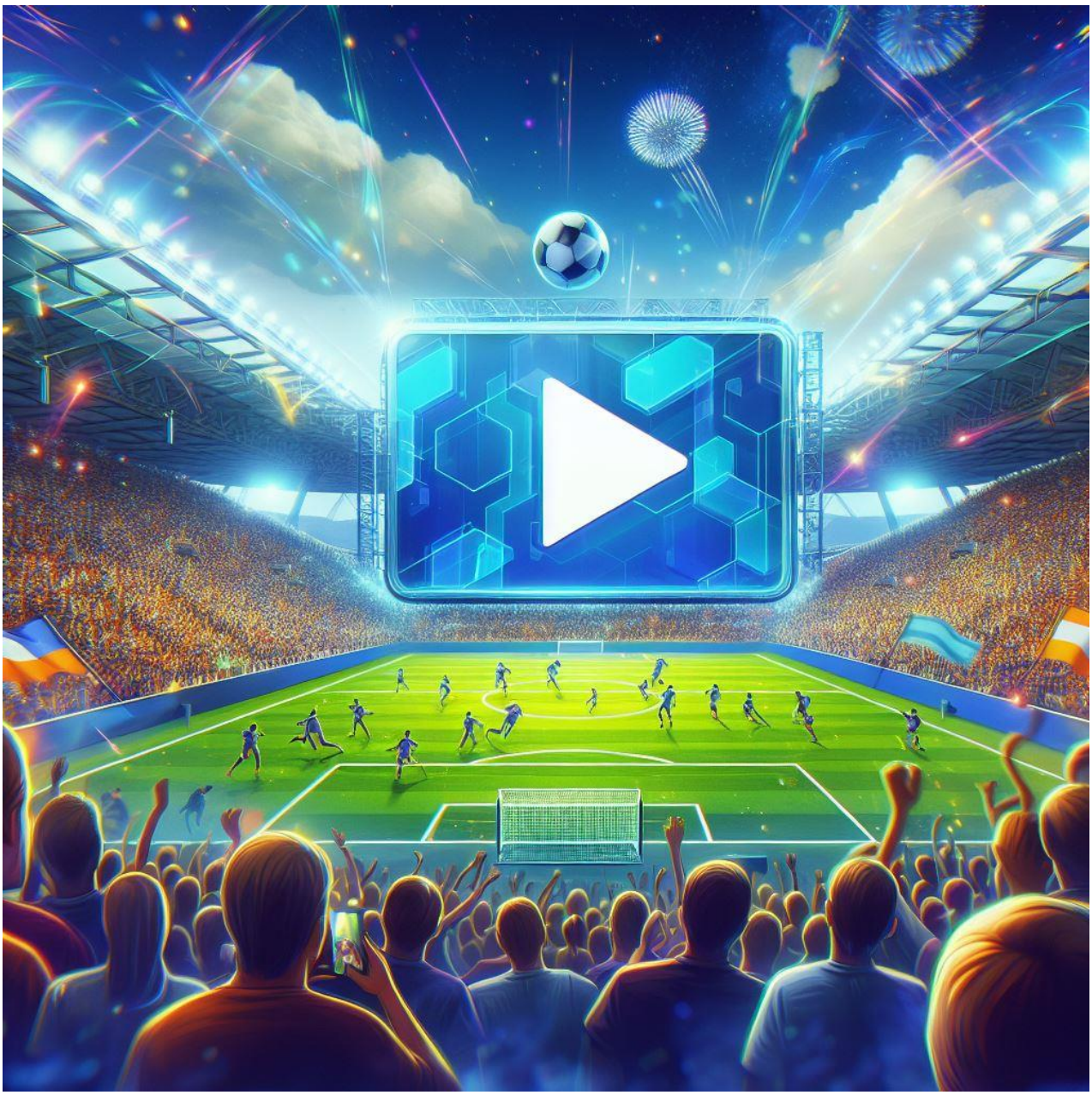
ROBERT H. SMITH SCHOOL OF BUSINESS

System Design Proposal

For Football Paradise LLP – Stream Management Platform



BUDT 723 – Business Process Analysis (Dr. Paul Shapiro)

BY GROUP 02

May 07, 2024

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Executive Summary

Football Paradise, a leading literature website dedicated to football narratives, is embarking on a transformative journey with us to enhance its user experience through the implementation of a sophisticated Live Streaming Management System. This system aims to provide football enthusiasts with seamless access to live matches, highlights, and post-match analyses, elevating Football Paradise's position as a premier destination for football content.

Summary of Survey Phase:

The Survey Phase Report outlines key challenges and opportunities in the absence of a streaming management platform. Identified using the PIECES framework, these issues span performance, information accessibility, economic potential, control, efficiency, and service quality. Directives focus on developing a robust platform to address these concerns, aligning with Football Paradise's goal of fostering thoughtful discourse in football literature. The project aims to enhance the website's online presence by centralizing content management, providing a user-friendly interface, ensuring robust storage, implementing health monitoring, and improving overall user experience. Success metrics include functional efficiency, client satisfaction, platform stability, and security monitoring. Despite constraints such as time, resources, and stakeholder expectations, careful planning and collaboration are emphasized to ensure successful platform development, reinforcing Football Paradise's status as a sanctuary for passion, insight, and creativity in football literature.

Summary of System Analysis Phase:

The System Analysis Phase Report for Football Paradise provides a comprehensive understanding of its current structure and future plans. Through observation and stakeholder interviews, key features, content organization, and missing functionalities were elucidated. The interview approach incorporated open-ended and closed-ended questions to align stakeholder visions with strategic objectives, covering both thematic and technical aspects. The report outlines a planned platform aimed at enhancing user experience by organizing content efficiently, introducing new engagement features, and streamlining navigation pathways. Data Flow Diagrams offer insights into the current system's processes, including user interaction, content management, and analytics generation. Overall, the report lays a foundation for creating a user-centric and technically robust platform for football enthusiasts, aligning with Football Paradise's mission of fostering insightful football narratives.

Summary of System Analysis Phase:

The System Design Phase Report for Football Paradise's Stream Management Platform outlines a comprehensive proposal for the development and implementation of a robust live stream management system. It begins with an overview of essential diagrams, including logical and physical data flow diagrams, entity-relationship diagrams, and synchronized system models. These diagrams provide a detailed blueprint for the system's functionality and technological implementation, ensuring efficient stream management. The report also includes a candidate systems solutions

matrix, feasibility analysis matrix, sample interface screens, implementation plan, and lessons learned. Key insights include the importance of comprehensive system analysis, integration of technology and business processes, evaluation of candidate system solutions, parallel implementation approach, and strategic planning and vision. Overall, the report offers valuable insights into the complexities and considerations involved in developing and deploying a live stream management platform for Football Paradise.

In conclusion, the Live Streaming Management System represents a pivotal step forward for Football Paradise, enabling the organization to meet the evolving needs of its user base and stay ahead of the competition. By leveraging advanced technology, comprehensive data analysis, and strategic planning, Football Paradise is poised to redefine the football content landscape and establish itself as the ultimate destination for football enthusiasts worldwide.

With a clear vision, robust infrastructure, and unwavering commitment to excellence, Football Paradise is primed to elevate the football viewing experience and cement its position as a leader in the digital sports media industry.

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Evaluation Letter from Client

Football Paradise
Stream Management Platform

(DRAFT)

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Spring 2024
Dr. Shapiro

To Whom it may concern,

My name is Gaurang Manjrekar, and I am the owner of Football Paradise. Football Paradise, a football (soccer) literature website, originating from Mumbai, India, is now a beacon of quality literature since its inception in 2008. Our platform's commitment to authentic storytelling and insightful content garnered international recognition, notably winning the 2016 Judges' Choice Award for the Best International Blog at the Football Blogging Awards, a groundbreaking achievement for Indian representation in the field.

Our company is looking forward to entering an exciting phase of development, the creation of a stream management platform which will help us in delivering quality video content to our customers.

Operating a small business in the dynamic world of sports publishing requires adaptability and innovation. My team and I handle various aspects of our operations, from design and development to marketing and customer engagement. As we embark on this new project, collaboration with external partners becomes essential.

UMD Smith recently approached us about a collaborative opportunity aligned with their project at the University. In our initial discussions, the student team outlined the scope of their project and its relevance to our company's goals and challenges. Through constructive dialogue, we identified key areas where our platform could benefit from their expertise.

During our latest meeting, the student team presented the current state of the project, projected deliverables, and outlined next steps. As someone who has held executive positions in the past, I was thoroughly impressed by the professionalism and diligence exhibited in their presentation. It's evident that they have invested significant effort into this project.

Key takeaways from our collaboration so far include:
- Confidence in the validity of the project's objectives and outcomes.
- Expected deliverables aimed at enhancing our platform's efficiency and usability.
- Appreciation for the University's initiative in facilitating partnerships between students and small businesses.

The proposed deliverables, such as a comprehensive dashboard for managing live stream links, monitoring stream health, and storing video content, align perfectly with our goal to launch live streaming platform. This partnership presents an opportunity for us to strengthen our platform and better serve our audience of football enthusiasts.

I am committed to supporting the student team throughout this project and am impressed by their dedication and enthusiasm. It's refreshing to collaborate with bright and motivated individuals who bring fresh perspectives to our business challenges.

On behalf of Football Paradise, I extend my gratitude to UMD Smith School and the student team for their invaluable support.

We are eager to see the positive impact of this collaboration on our platform and look forward to continued success together.

Respectfully,
Gaurang Manjrekar
Owner, Football Paradise

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Survey Phase Report

Football Paradise

Stream Management Platform

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Survey Phase Report

Client Background

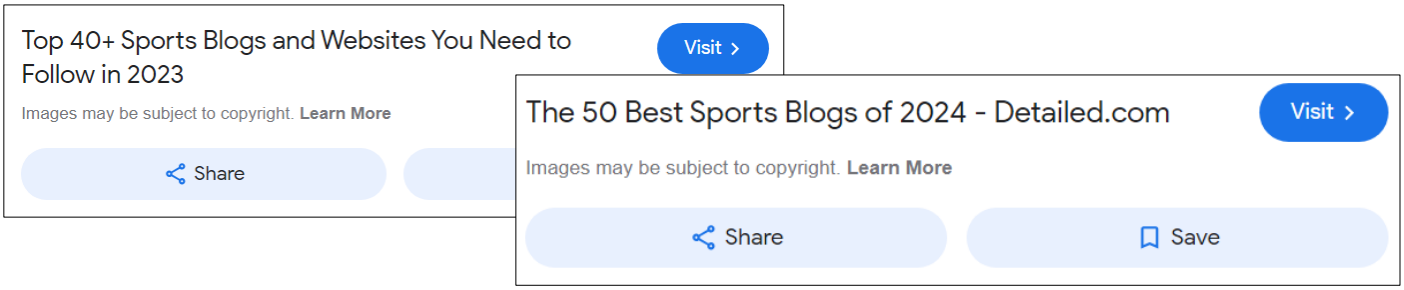
Football Paradise, a football (soccer) literature website, originating from Mumbai, India, is a beacon of quality literature since its inception in 2008 by Gaurang Manjrekar, Sr Technical Program Manager at Amazon. The platform's commitment to authentic storytelling and insightful content garnered international recognition, notably winning the 2016 Judges' Choice Award for the Best International Blog at the Football Blogging Awards, a groundbreaking achievement for Indian representation in the field.

Amidst a landscape cluttered with clickbait and fleeting attention spans, Football Paradise stands out by offering thought-provoking feature pieces, book reviews, and interviews, lauded by industry luminaries including Phil McNulty of The BBC and Barney Ronay of The Guardian. The platform's dedication to elevating football discourse has earned it praise from respected figures across various media outlets.

Football Paradise serves as a melting pot where sports and creativity intersect harmoniously. From creative literature and opinion pieces to exclusive interviews and captivating artwork, the platform offers a diverse array of content catering to a global audience. It transcends the traditional boundaries of sports reporting, providing a platform for nuanced discussions and deeper explorations of football culture. For those seeking more than mere statistics and scores, Football Paradise offers a sanctuary—a place where passion, insight, and creativity converge to celebrate the essence of the beautiful game.

