

**MICHIGAN STATE**  

---

**UNIVERSITY**

# Project Plan Presentation

## CAVE: Collaborative Audio/Video Editor

### The Capstone Experience

Team TechSmith

Wenrui Li  
Faran Meshinchi  
Craig Smith  
Marco Suriano  
Rachel Townson  
Kyle Wagner

Department of Computer Science and Engineering  
Michigan State University

Spring 2023



*From Students...  
...to Professionals*

# Project Sponsor Overview

---

- “Empower people to create remarkable videos and images that help share knowledge and information”
- Easy to use software with professional results
- Flagship Products: Camtasia, Snagit
- Based in East Lansing



# Project Functional Specifications

---

- CAVE: Collaborative Audio/Video Editor
- Asynchronous: one editor at a time
- Secure
- Shared media bin
- Linear editing



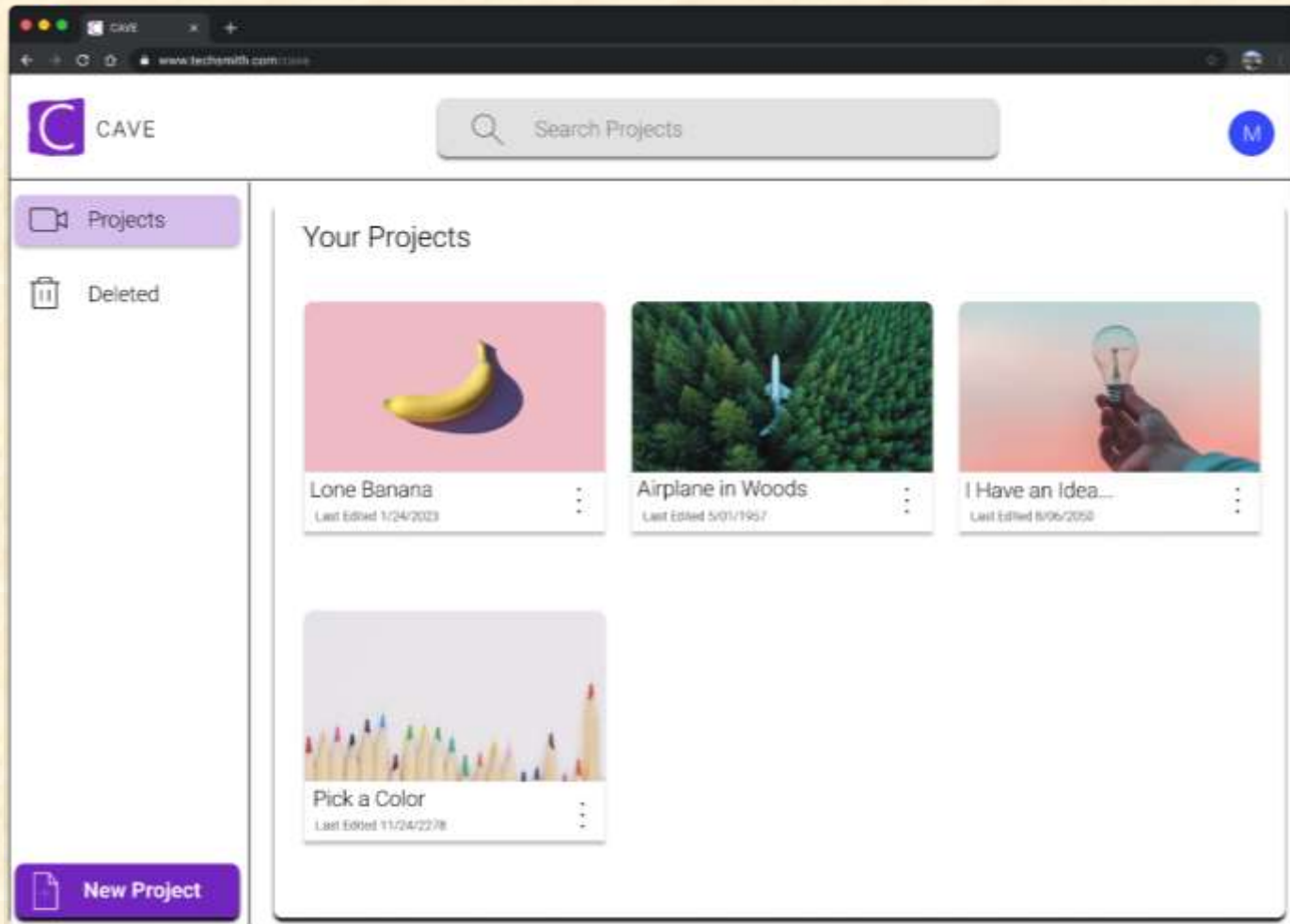
# Project Design Specifications

---

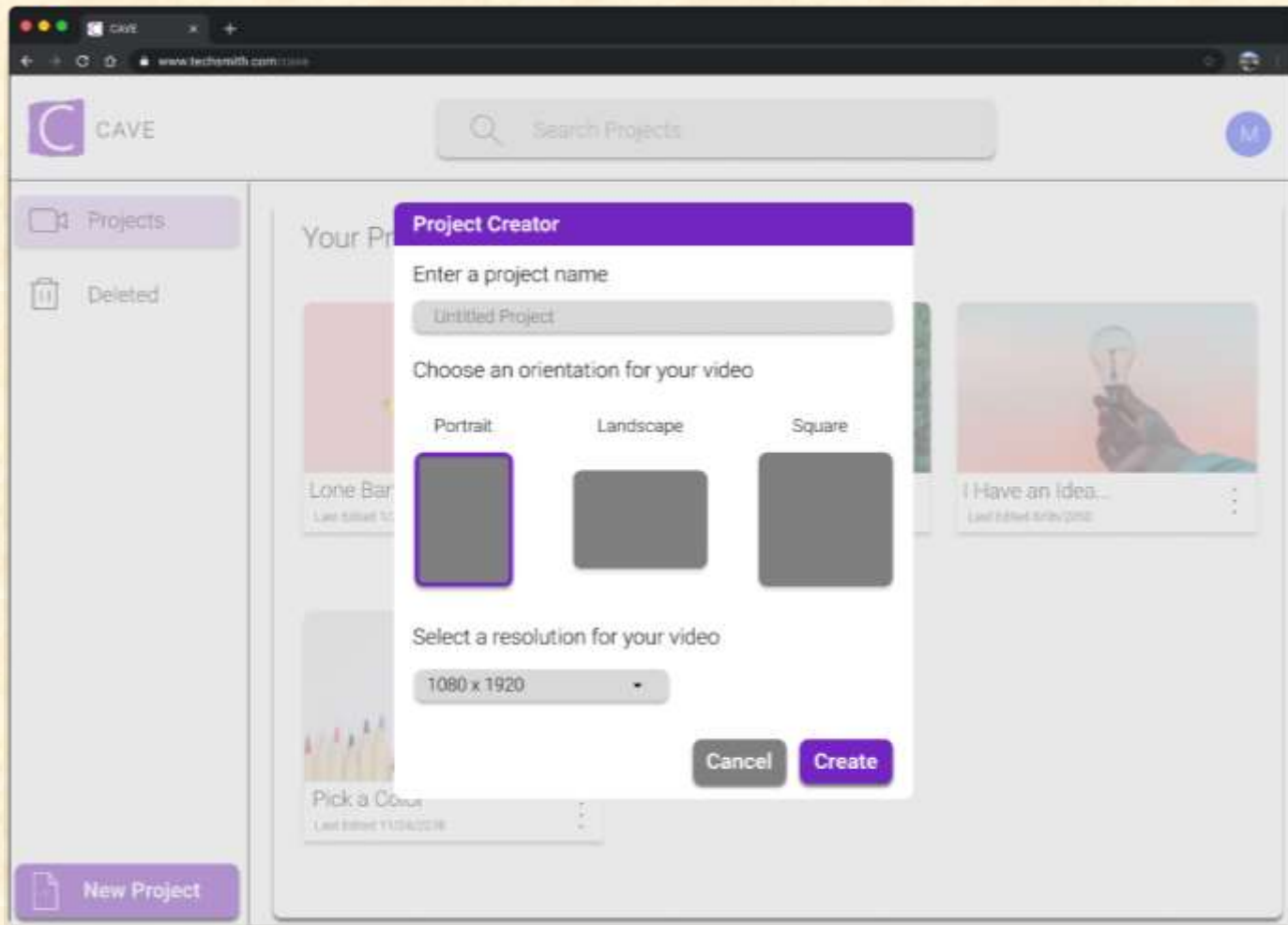
- Project page
  - Log in
  - Create and save multiple projects
- Video editor
  - Media bin
  - Timeline
  - Preview window
  - Invite other users



