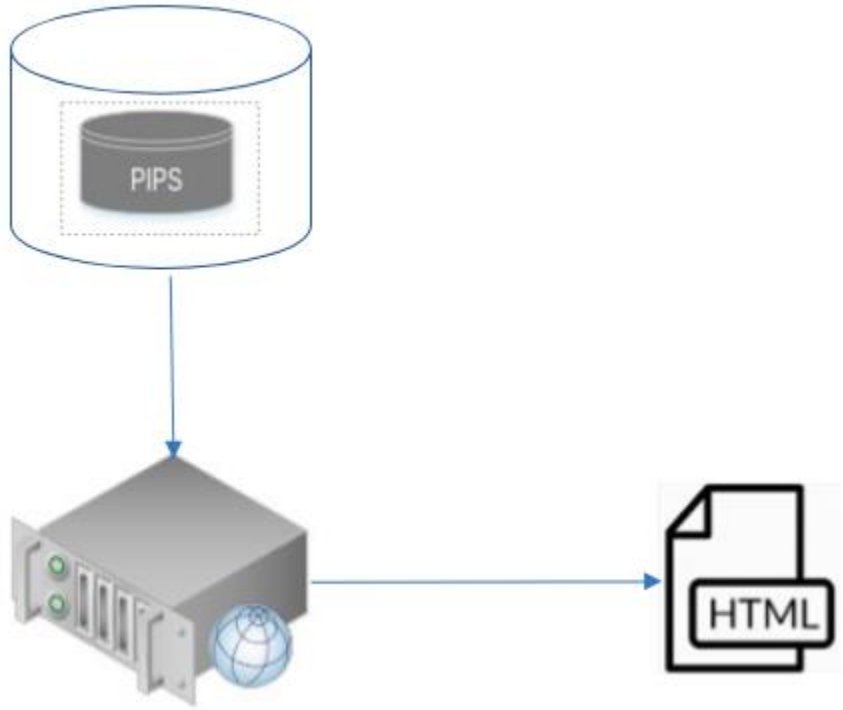
Browser based Streaming Media Player

Project Details

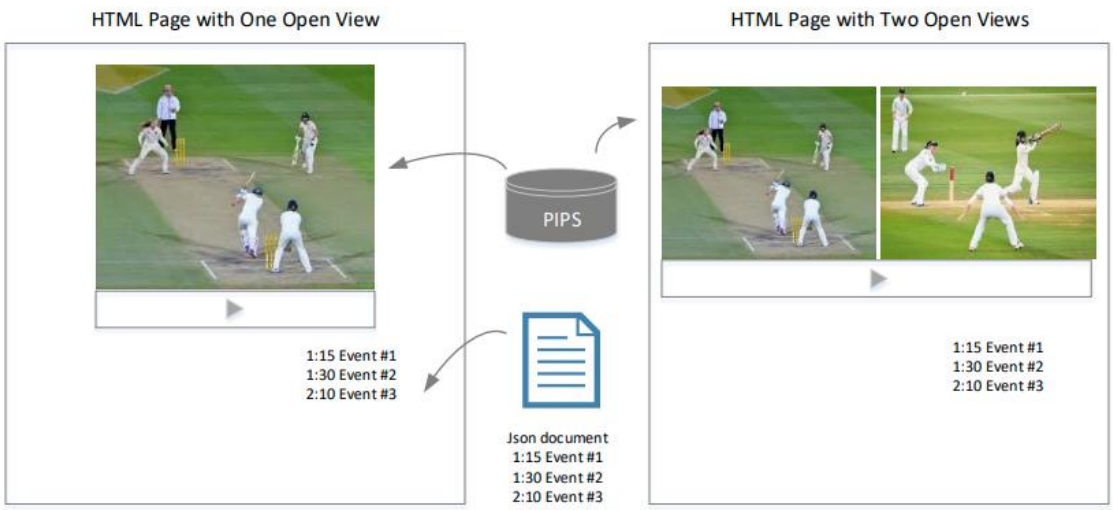
Overview

The objective of the project is to create a browser based streaming media player, that connects to a remote Linux server, streaming media converted from a multimedia object serialized as a set of audio, video and data files, collectively called a PIP.



General Requirements

The most important project deliverable is the Media Player, that can run on the browser without downloading any media from the server. The player needs to consume real-time stream from the remote Linux server and display the frames of the media. The player needs to have most common player controls to help user jog through the frames, Stop, Play, Pause. Some advanced features shall be added to the player in the next development phase.



The player should have provision to play one to four different videos at a time. A metadata file with JSON data about important milestone timestamps of the videos shall be used to control the player position.

Scope of the project

The project development work includes the browser based streaming media player, apart from the Linux server-based streamer and any other part required for these components. The only available part of the whole project is the STRAPI based storage where the PIPs are stored in a proprietary format.

Steps to Methodology

The methodology shall evolve while taking decisions on the following pivots.

Technology Decisions

- Research streaming video server applications that provide better user experience
- Buffering, Quick Streaming
- Consider open source and commercial options
- Must run in Linux Docker container
- Download demo versions and evaluate

Development Requirements

- Open one of the PIPs from the STRAPI grid in an HTML page generated by STRAPI
- Display video in media player
- User can choose 1 or 2 camera views displayed
- Controller to support, start, stop, .25X, .5X, 1X, 2X, 4X playback
- Need to be able to support camera angles
- Need to handle video camera angle made up of short clips (what are the implications?)

Test Conditions

- Test with various video formats and codecs (.mov, .mp4, h.264, h.265)
- Test with and without using streaming video server technology

- Multiple camera angles in PIP (1 – 4), but only need to display up to 2 views
- Various video durations (15 seconds to 30 minutes long)
- Test with short clips from one camera angle
- Recording with audio and without audio
- Test with up to 10 concurrent users HTML browsers opening the same or different PIPs.

Where to Begin With

It can be daunting to decide on that. Although most of it shall be for you to work on, I think our collaboration shall be an important element of the success of this project. To begin with, you need to get some background information about some of the proprietary objects like a PIP. Plus, we can validate your research decisions together before you move far enough to make be able to make expensive corrections only. Also, the features mentioned in this document are bare minimum and preliminary. They may need further explanation that we'll keep doing on daily basis. A checklist of points that we can begin with are mentioned below.

1. What protocols are used in the industry to stream Video to a browser-based media player?
2. What are the pros and cons of each one of those protocols?
3. What protocol do you suggest for our scenario and why?
4. Find out what is the structure of the PIP.
5. Discuss what can be involved in the structure of a PIP.
6. Discuss formats and schemas of various parts of a PIP.
7. Discuss features of the browser-based media player.
8. Discus what technologies shall be involved in creating the browser-based media player.
9. Discuss the platform and IDE to be used.
10. Find out the riskiest or unknown parts of the complete implementation.
11. Test the risky/unknown parts first.
12. For the risky parts, what other options are available in case of a dead-end?
13. Create a list of spikes for the risky part and a sprint for the rest to do a rough estimation.

Timeline

I would like you to provide a rough estimate of how much time it will take to complete it. This small project is to get you started with the real work lying ahead of us. Working on this project shall not bring you inside the mainstream development we are doing, but it shall certainly connect you to it. By the time you are done with this, I think you'll be ready to take over the mainstream development. I'll be really interested in how you handle this project and shall keep tab on the timeline.