Industry Background

The sports publishing sector has witnessed remarkable expansion, aligning with the surging worldwide interest in sports, notably football. The advent of digital platforms and social media has revolutionized fan interaction, creating a heightened demand for varied and perceptive football content. Blog publishing, particularly within the sports domain, has emerged as a potent avenue for driving website traffic, fuelled by the allure of impassioned viewpoints and in-depth analysis. This trend underscores a fundamental shift in how sports enthusiasts consume content, with blogs serving as dynamic hubs for engaging discussions and immersive experiences, thus shaping the contemporary sports media landscape.



The Problems and Opportunities

Problem Analysis (using PIECES Framework):

- **Performance:** Football Paradise's current performance is hindered by the absence of a streaming management platform. Without the ability to offer match highlights and manage streaming content effectively, the organization wants to cater to the expectations of its audience and wants to deliver timely football-related video content.
- **Information:** The lack of a streaming management platform results in a deficit of accessible information for visitors. Match highlights and other football-related content are unavailable, limiting the information available to users and decreasing engagement with the platform.
- **Economy:** There is a missed economic opportunity due to the absence of a streaming management platform. Without the ability to offer engaging content such as match highlights, Football Paradise may lose out on potential revenue streams from sponsorships or premium content offerings.
- **Control:** The absence of a streaming management platform leads to a lack of control over content organization and delivery. This hampers the organization's ability to curate video content effectively and provide a seamless user experience, which may result in decreased visitor satisfaction and engagement.
- **Efficiency:** The current lack of a streaming management platform signifies inefficiency in video content management and its delivery processes. Without a centralized system in place, resources cannot be procured or created, leading to no availability of football-related video content for the audience.
- **Service:** The inability to offer match highlights and manage streaming content effectively impacts the quality of service provided by Football Paradise. Visitors expect access to a wide range of football-related content, and the absence of such offerings diminishes the overall user experience and satisfaction.

Opportunities Analysis (using PIECES Framework):

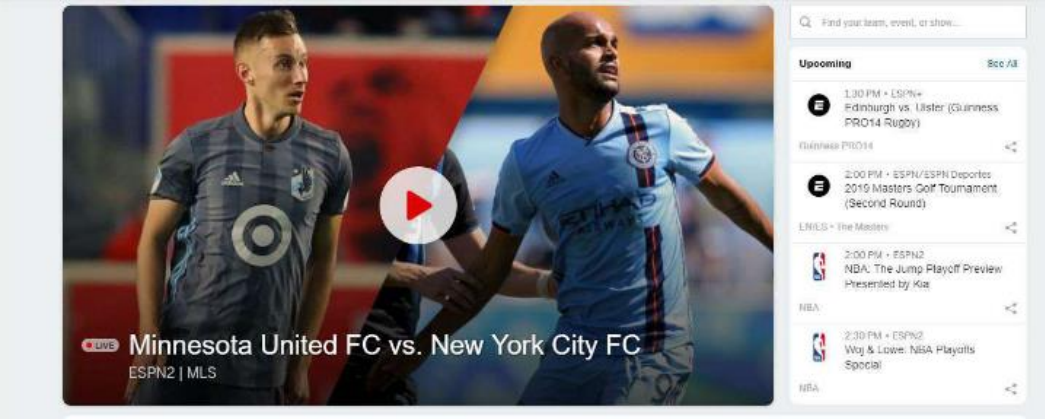
- **Performance:** Implementing a comprehensive streaming management platform presents an opportunity to enhance Football Paradise's performance. By offering match highlights, live streams, and other football-related content, the organization can improve visitor engagement and satisfaction levels.
- **Information:** The development of a streaming management platform can enrich the information available to visitors. With access to a diverse range of content, including match highlights and live streams, users will have more comprehensive information about football-related events and matches.
- **Economy:** Introducing a streaming management platform opens up new economic opportunities for Football Paradise. By attracting more visitors through enhanced content offerings, the organization can potentially increase revenue streams from sponsorships and premium content subscriptions.
- **Control:** Implementing a streaming management platform provides greater control over content organization and delivery. With a centralized system in place, Football Paradise can

curate content effectively, ensuring a seamless user experience and improving visitor satisfaction.

- **Efficiency:** The adoption of a streaming management platform can streamline content management processes and improve efficiency. With automated content organization and delivery mechanisms, resources can be utilized more effectively, resulting in faster content delivery and improved operational efficiency.
- **Service:** Developing a streaming management platform aligns with Football Paradise's goal of providing high-quality service to its audience. By offering a user-friendly platform with a wide range of football-related content, the organization can enhance the overall user experience and satisfaction levels.

Directives Analysis (using PIECES Framework):

- **Performance:** The directive to **develop a robust streaming management platform** directly impacts Football Paradise's performance. By creating a comprehensive platform for organizing and categorizing streaming content, the organization can enhance its performance & ranking among competitors by providing a more engaging and satisfying experience for visitors.
- **Information:** Implementing **user-friendly features**, by ensuring easy navigation and intuitive interfaces so that Football Paradise team can easily manage the video content and implement the live streams on their platform.
- **Economy: Ensuring content accessibility** and ease on the stream management platform is crucial for maximizing engagement and viewership on the website, directly impacting the economic aspect of the framework. By removing restrictions on accessing streaming content on their website, Football Paradise can attract more visitors and potentially increase revenue streams.
- **Control:** By implementing a system for content organization and delivery, the organization gains greater **control over its operations**, leading to improved efficiency and visitor satisfaction.
- **Efficiency:** By making streaming content readily available to the organisation without restrictions, Football Paradise can **streamline video content delivery processes and improve operational efficiency** on their website.
- **Service:** Overall, the directives aim to enhance the **quality of service** provided by Football Paradise. By developing a user-friendly platform, ensuring content accessibility, and implementing a robust streaming management system, the organization can better serve its audience and improve their overall experience.



Project Scope

Project Objective

Football Paradise aims to enhance its online presence by implementing a comprehensive streaming management platform. This platform will serve as a centralized solution for managing live stream links, pre-recorded videos, and associated metadata. The project scope outlines the objectives, deliverables, and key features of the streaming management platform.

The primary objective of the project is to develop a user-friendly and efficient streaming management platform tailored to the needs of Football Paradise. Specific objectives include:

- Centralizing the management of live stream links and pre-recorded videos.
- Providing clients with a dashboard for managing links, viewing upcoming streams, and accessing metadata.
- Ensuring robust storage and organization of live stream videos and pre-recorded content.
- Implementing health monitoring features to track the status of live stream links.
- Enhancing control over content delivery and resource utilization.
- Improving the overall user experience for clients accessing football-related content.

Measurement of Success

In the realm of football content management, success is not merely a goal—it's a measurable outcome. Our commitment to excellence is reflected in our rigorous approach to monitoring and enhancing performance:

- A functional & efficient stream management platform with all the football-related content.
- Collect feedback from clients regarding platform usability, features, and overall satisfaction to identify areas for improvement.
- Assess platform stability by monitoring system uptime, response times, and error rates to maintain a seamless user experience.
- Monitor security metrics such as vulnerability assessments and incident response times to mitigate security risks and ensure platform integrity.

High-Level Requirements

a. Stream Management Platform Interface:

- Intuitive dashboard for clients to manage live stream links, view upcoming streams, and access metadata.
- Customizable layout and preferences for personalized user experience.

b. Link Management:

- Tools for adding, editing, and removing live stream links with scheduling options and metadata settings.
- Categorization and tagging features for efficient organization and retrieval.

c. **Health Monitoring:**

- Real-time monitoring of live stream link health with alerts for downtime or performance issues.
- Visualization of link health metrics for easy assessment and management.

d. **Video Storage and Management:**

- Secure storage and organization of live stream videos and pre-recorded content with categorization and tagging.
- Integration with cloud storage services for scalability and redundancy.

e. **Reporting and Analytics:**

- Generation of usage reports and analytics to track link performance, viewer engagement, and content popularity.
- Visualization of analytics data through interactive charts and graphs for informed decision-making.

Exclusions

- Any features or functionalities that compromise the ad-free nature of the platform.

Constraints & Limitations

1. **Time Limitations:**

- The project must be completed within the timeframe specified by the college curriculum, potentially limiting the scope of development and testing phases.
- Team members may have other academic commitments, restricting the amount of time available for project work.

2. **Resource Constraints:**

- Limited access to specialized software tools, development environments, or hardware may impact the team's ability to implement certain features or conduct comprehensive testing.
- Availability of team members for meetings, collaboration, and troubleshooting may be restricted by individual schedules and academic obligations.

3. **Technical Limitations:**

- Access to external databases, APIs, or services may be restricted, requiring the team to rely on simulated data or alternative solutions.

4. **Scope Restrictions:**

- The project scope may need to be constrained to fit within the available time and resources, potentially limiting the depth or complexity of certain features.

5. **Stakeholder Expectations:**

- The project stakeholders, including college instructors or evaluators, may have specific expectations regarding project deliverables, quality standards, or presentation formats.
- Balancing stakeholder requirements with project constraints may require clear communication and alignment throughout the development process.

6. **Documentation Requirements:**

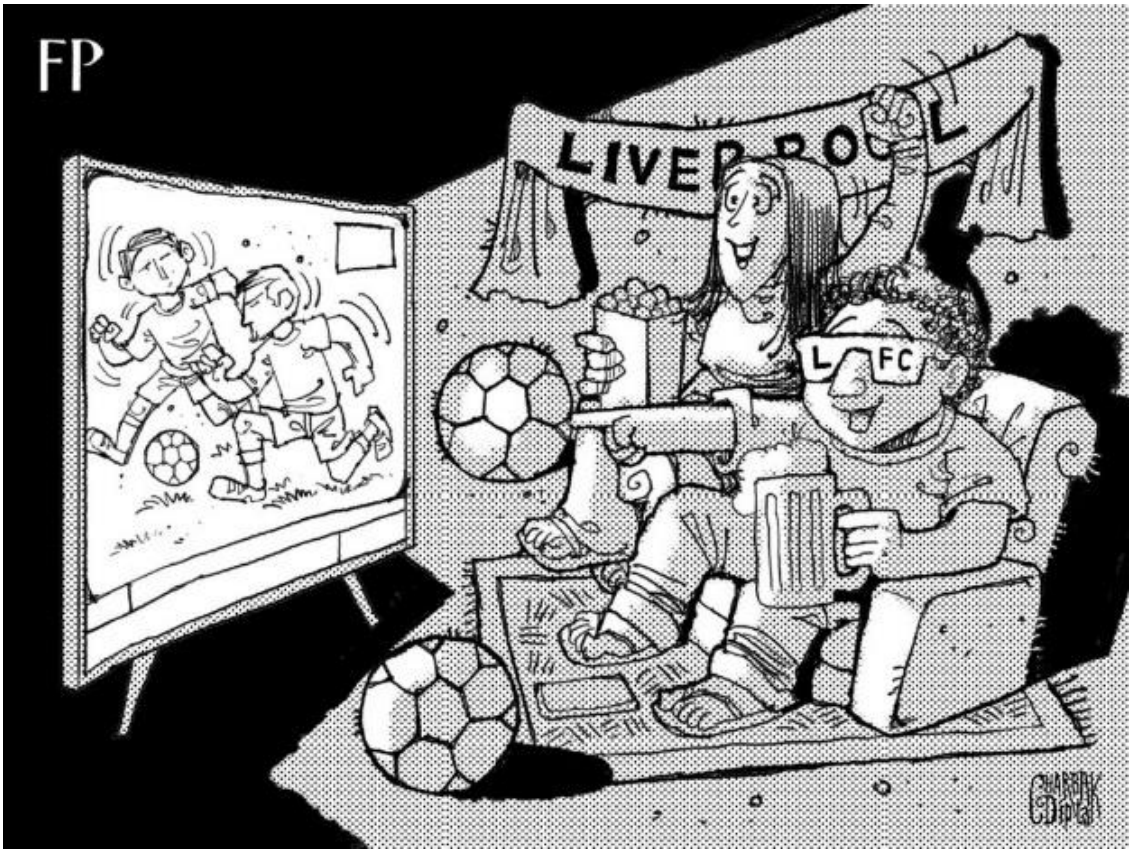
- The project may need to be accompanied by comprehensive documentation, including design documents, technical specifications, user manuals, and project reports.