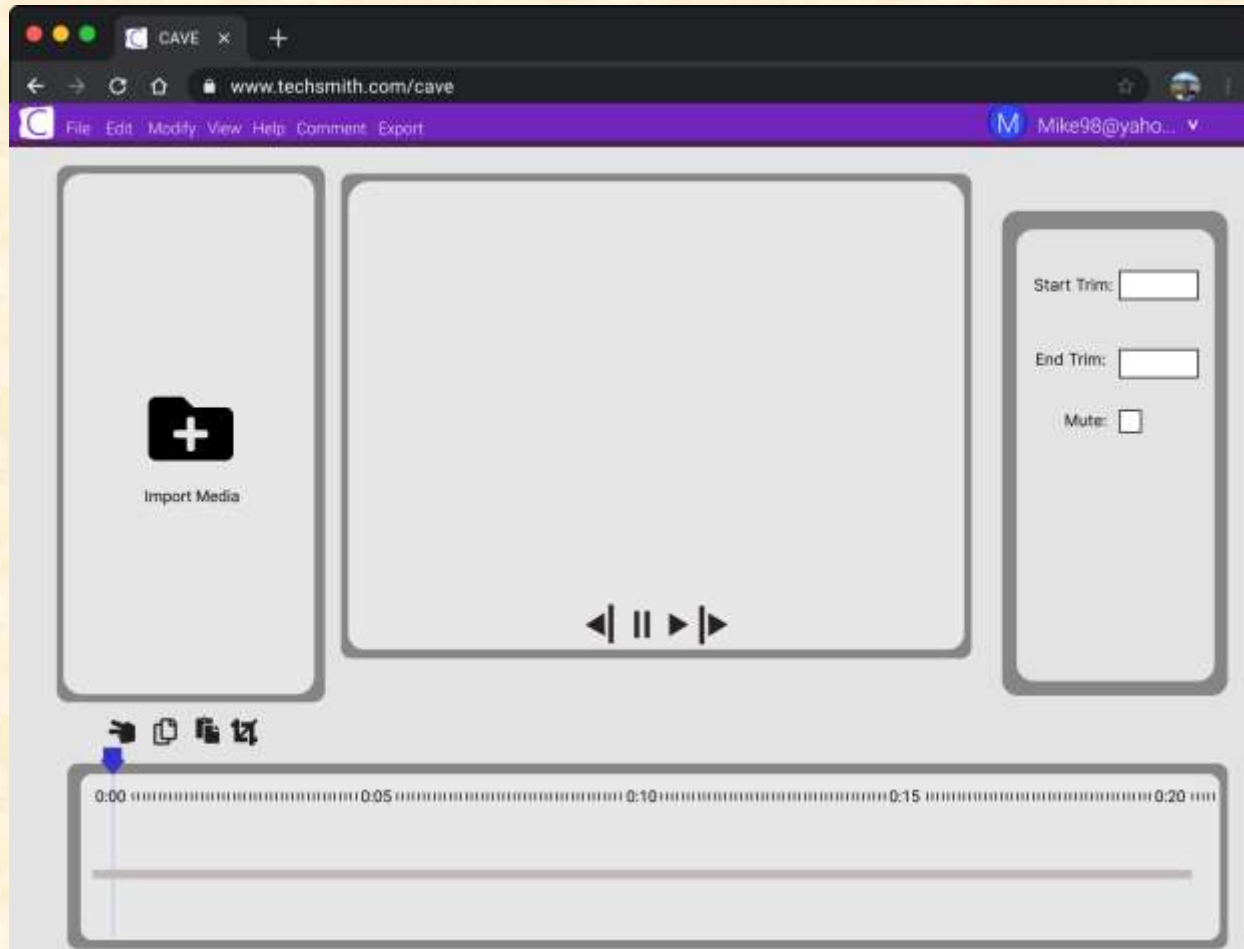
# Screen Mockup: Projects Page



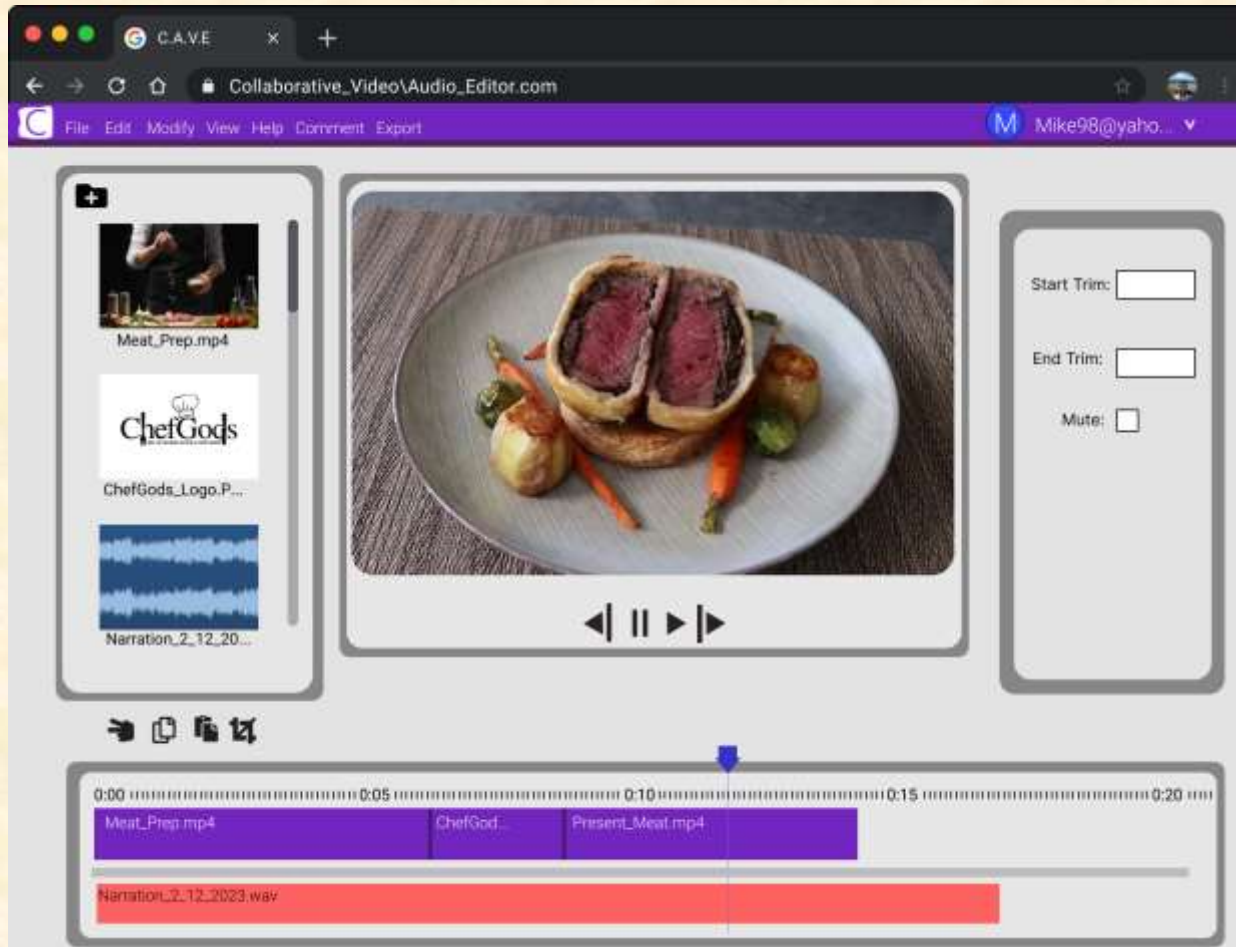
# Screen Mockup: Project Creator



# Screen Mockup: Video Editor (Empty)

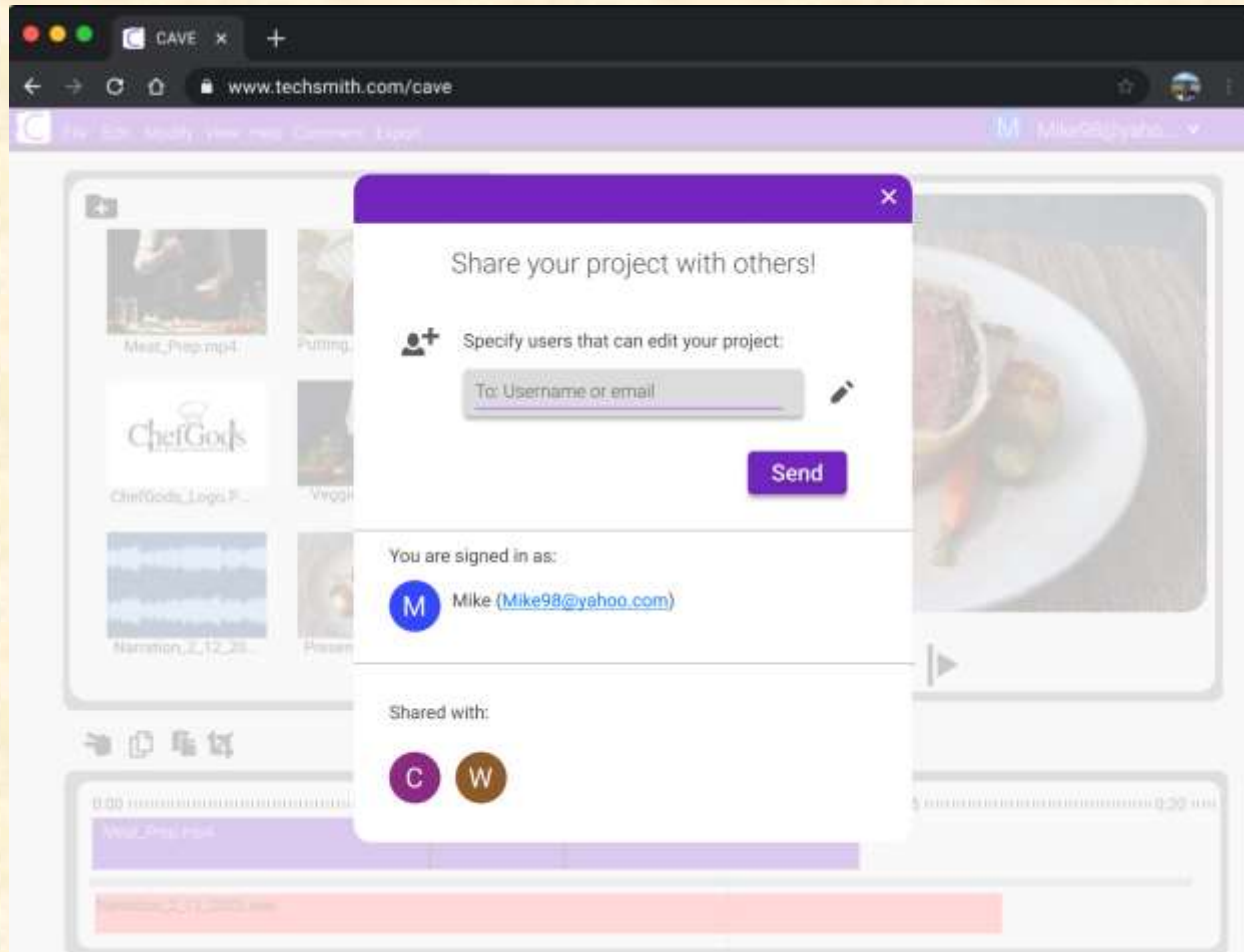


# Screen Mockup: Video Editor





# Screen Mockup: Share Project

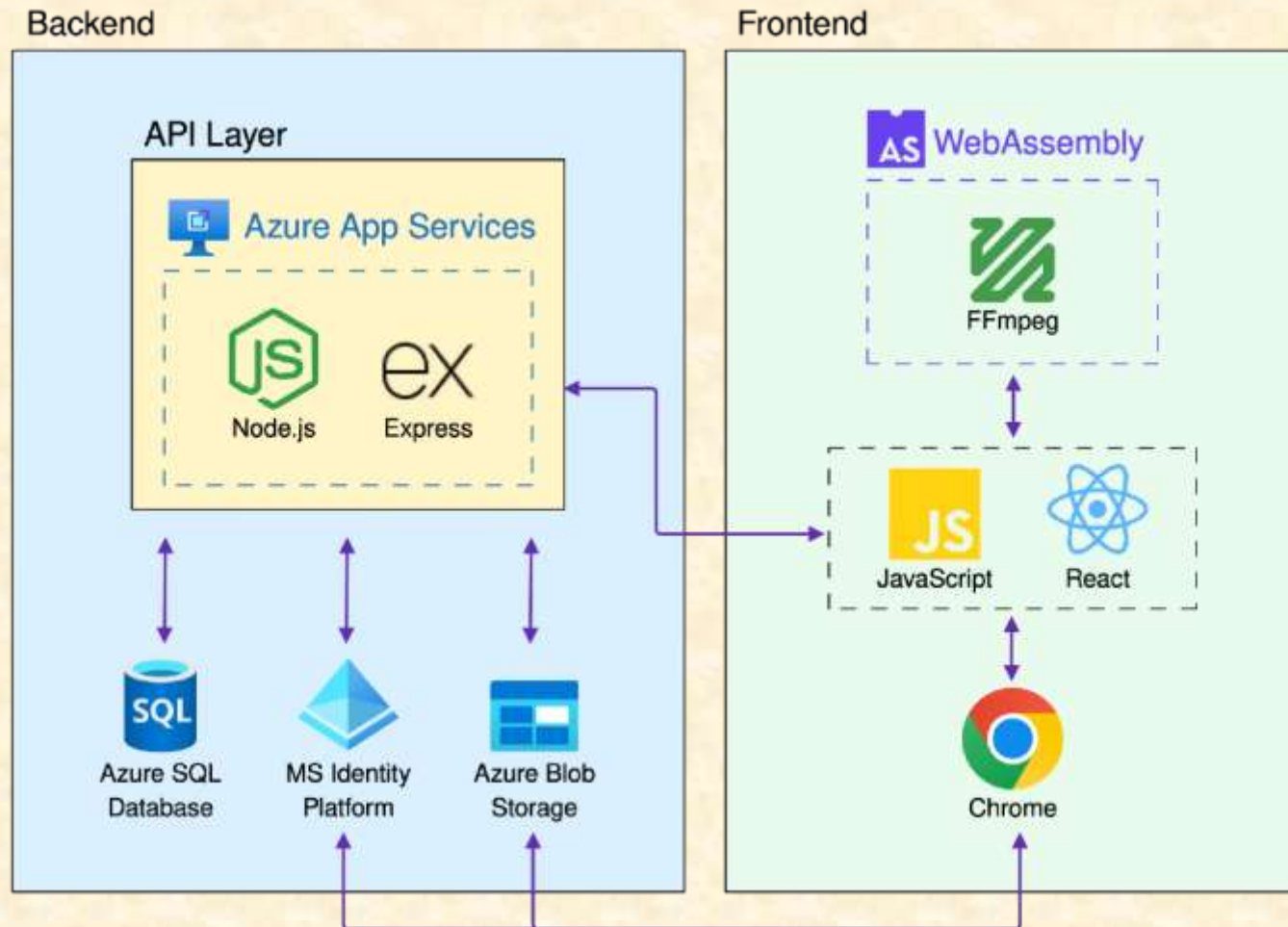


# Project Technical Specifications

- Support Chromium-based browsers on Windows and Mac
- Supported files
  - Import: MP4, PNG, JPEG, WAV, MP3
  - Export: MP4
    - User-selected resolution
    - 2GB export limit
- Input media files saved in cloud, cached in browser
- Media processing executed on client-side



# Project System Architecture



# Project System Components

- **Software Platforms / Technologies**
  - **User Interface**
    - React
    - JavaScript
  - **Video Processing**
    - FFmpeg on WebAssembly
  - **Server Systems**
    - Node.js / Express
    - Azure App Service
    - Azure Blob Storage
    - Azure SQL Database



# Project Risks

- Constraints of Client-Side Media Processing
  - Description: Media processing must be executed on users' hardware
  - Mitigation: Standardize input media format for lossless operations
- Converting XML to UI Elements
  - Description: Timeline blocks must reflect project state
  - Mitigation: Create functions to generate UI from XML and vice versa
- Caching of media files for seamless project previewing
  - Description: Must cache large media files in browser
  - Mitigation: Prototype various caching APIs
- Assigning editing privileges to multiple users
  - Description: Multiple users must be able to edit asynchronously
  - Mitigation: Allow one editor at a time, lock out others



# Questions?

---

?

?

?

?

?

?

?

?

?

