

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video.ibm.com
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5 TOTAL VIEWS
SHARE
Bioengineers-and-Biomedical-Engineers-Career-Video
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01:48
Chat
General chat
Send a message...
Videos
About
Privacy
GOWTHAM_BIOMED
OFF-AIR
Bioengineers-and-Biomedical-Engineers-Career-Video
9 MINUTES AGO • 1 VIEWS
What-is-Biomedical-Engineering
1 WEEKS AGO • 5 VIEWS
Contact
Terms of use
Terms and conditions for IBM Video Streaming
Accessibility
Copyright Policy
Acceptable use policy
Cookie preferences
Asia Pacific

Implement Video Streaming Endpoints:

- Create endpoints in your server application to handle video streaming requests.
- When a client requests to view a video, your server should fetch the video
- file from IBM Cloud Object Storage and stream it to the client.

Example (Node.js with Express)

```
const express = require('express');
const app = express();
const ibmCloudVideoService = require('ibm-cloud-video-service-library');
// Use the appropriate library for your language.
const videoService = new ibmCloudVideoService
({apiKey: 'YOUR_API_KEY',
  apiSecret: 'YOUR_API_SECRET',
   endpoint: 'YOUR_ENDPOINT_URL', });
app.get('/stream/:videoId', (req, res) => {
   const videoId = req.params.videoId;
   const videoUrl = 'URL_TO_YOUR_VIDEO_IN_IBM_CLOUD_OBJECT_STORAGE';
// Fetch the URL based on videoId.
 // Stream video to client
   videoService.streamVideo(res, videoUrl); });
app.listen(3000, () => {
   console.log('Server is running on port 3000'); });
```

Client-Side Implementation:

- Develop a client-side application (web or mobile) to request and display the streaming videos.
- Use video player libraries like Video.js, Plyr, or HTML5 video element for video playback in the client application.
- Make HTTP requests to your server endpoints to fetch and play the streaming videos.

```
<video controls>
   <source src="http://your-server.com/stream/YOUR_VIDEO_ID"type="video/mp4">
   Your browser does not support the video tag.
</video>
```

DATASET OF MEDIA STREAMING

USER DATA • User ID • Username • E-mail Address • Subscription Type (e.g., Free, Premium) • Subscription Start Date • Subscription End Date • Payment Information (If Applicable)	**CONTENT DATA** • Media Title • Media Type • Genre • Release Date • Duration • Description / Summary • Thumbnail URL • Media File URL • Rating/ Reviews • Language • Director, Cast and Crew
USER INTERACTIONS • Date and Time of Media Playback • Duration of Playback • Device Used • User Ratings • User Reviews/ Comments	**STREAMING QUALITY** • Video Resolution • BIT Rate • Buffering Time • Playback Errors
RECOMMENDATIONS • Recommendation Media • Click through Rate on Recommendations • Effectiveness of Recommendations	**PERFORMANCE METRICS** • Server Response Time • Concurrent User Count • Bandwidth Usage • Geographic Location of Users
USER DEMOGRAPHICS • Age • Gender • Location • Device Type • Internet Connection Speed	**CONTENT LICENSING** • Licensing agreements with content providers • Expiry dates for licensed content
USER PREFERENCES • User's Watchlist • Favourite Genres • Search Queries • Watch history	**SECURITY AND ACCESSS** • Login Attempts • Account Activity Logs • IP Addresses

CONCLUSION

This project aims to deliver a feature-rich and secure virtual platform using IBM Cloud Video Streaming, offering users an immersive and interactive experience. The combination of live video streaming, interactive features, and robust user management will create a versatile platform suitable for a variety of applications. cure access to the virtual platform

By integrating on-demand video playback, user video uploads, and leveraging IBM Cloud Video Streaming services, the virtual platform becomes a dynamic and user-centric hub for creating, sharing, and enjoying video content. It offers a diverse range of features for both content creators and viewers, ensuring high-quality video delivery and user engagement.