Addressing these constraints effectively requires careful planning, prioritization, and efficient use of available resources to ensure successful completion of the college project within the specified timeframe and quality standards.

Conclusion of Survey Phase Report

Through diligent adherence to the project scope, meticulous consideration of constraints and limitations, and a commitment to stakeholder expectations, the development team can navigate challenges effectively and deliver a functional and efficient stream management platform. Success will be measured not only by the platform's technical capabilities but also by the positive feedback clients regarding platform usability, features, and overall satisfaction.

As Football Paradise continues its journey as a beacon of quality literature in the football world, the implementation of this stream management platform will undoubtedly contribute to its mission of fostering thoughtful discourse and celebration of the beautiful game. With careful planning, execution, and collaboration, this project has the potential to leave a lasting impact on football enthusiasts and content creators alike, reinforcing Football Paradise's status as a sanctuary for passion, insight, and creativity in the realm of football.



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Group 2

System Analysis Phase Report

Football Paradise

Stream Management Platform

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System Analysis Phase Report

Fact-Finding Methods & Information Gathering Techniques

Football Paradise, a literature website centered around football narratives, offers a diverse range of content including feature pieces, book reviews, and interviews. Through observation of its website structure and an interview with the client, we gained insights into its current functioning and future aspirations.

A. Observation Findings:

1. Homepage Overview:

Football Paradise is a literature website promoting football stories with a focus on insightful feature pieces on European football, book reviews, and interviews. Landing on their home page, we can find various tabs which lead to different focus areas of the website. Underneath the tabs, users can find a sliding window displaying pieces from the Kaleidoscope offerings of the website. The rest of the homepage offers a few excerpts from each content section of the website. Additionally, it offers a link to an external football news website and a section for displaying the most shared articles of Football Paradise. It also offers an option to sign up for a newsletter right at the end of the page. Lastly, it features all of its social media links on the top right-hand side of the page, alongside a search bar for looking up specific articles.

2. Content Sections:

a. Kaleidoscope: The Kaleidoscope tab offers articles written by hardcore football fans and authors. The articles are arranged in a grid view with an option to go through the different pages towards the bottom of the page. This is one of the defining features of the website and is what separates it from other football websites.

b. Book Reviews: The Book reviews tab offers insights on player and manager biographies, autobiographies, and all books related to football. Again, the articles are arranged in a grid view.

c. Culture: The “culture” tab is a dedicated section for the users interested in reading interesting blogs which explore how different culture dynamics intersect with football. Users can scroll down and choose the blog which they want to read. User is redirected to the blog page, at the end of the blog, it shows Author information, related News, and blogs for the same.

d. Investigative: The "Investigative" tab is a dedicated section filled with blogs that incorporate personal stories, quotes, history, and their effects on the evolution of football. Users can scroll down and read the blog of their choice.

e. Interview (Currently inaccessible): The 'Interview' tab is not loading and continues to buffer. We assume it contains all the interesting interviews conducted by Football Paradise with football celebrities for users to read. Alternatively, it may represent an ongoing project for the company to work on and is under progress.

f. World Cup 2018: The “World Cup 2018” tab is a dedicated tab to the World Cup held in 2018. It features all the blogs from that time. Users can scroll down and choose blogs to read from January 17, 2017, through July 24, 2018.

3. Missing Functionality:

The 'Interview' tab was found to be inaccessible, potentially representing a work-in-progress section.

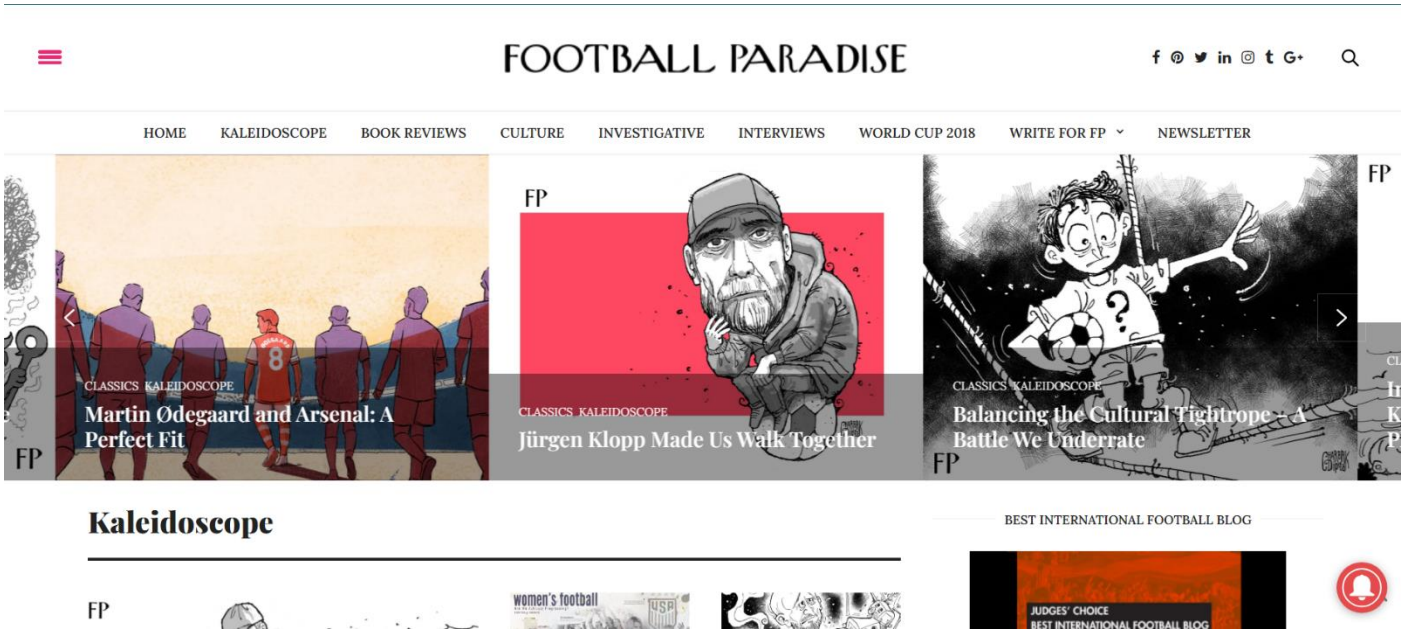
4. Mission and Privacy Policy:

The "Write for FP" tab offers two sub-tabs: Mission and Privacy Policy.

The Mission tab succinctly outlines the company's mission. The **Privacy Policy** details the collection, usage, and disclosure policies for Personal Information (e.g., full name, email, profile picture), including links to the privacy policies of third-party apps like Google Play Services, AdMob, Firebase Analytics, Fabric, and Crashlytics. Log Data, collected during errors, includes device details and usage statistics. The policy also covers cookie usage, with users given the option to accept or refuse them, though refusal may affect app functionality.

Third-party companies (Service Providers) are involved in facilitating, providing, or analysing the service, with access to user data but bound not to disclose or use it for other purposes. Security measures are outlined, acknowledging limitations despite efforts. External site links come with a disclaimer, advising users to review external privacy policies independently. The service doesn't cater to individuals under 13 and pledges to promptly delete inadvertently collected data from children.

Periodic updates to the privacy policy are noted, with changes effective upon posting. Lastly, users have the option to reach out via *editor@footballparadise.com* for privacy policy-related inquiries or suggestions. The Newsletter tab lets the user sign up for newsletters using their email addresses and has hyperlinks to direct them to Football Paradise’s Facebook, Twitter, and Instagram accounts.



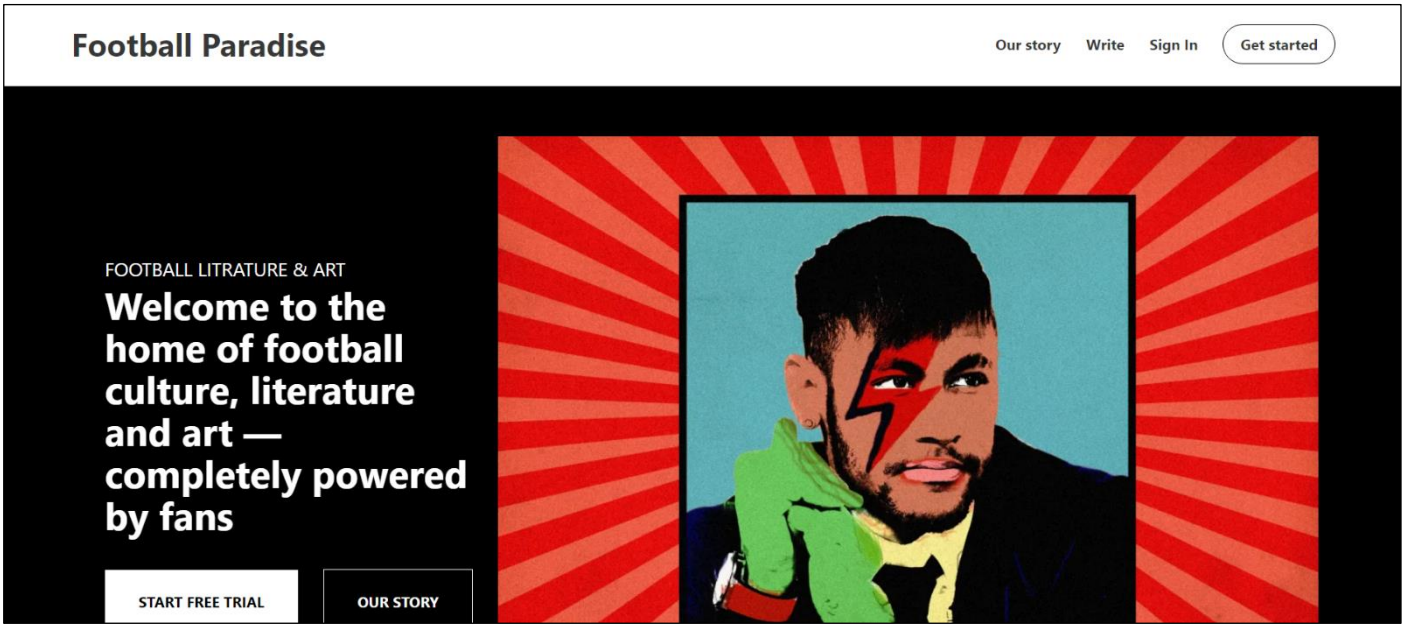
- **Current website of Football Paradise**

Through observation, we were able to understand the functioning of their website and how they engage users.

Furthermore, the organization is planning to launch a new website with more defined design and rearrangement of above data. The observation is as follows:

1. **Homepage Revamp:** Football Paradise has recently undergone a significant revamp of its homepage interface. A notable addition is the prominent "Start a free trial" feature, enticing users with unlimited access to Football Paradise content. This includes various subscription plans starting from <$1/week, ad-free browsing, comprehensive access to all stories, support for fan writing, multi-device compatibility, offline reading via the app, and active community engagement through comment discussions. Subscription options are available at $5 per month or $50 per year.

2. **Content Organization:** A significant change in content organization is evident, with all blog content now consolidated onto the homepage. Presented in a grid view format, users can easily navigate through the available blogs, with authors being prominently highlighted. This restructuring aims to streamline user experience and reduce clutter, addressing previous issues of scattered content and confusing titles for blog sections.
3. **Navigation and Additional Tabs:** The bottom section of the homepage features clickable links for various sections such as Company, About Us, Careers, Our Story, Blog, Legal, Terms, Team, and Privacy. However, it's noted that these sections are still under development and currently redirect users to the homepage. New additions like "Our Story," expected to contain mission, vision, and values, are visible but not clickable.



- **Current website of Football Paradise**

4. **User Engagement Features:** Two new tabs, "Write" and "Get Started," have been introduced. The "Write" section encourages user participation by inviting them to submit ideas and write-ups via email (editor@footballparadise.com). Meanwhile, the "Get Started" tab directs users to a portal for account creation, enhancing user interaction and involvement with the website. Additionally, the "Sign-in" tab facilitates a seamless login process for users, enabling them to access website features with ease.

Overall, the observation reveals a deliberate effort by Football Paradise to enhance user experience by organizing content more efficiently, introducing new engagement features, and streamlining navigation pathways. These changes aim to create a more cohesive and user-friendly platform for football enthusiasts.

B. Interview Approach:

In the dynamic landscape of online platforms, continuous improvement and adaptation are imperative to meet evolving user needs and technological advancements. To facilitate this process, conducting structured interviews with stakeholders plays a pivotal role in eliciting valuable insights and guiding strategic decisions.

Our interview approach combines open-ended queries for creative input on platform enhancements and closed-ended questions to probe specific aspects like regional coverage, subscription models, and technical requirements. It aims to align with the stakeholder visions to provide as per the strategic goals of the organization.

1. **Open-ended Questions:** Explored potential additions to the website and the thematic focus of new additions. Few of the questions were:

   - **What are the additions that you would like to your website?**
     - This question allows the interviewee to freely express their ideas and suggestions for enhancing the website. It provides insight into their vision for potential improvements or new features.

   - **What will be the overall theme of the new addition on the website?**
     - This question seeks to understand the overarching concept or focus behind any proposed additions. It helps clarify the thematic direction and ensures alignment with the website's goals and target audience.

2. **Closed-ended Questions:** Inquired about intended league coverage, additional features, data storage, subscription models, advertisement plans, key performance indicators, and preferred server/website technology. Answers were discussed with the client to sync with the thought process. Few of the questions asked were:

I. **The platform intends to serve/stream leagues from which region(s)?**
   - This question aims to determine the geographic scope of the website's content, particularly regarding sports leagues. It helps in identifying specific regions of interest for league coverage.
     - **Client Answer:** India as a preferred place to seek live streaming of local football clubs.

II. **Does the platform intend to incorporate any other features apart from Live Streams, on-demand videos, and highlights?**
   - Here, we inquire about potential additional functionalities beyond basic content delivery. It could include interactive features, community forums, statistical analysis tools, or any other innovative features.
     - **Client Answer:** Analytics

III. **Does the platform intend to store past events in its database?**
   - This question addresses data management and retention policies. It's crucial for understanding whether the platform plans to archive past content for reference or historical analysis.
     - **Client Answer:** Yes, should be able to see past streams.

IV. **Will access to content be based on a subscription model?**
   - By asking about the monetization strategy, we aim to ascertain whether the website plans to offer content through a subscription-based model, pay-per-view, or other pricing structures.
     - **Client Answer:** No, it will be free.

V. **Are there any plans to incorporate ads within the platform?**
   - This question explores potential revenue streams through advertising. It helps gauge whether the platform intends to display ads and, if so, how they plan to integrate them without compromising user experience.
     - **Client Answer:** Absolutely NO ADS of any kind or forms.

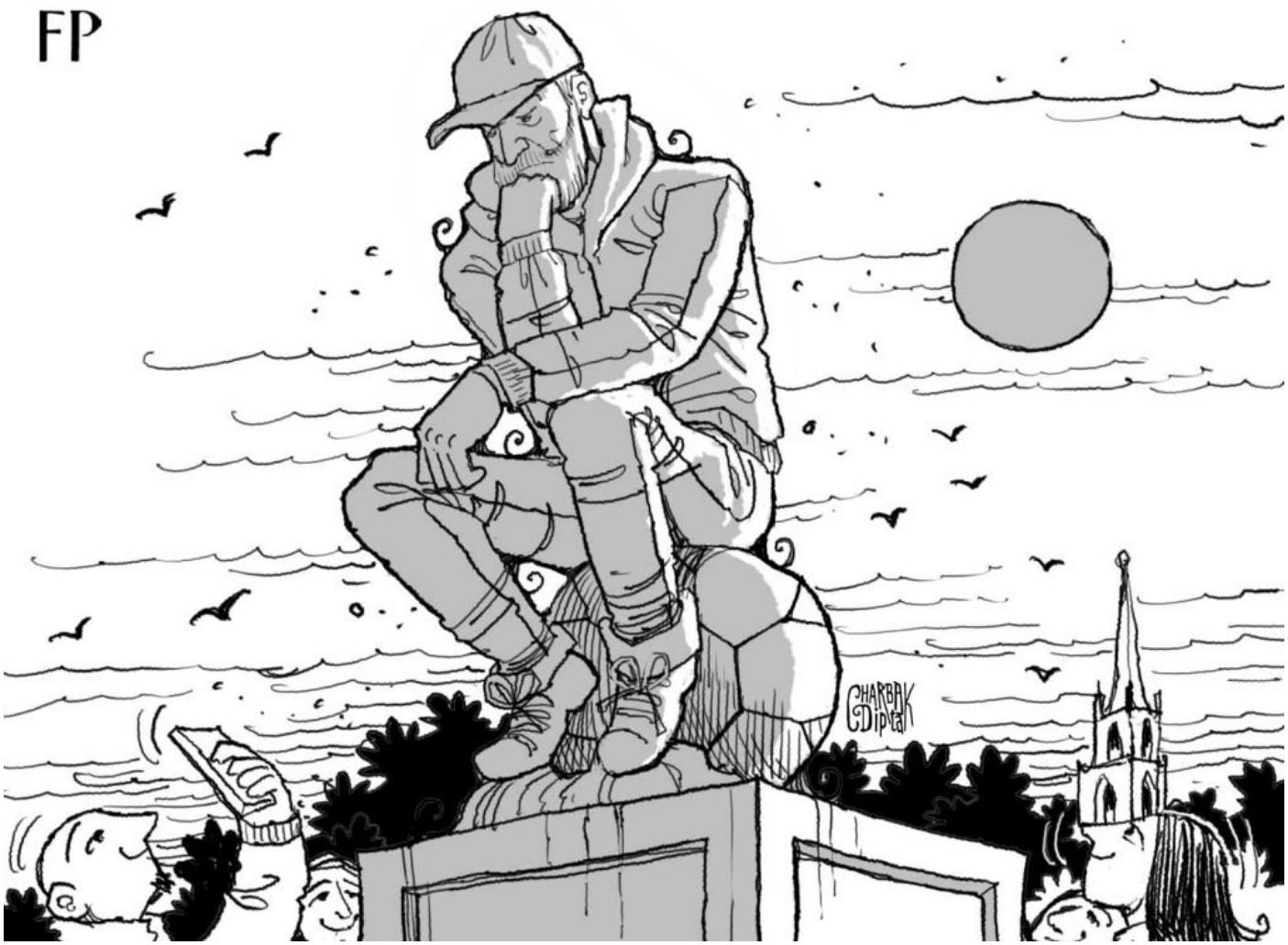
VI. **What attributes will define the key performance indicators?**
   - Here, we delve into performance measurement metrics. By identifying key indicators such as user engagement, subscription retention, website traffic, or ad revenue, we gain insight into the success criteria for the platform.
     - **Client Answer:** If the user retention rate is increased.

VII. **What kind of server/website technology can be used to create the new system?**
   - This question focuses on the technical infrastructure required for website development. It helps in determining the appropriate server architecture, programming languages, content management systems, and other technology components needed for the project.
     - **Client Answer:** Any (as long as we are able to fulfil the objectives)

These questions aim to comprehensively gather information about the interviewee's vision, preferences, and requirements for the website redesign, covering both strategic and technical aspects. Though the client answers look small, they were quite elaborative and gave us a clear understanding.

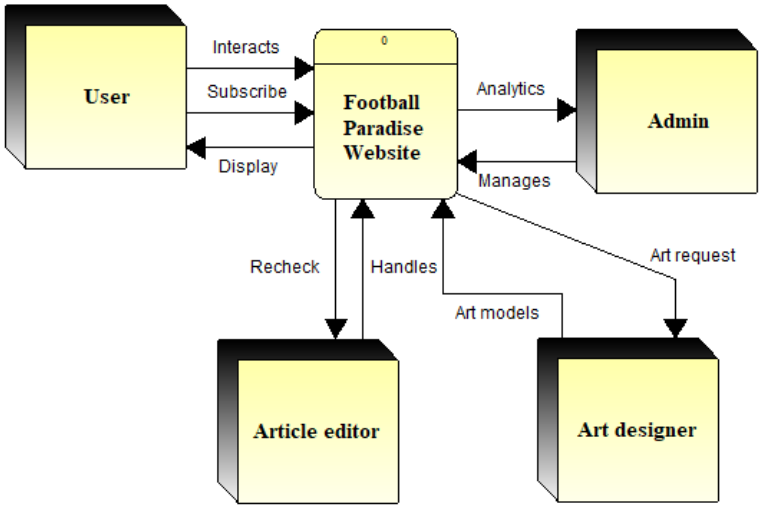
Conclusion:

In conclusion, our fact-finding methods and information gathering techniques have provided invaluable insights into Football Paradise's current website structure and future aspirations. Through observation and interviews with stakeholders, we've elucidated key features, content organization, and missing functionalities. Moreover, our interview approach, combining open-ended and closed-ended questions, has yielded comprehensive understanding, aligning stakeholder visions with strategic objectives. These findings inform the planned website revamp, ensuring a user-centric and technically sound platform for football enthusiasts.



Data Flow Diagrams of the Current System

The Context Diagram



Football Paradise (Current): Context Diagram

This diagram shows the high level DFD of the current system of football paradise website. It captures all the external entities interacting with the website.

Entities:

User- This entity represents a user entering the website to interact with or subscribe to different blog posts.

Admin- This entity represents the back end of the systems where things like website analytics can be monitored, and different changes can be made.

Article Editor- This entity represents an employee of Football Paradise that looks at incoming blogs from its users and either rejects or accepts them.

Art Designer- this entity represents the artists hired by Football Paradies who create artwork that accompany the website and the blogs.

Inputs:

Interactions- a user can interact with the website by clicking on the home page and from there clicking on whichever article/blog they want.

Subscribe- A user can choose to subscribe to the websites newsletter by entering their information of communication.

Manage- The administrator can manage website details to change how the website looks.

Handles- Handles deals with the acceptance or rejection of potential blog articles

Art Models- This is an action that the art designer gives the website its art designs.

Outputs:

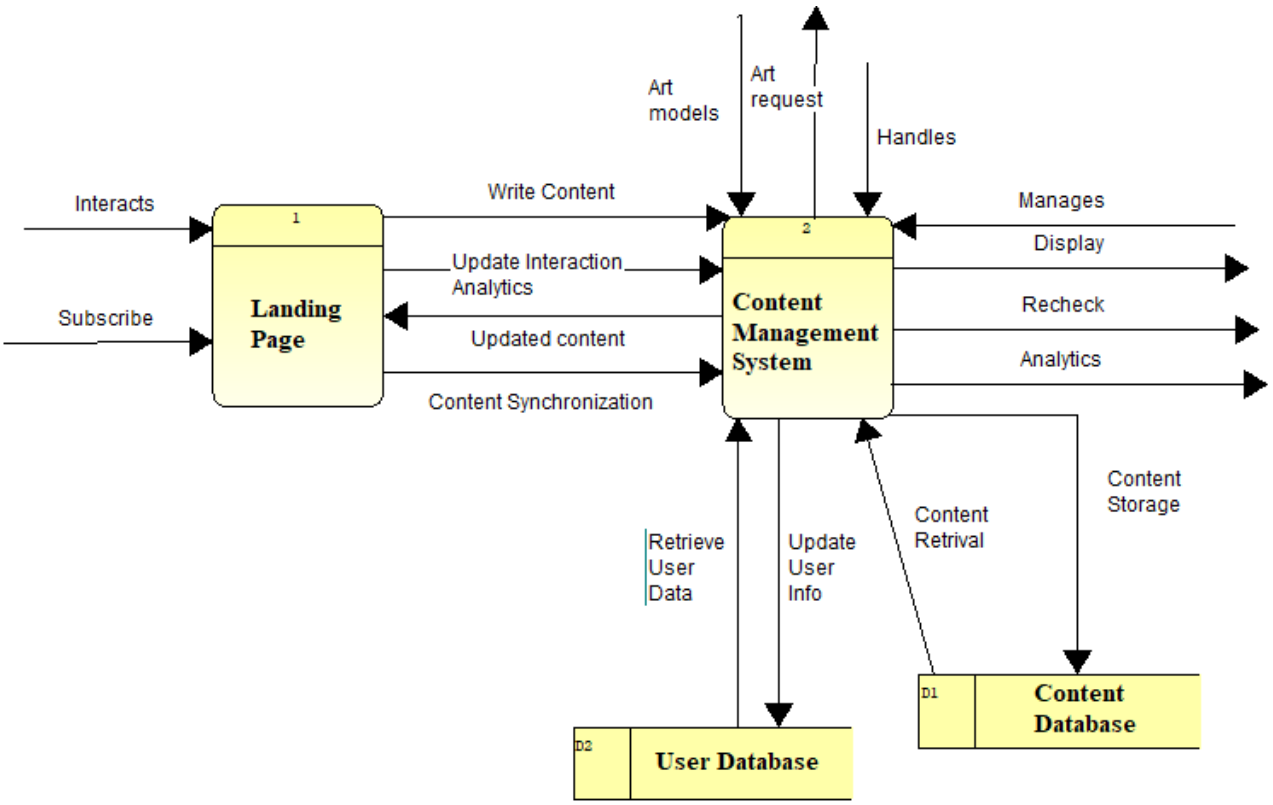
Analytics-All the information from the website and the user can be outputted to the administrator. This will give the administrator control over the different types of analytics of the website such as user count, time spent, bounce rate, and new viewership.

Display- When the user clicks on the website the homepage will be displayed for their use. Anytime they click on a part of the website new displays will be shown

Art request- When a blog or the website needs an accompanied art piece the website will request one of its artists to create something.

Recheck- Before an article is published to the website the article must be checked by another editor to ensure accuracy.

Level 0 Diagram



Football Paradise (Current):

Level Zero Diagram: This diagram is the further exploration of the main processes that we have observed happening with the main system i.e. the website system.

Process 1

Inputs:

Interactions- a user can interact with the website by clicking on the home page and from there clicking on whichever article/blog they want.

Subscribe- A user can choose to subscribe to the websites newsletter by entering their information of communication.

Updated Content- content must be updated when blogs or art is added to the system.

Outputs:

Write content- people that want to enter in their blogs can submit their piece to have it judged by football paradises team of editors.

Update interaction Analytics- anytime any user does anything their interactions should be updated for the interaction analytics of the website.

Content synchronization- when new works are added, or changes are made all the content of the website should reflect the changes made and be well organized.

Process 2

Inputs

Manage- The administrator can manage website details to change how the website looks.

Write content-people that want to enter in their blogs can submit their piece to have it judged by football paradises team of editors.

Update interaction Analytics- anytime any user does anything their interactions should be updated for the interaction analytics of the website.

Content synchronization- when new works are added, or changes are made all the content of the website should reflect the changes made and be well organized.

Update user info- when user does any sort of interaction with the website each interaction for that specific user is held here.

Content retrieval- Any content that is going to be published on the website will be stored and pulled from here.

Art Models- Art will be imputed to the content management system that can be added to a blog.

Art Request- when a blog or the website needs an accompanied art piece the website will request one of its artists to create something.

Outputs:

Analytics-All the information from the website and the user can be outputted to the administrator. This will give the administrator. control over the different types of analytics of the website such as user count, time spent, bounce rate, and new viewership.

Display- When the user clicks on the website the homepage will be displayed for their use. Anytime they click on a part of the website new displays will be shown.

Updated Content- content to be added to the website will be output through this process and go through to the homepage**.**

Handles- handles deals with the acceptance or rejection of potential blog articles

Recheck- Before an article is published to the website the article must be checked by another editor to ensure accuracy.

Content Storage- All accepted blogs are stored in this database for future reference.

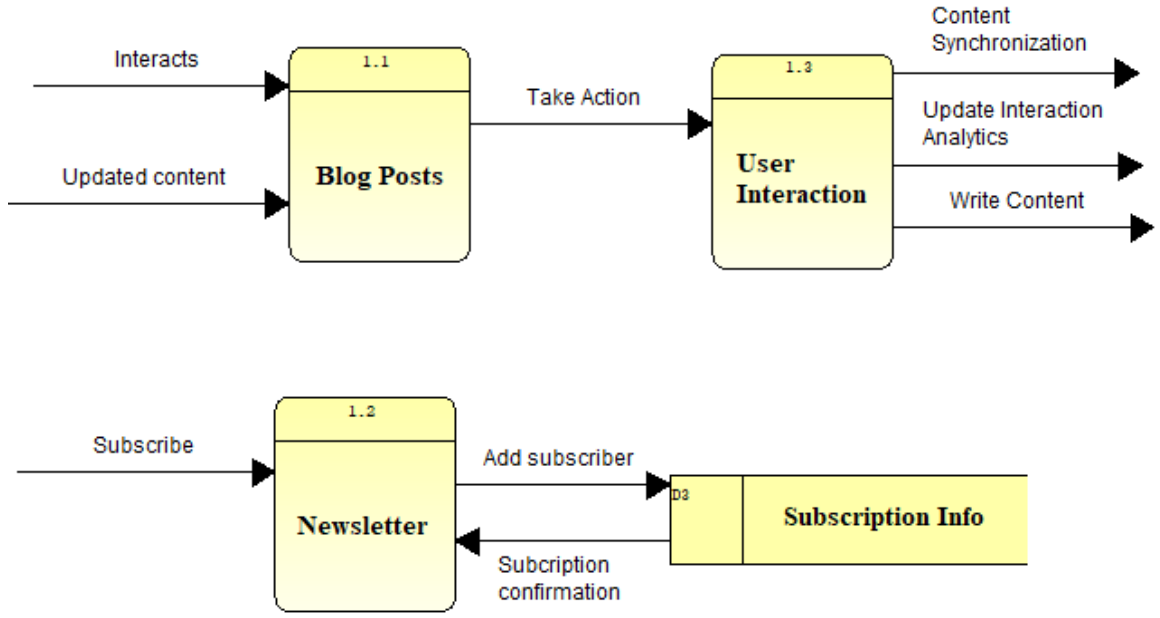
Update User Info- all user interaction analytics for each user are sent here.

Data Stores:

User Database: users of the website that interact in any way will have their information of that website visit stored here.

Content Database: people that have their blogs accepted will have their blog and all its information stored here.

Level 1 Diagram



Football Paradise (Current): Level One Diagram

As we explore further, within the intricacies of the current system, we select each process and explore them further. It gives a robust understanding of the systems functions. This is for landing page:

Process 1.1:

Inputs:

Interacts- users can interact with the blog post once they click on the one, they want to read. After reading the post they have the option to like, share, or comment on the post.

Updated Content- There is new content being uploaded every day that is chosen by the administrators of the website. New content is sent to the administrators here.

Output-

Take Action- Users can interact with each post.

Process 1.2:

Input:

Subscribe- if a user chooses to subscribe to the newsletter their information will stored in the database for future use of the website.

Subscription Confirmation- when a user signs up for the newsletter a confirmation email will be sent to their email address updating them of their subscription.

Output:

Add subscriber- If someone want to subscribe to the newsletter, they will give us personal information that will be stored in the database.

Data Store:

Subscription info: Users who decide to subscribe to the newsletter will have their email address stored in the database.

Process 1.3:

Input:

Take Action- Users can interact with each post.

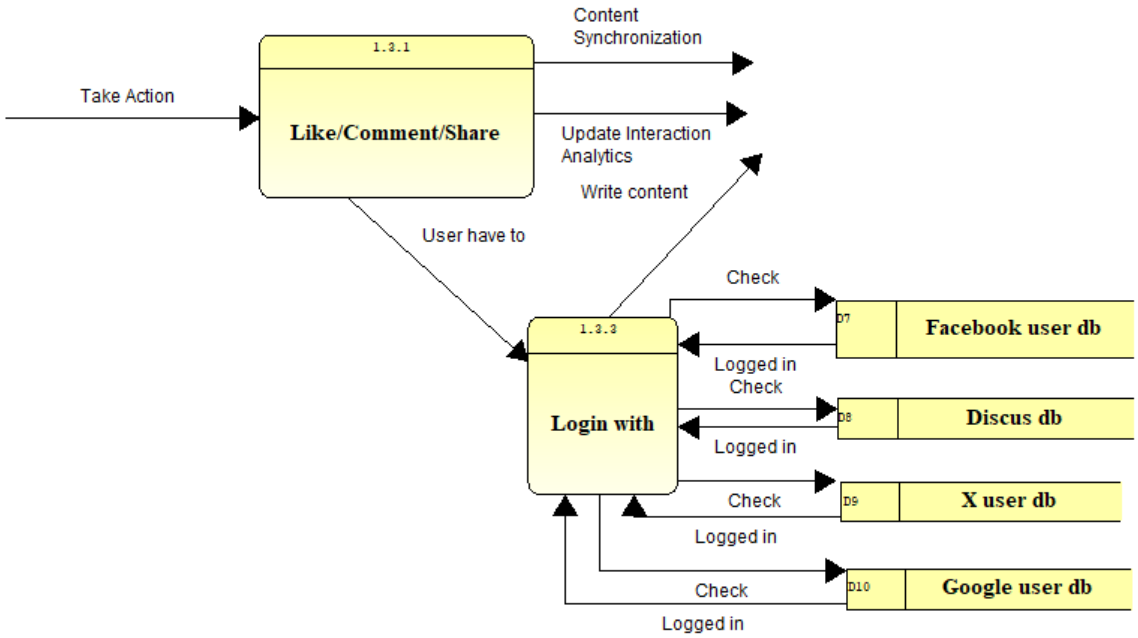
Output:

Content Synchronization- takes all applicable content for the website and transfers it to the management system.

Update Interaction Analytics- whenever users interact with the website the analytics behind each interaction must be updated.

Write content- Users can choose to send their own blog post to the website in hopes that it is good enough to be posted.

Level 2 Diagram



Football Paradise (Current): Level Two Diagram

This process is further exploration of the landing system and provides more low-level understanding of the current system.

Process 1.3.1

Inputs:

Take action- Users can choose to like, comment, or share under each blog post.

Outputs:

Content Synchronization- takes all applicable content for the website and transfers it to the management system.

Update Interaction Analytics- the data collected from each interaction is to be recorded for the website administrators use.

Users have to- User has to login in order to write content.

Process 1.3.3

Input:

Users have to- user has to login before they can upload or write content.

Logged in- from the database of logins the website will be able to log you in

Output:

Write Content- Users can choose to send their own blog post to the website in hopes that it is good enough to be posted. They must be signed into an account to interact with the blog.

Check- when a user tries signing in to the website using other website emails the website must first check if you email can be found in its database.

Data stores:

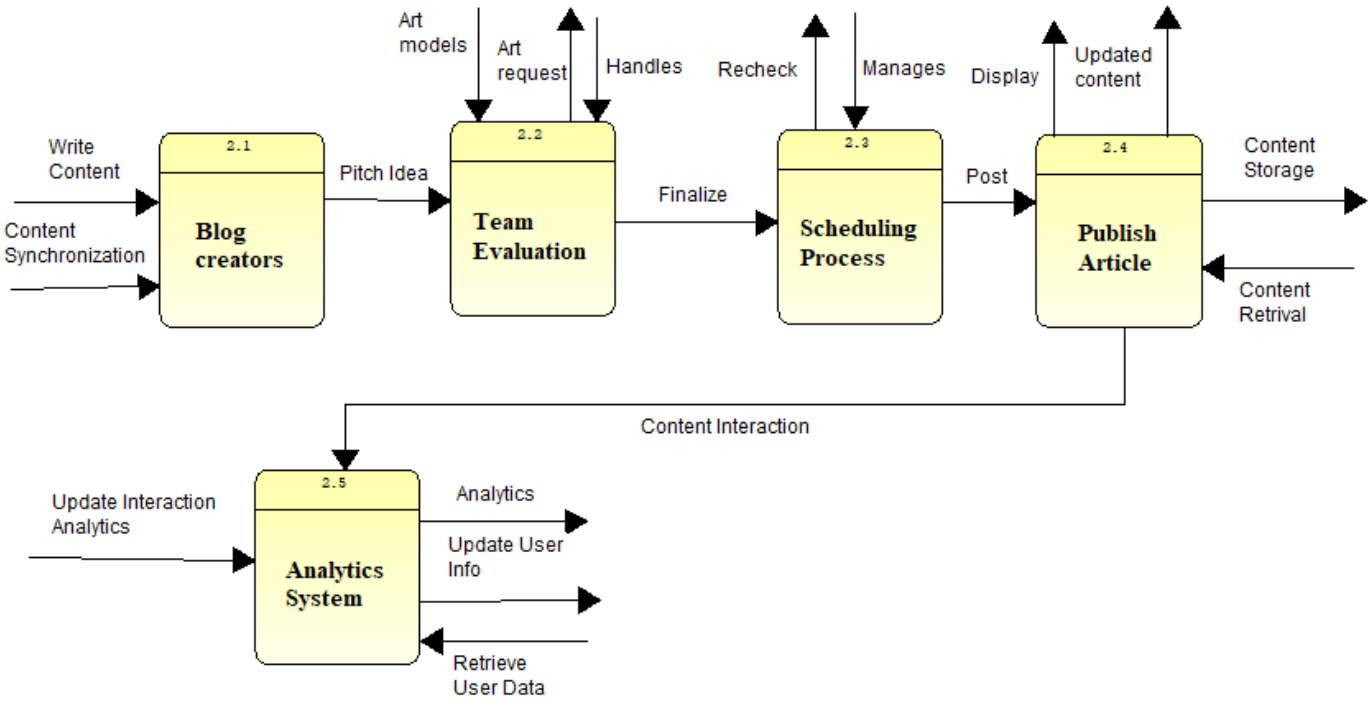
X user database- users can choose to sign in through their social media of X. Their accounts will be saved on this webpage here.

Discus database- users can choose to sign in through Discus. Their accounts will be saved on this webpage here.

Facebook user database- users can choose to sign in through Facebook. Their accounts will be saved on this webpage here.

Google user database- users can choose to sign in through Google. Their accounts will be saved on this webpage here.

Level 3 Diagram



Football Paradise (Current): Level Three Diagram

This process is further exploration of content management system of the current system. It gives a low-level information on how the content is being processed.

Process 2.1

Input:

Write Content-Users can choose to send their own blog post to the website in hopes that it is good enough to be posted.

Content Synchronization-takes all applicable content for the website and transfers it to the management system.

Output:

Pitch idea- Ideas will be sent out for team evaluation.

Process 2.2

Input:

Pitch idea- ideas from blog creators are reviewed by the team.

Art models- art models are imputed once they have been made and can be added to a blog for publication.

Handles-Blogs are imputed to be evaluated by the team to see if it is good enough to make the website.

Output:

Finalize- Content that is good is approved by the team of evaluators to be used on the website.

Art Request- requests are output by the evaluators once they have found a blog that can be used on the site.

Process 2.3

Input:

Finalize- a finished version of the blog is given to schedule the upload time and is ready to post.

Manages- the scheduling of when blogs are imputed to the website are handled by the scheduling process.

Output:

Recheck- before a post is published to the website it must be rechecked to ensure there are no errors.

Post- the finalized version of the blog is posted onto the website.

Process 2.4

Input:

Post- the post is posted to the website for user interaction.

Content Retrieval- when the article is ready to be posted it will be pulled from the content database.

Output:

Display- The display will now be included with the finalized version of the blog/article.

Updated Content- all content must be updated to fit the new blog/article.

Content Interaction- content interaction for this post will be added and updated.

Content Storage- the same version of the content will be stored away.

Process 2.5

Input:

Update interaction analytics- the analytics that come with this specific blog post must be updated continuously as more users interact.

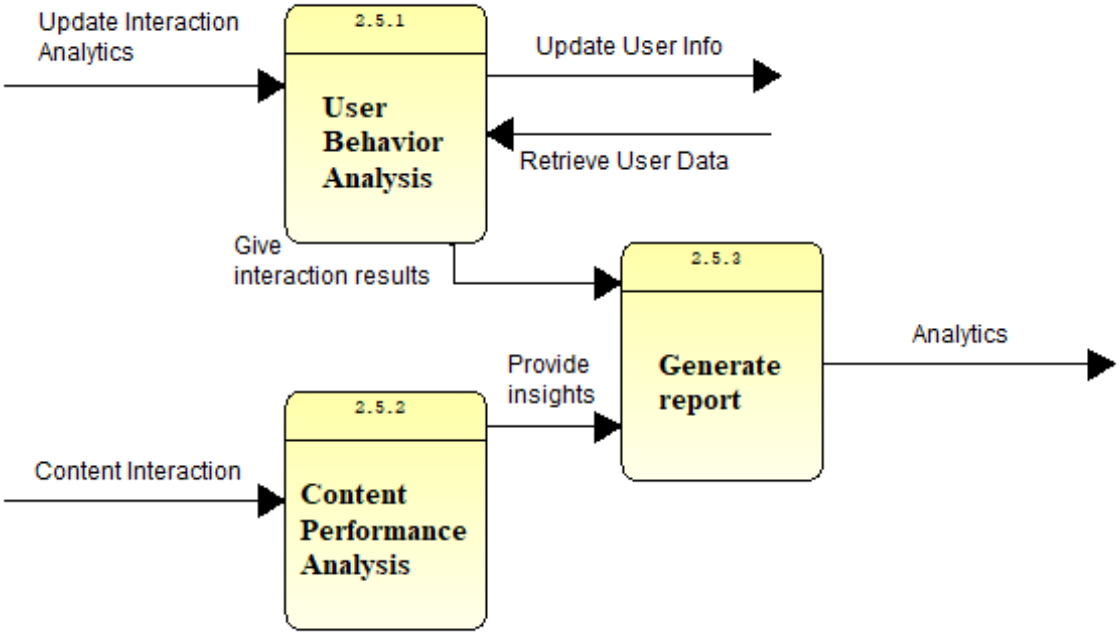
Content Interaction- interaction with the content such as like, comments, and shares is continuously updated as new interactions happen.

Output:

Update User Info- the user who interacted with the content will have their information updated in the data storage.

Analytics- Analytics of anonymous users and the website overall will be updated.

Level 4 Diagram



Football Paradise (Current):

Level Four Diagram

This is exploration of analytics system of the current system which show the ongoing the performance of the system and its content.

Process 2.5.1

Input:

Update Interaction Analytics- user interaction analytics from the website.

Retrieve user Data- In order to view the analytics, the data must be retrieved and organized for the user behaviour analysis.

Output:

Update User Info- the user's information to be updated using interaction analytics of website.

Give interaction results- interaction result to be processed and created into a report for administrator.

Process 2.5.2

Input:

Content Interaction- user interaction analytics from the User

Output:

Provide Insights- using statistics from individual user to provide a report of the website.

Process 2.5.3

Input:

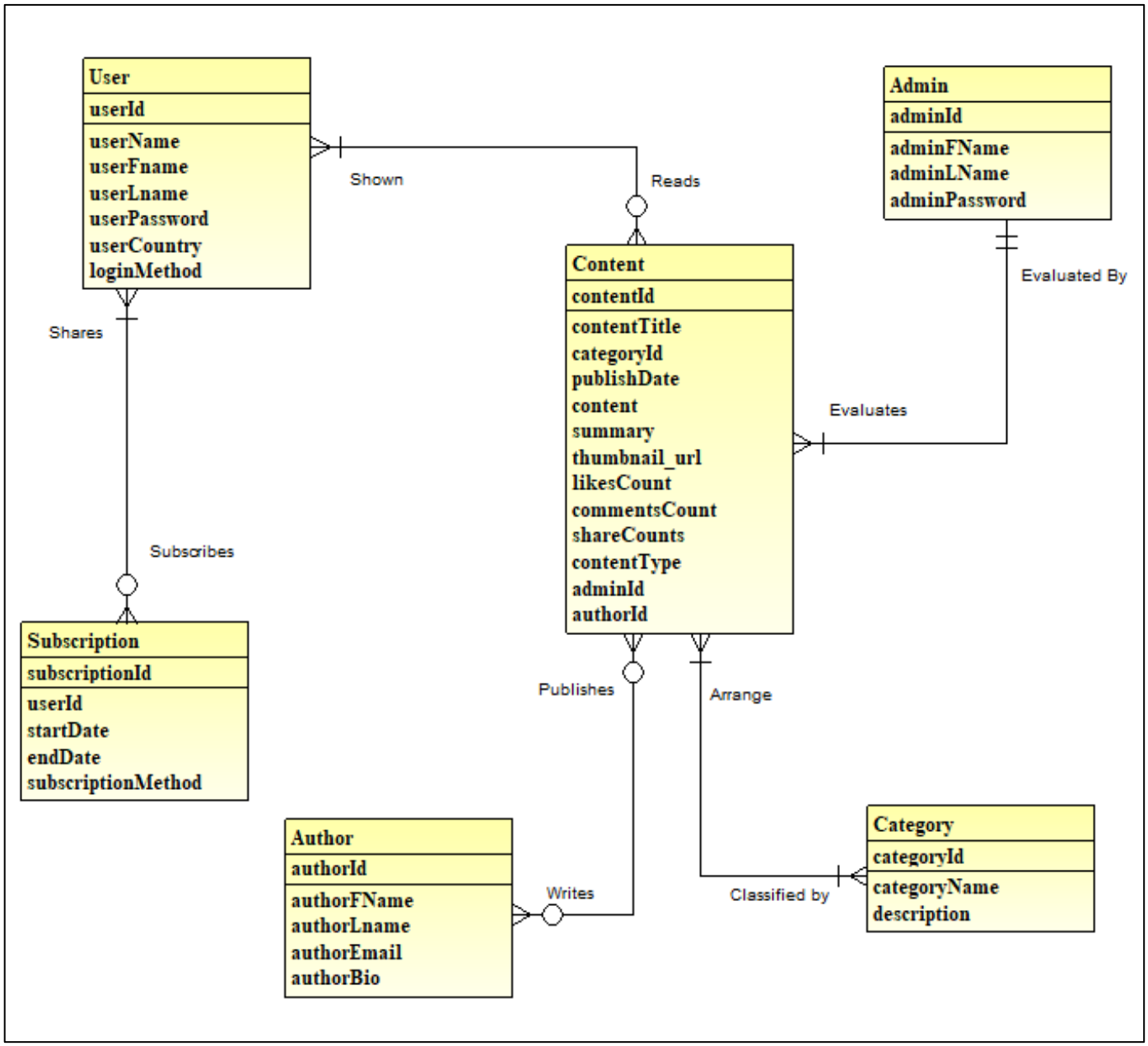
Give interaction results- interaction results to be used to create analytics of report.

Provide insights- insights from content performance analysis to be used in report analytics.

Output:

Analytics- final product of all collected information about website interactions to be given to the admin when requested.

Entity Relationship Diagram



This represents the present entity relationship diagram for Football Paradise, illustrating all informational attributes stored for each instance of the depicted entities. While not normalized, it accurately reflects the current data storage approach on the Football Paradise website.

BUDT 723

Group 2

System Design Phase Report

Football Paradise

Stream Management Platform

ROBERT H. SMITH SCHOOL OF BUSINESS

System Design Proposal Report

Diagrams for the Proposed System

For the Football Paradise's Stream Management System, two sets of diagrams are essential. Firstly, there are logical data-flow diagrams (DFDs), which depict the flow of information through the system without being tied to specific technology.

These diagrams, similar to those used in the analysis phase but updated to reflect business process enhancements, serve as a blueprint for improved operations. Secondly, physical DFDs represent the system's implementation, integrating technology specifics. They provide a technical roadmap for development, aligning with the logical processes.

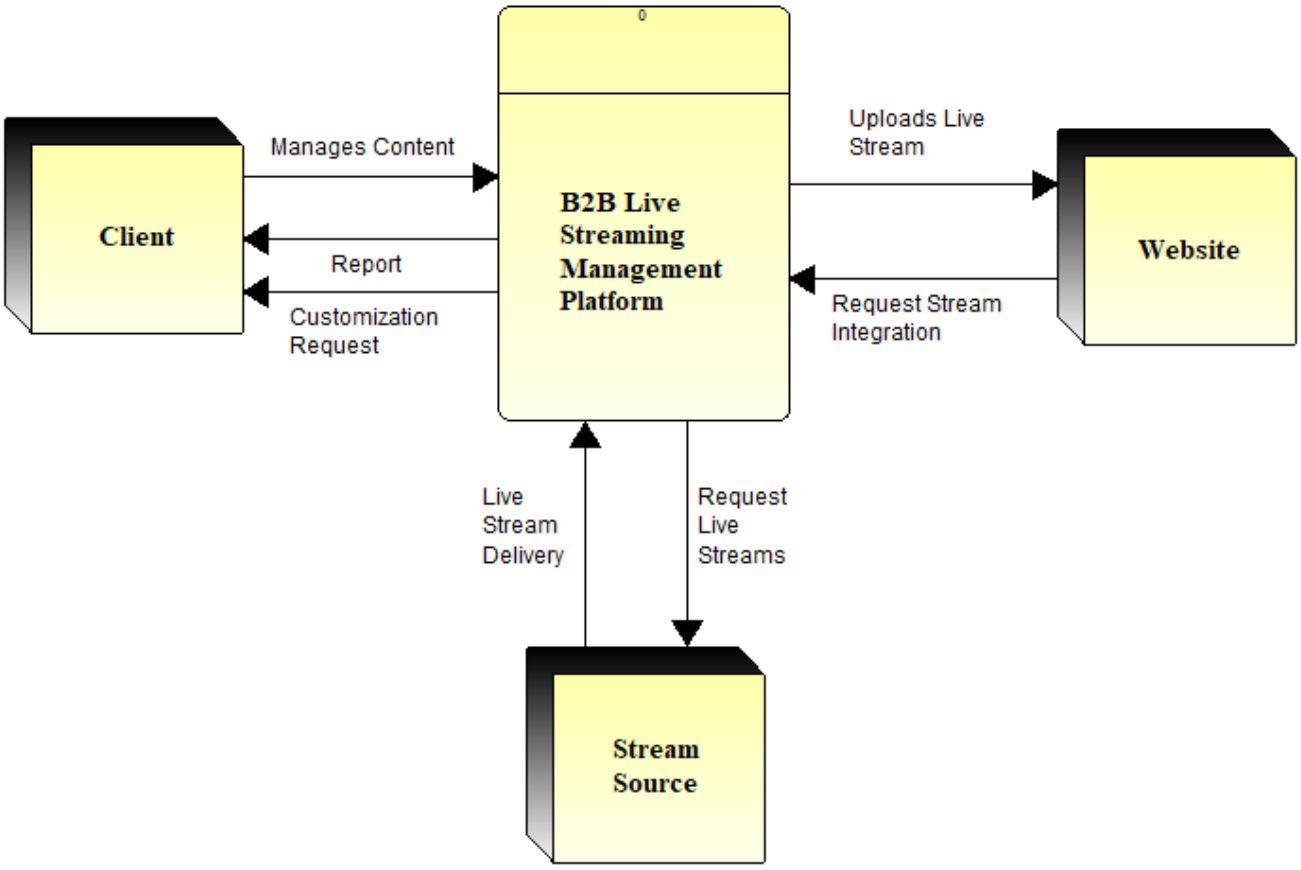
Additionally, an entity-relationship diagram (ERD) showcases the relationships among different data entities within the system. It's designed to at least third normal form for efficient data storage. The ERD will be synchronized with the logical DFDs using a CRUD matrix, outlining how entities are managed – created, read, updated, or deleted.

This structured approach ensures a comprehensive understanding of the system's functionality and its technological implementation, facilitating efficient stream management for Football Paradise.

Data Flow Diagrams of the Proposed System

This Data Flow Diagram represents the proposed Live Streaming Management System for Football Paradise. The system aims to centralize the management of live stream links, pre-recorded videos, and associated metadata. It encompasses objectives focused on enhancing user experience, improving content delivery, and ensuring efficient resource utilization.

The Context Diagram



Football Paradise (Proposed): Context Diagram

This diagram shows very simply how different entities will interact with the system and what will be the end result for each entity

Entities:

User- This entity represents football paradise on the back end of the platform.

Stream Source- This entity represents external partners or sources that provide streams API or links.

Website- This entity represents football paradises blogging website where the stream from this system's will be integrated.

Inputs:

Manages Content- The administrator (football paradise) will be able to put the necessary content in the streaming platform.

Request Stream Integration- When a website needs a stream it will request that stream from the management platform.

Live Stream Delivery- Streams from the stream source will be input to the system by a third-party source.

Outputs:

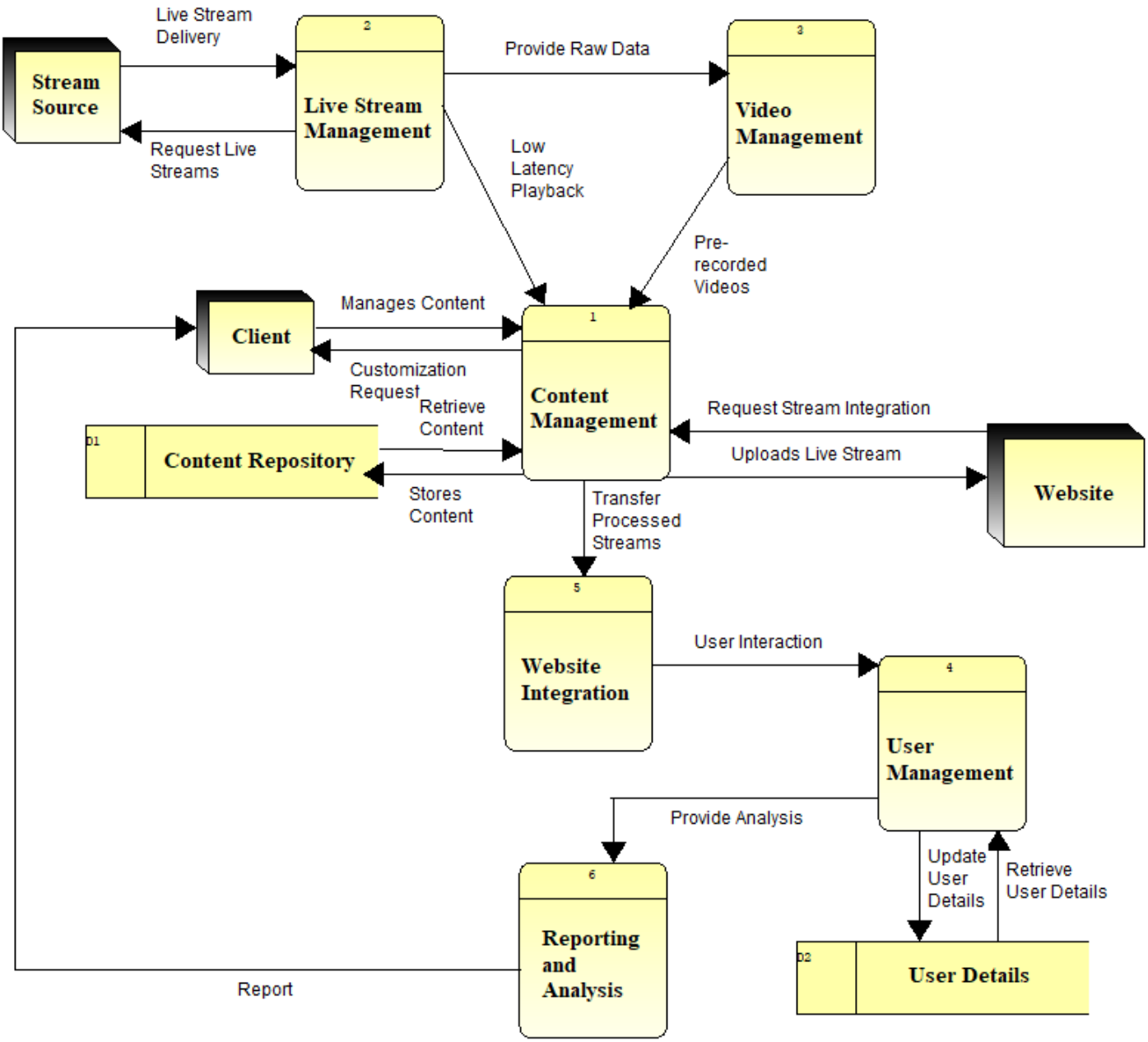
Report- The system will output an analysis report of user engagement for football paradise to look at.

Customization Request- Content will customised as per admin requirements so request will generate.

Uploads live stream- The stream that is needed by the website will be uploaded to the website through the content management system**.**

Request Live Streams- Streams are requested by the management system for the streams that are needed for that session.

Level 0 Diagram



Football Paradise (Proposed):

Level Zero Diagram:

This level shows on a more complex level how video and streaming will be processed through the system in order to simplify and optimize Football Paradises usage and storage

Process 1- Content Management

Inputs:

Retrieve Content- Streams that are requested from the user will be found in the content repository.

Manages Content- Football Paradise will be able to put the necessary content in the streaming platform.

Low Latency Playback- Streams that the user watch is ensured to be watchable with the live data processing to ensure that streams work well.

Pre-recorded video- Videos of games/highlights will be managed in the video management and are inputted when requested.

Request Stream Integration- When a website needs a stream it will request that stream from the management platform.

Outputs:

Uploads live stream- the stream that is needed by the website will be uploaded to the website through the content management system.

Customization Request- Share the output content customization.

Stores Content- All different forms of content are sent to be stored in a content repository.

Transfer Processed Streams- Stream that are ready to be watched are sent to Stream Delivery where a user can watch whichever stream/video they want.

Data Stores:

Content Repository: All content that is made and ready to be posted is stored in this database until it is ready to be uploaded.

Process 2- Live Stream Management

Inputs:

Live Stream Delivery- Streams from the stream source will be input to the system by a third-party source.

Outputs:

Request Live Streams- Streams are requested by the management system for the streams that are needed for that session.

Provide Raw data- Viewing statistics are sent along to be processed into information for football paradise.

Low Latency Playback- Streams that the user watch is ensured to be watchable with the live data processing to ensure that streams work well.

Process 3- Video Management

Inputs:

Provide Raw data- Viewing statistics are sent along to be processed into information for Football Paradise.

Outputs:

Pre-recorded video- Videos of games/highlights will be managed in the video management and are inputted when requested.

Process 4- User Management

Inputs:

User Interaction- User interaction is monitored and sent from the website.

Retrieve user Details- Users that are watching the streams have their interactions monitored through the website and must be signed in to an email account.

Outputs:

Provide Analysis- Analysis of user interactions are sent to out for reporting and analysis.

Update User Details- When user interacts with streams that usage is updated.

Data Stores:

User Details- All of the users' interactions and email are stored here for future use in the website.

Process 5- Website integration

Inputs:

Transfer Processed Streams- Stream that are ready to be watched are sent to Stream Delivery where a user can watch whichever stream/video they want.

Outputs:

User Interaction- User interaction is monitored and sent from the website.

Process 6- Reporting and Analysis

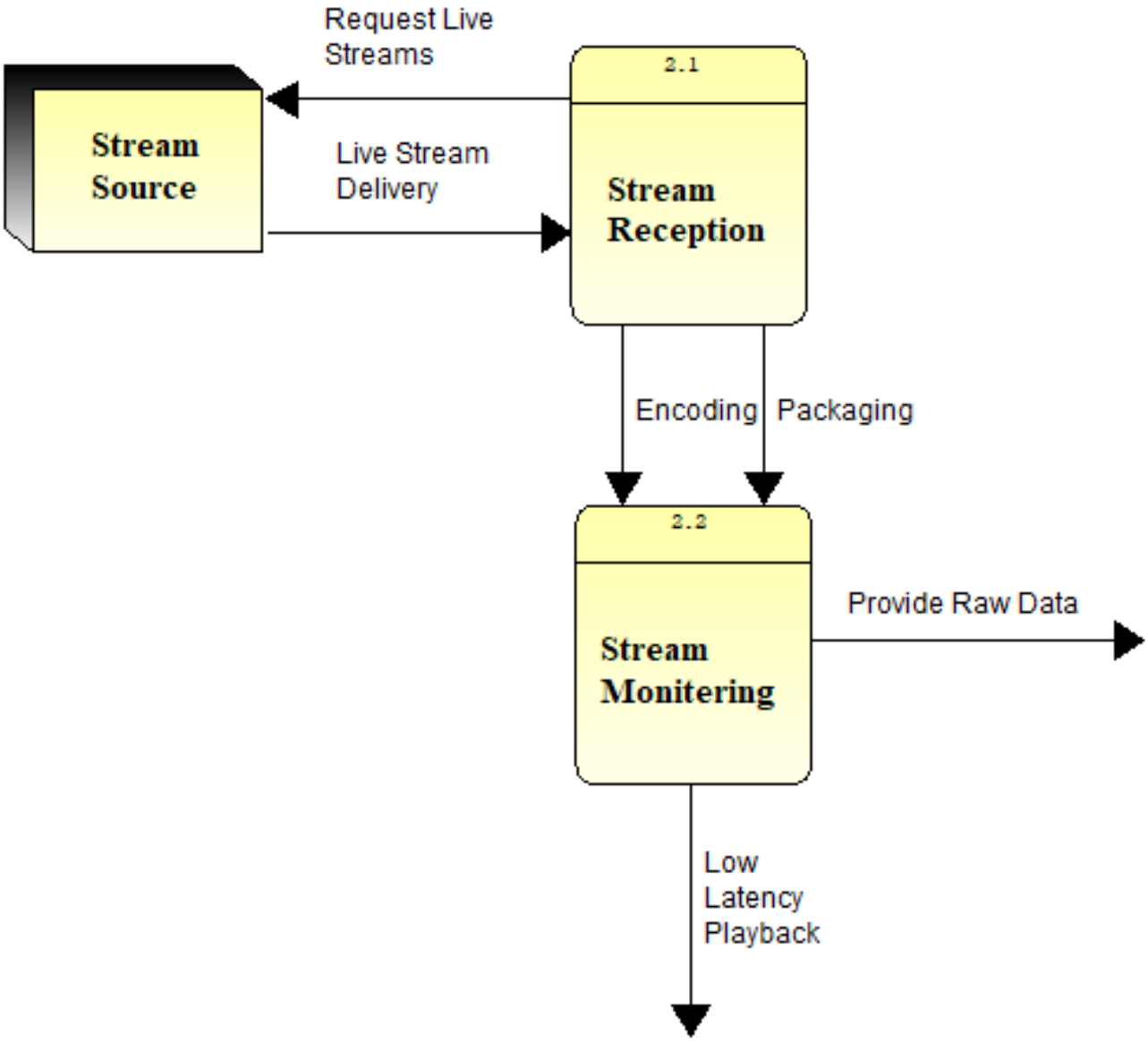
Inputs:

Provide Analysis- Analysis of user interactions are sent here for reporting and analysis.

Outputs:

Report- the system will output an analysis report of user engagement for football paradise to look at.

Level 1 Diagram



Football Paradise (Proposed): Level One Diagram

This is a Level 1 process that comes from stream management. It shows how streams will be found and monitored for best user experience.

Process 2.1- Stream Reception

Inputs:

Live Stream Delivery- Streams from the stream source will be input to the system by a third-party source.

Outputs:

Request Live Streams- Streams are requested by the management system for the streams that are needed for that session.

Encoding- Changes the file in a more manageable way to be sent and interpreted by server.

Packaging- Converts the digital video content from one format to another and preparing video content for transmission over the internet.

Process 2.2- Stream Monitoring

Inputs:

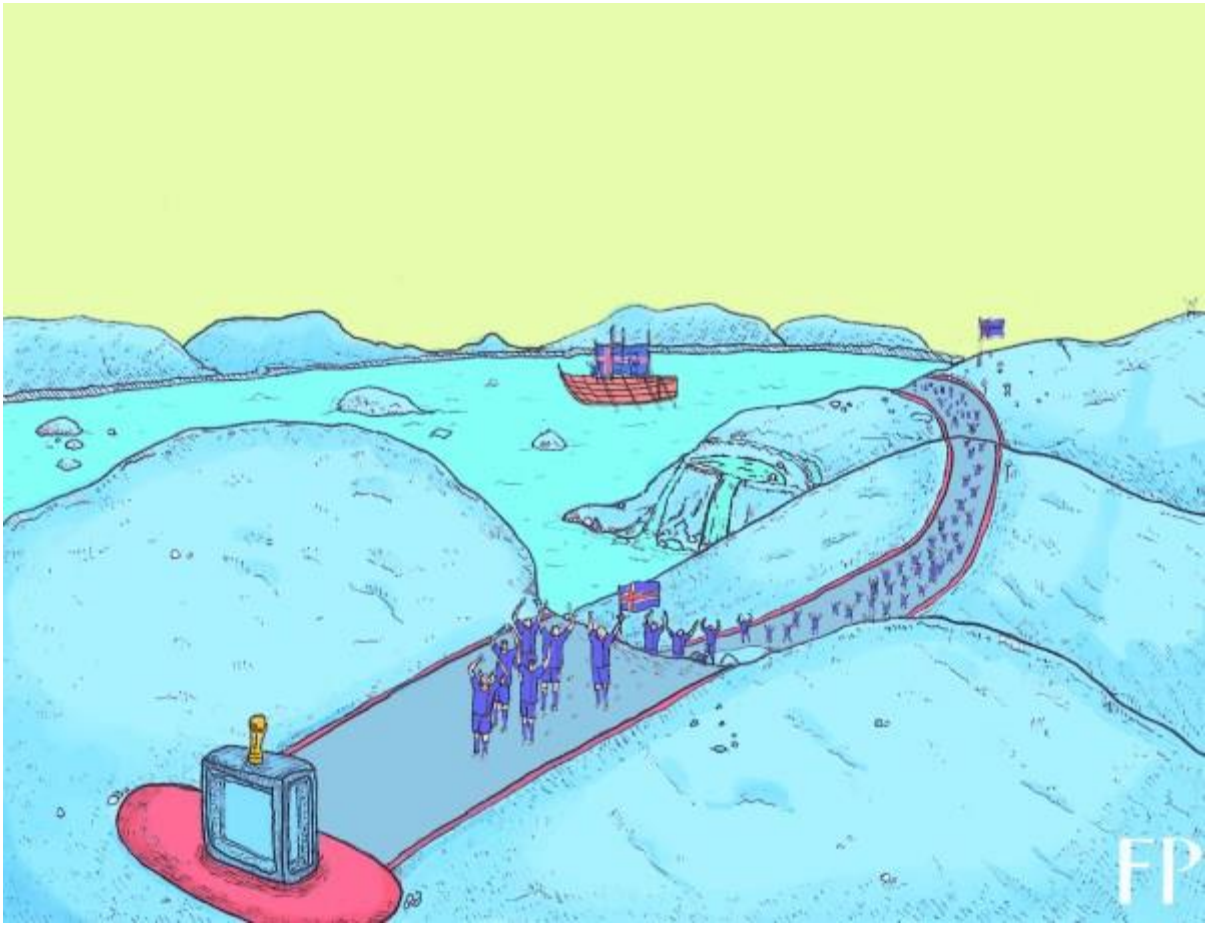
Encoding- Changes the file in a more manageable way to be sent and interpreted by server.

Packaging- Converts the digital video content from one format to another and preparing video content for transmission over the internet.

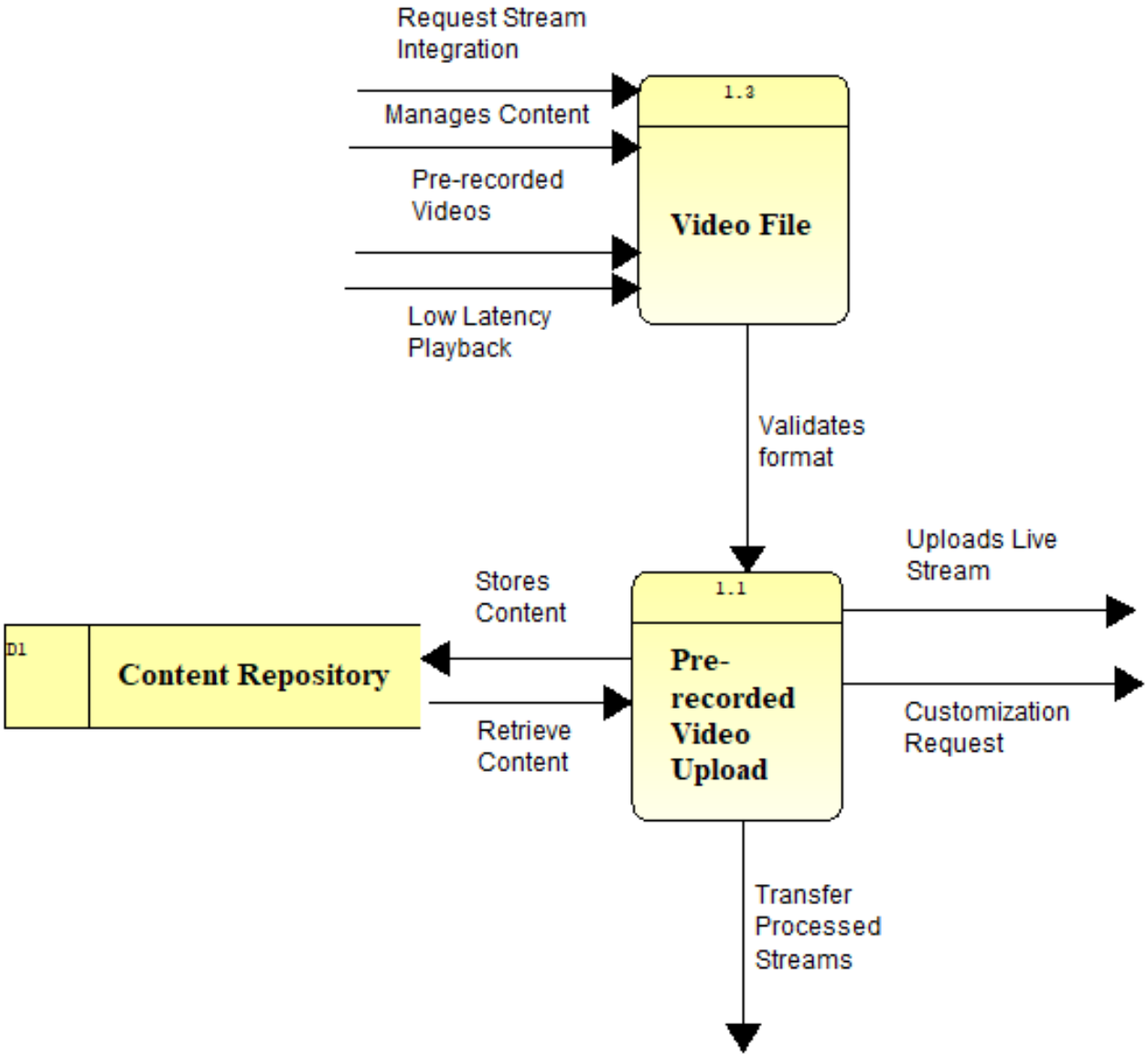
Outputs:

Provide Raw data- Viewing statistics are sent along to be processed into information for football paradise.

Low Latency Playback- Streams that the user watch is ensured to be watchable with the live data processing to ensure that streams work well.



Level 2 Diagram



Football Paradise (Proposed):

Level Two Diagram

This is a level 2 process that comes from video management in Level 0. It shows how the videos will be made and stored for future uses.

Process 1.3- Video File

Inputs:

Request Stream Integration- When a website needs a stream it will request that stream from the management platform.

Manages Content- Football paradise will be able to put the necessary content in the streaming platform.

Low Latency Playback- Streams that the user watch is ensured to be watchable with the live data processing to ensure that streams work well.

Pre-recorded video- Videos of games/highlights will be managed in the video management and are inputted when requested.

Outputs:

Validate Formats- The format of the video file must be checked to be compatible with the platform used by Football Paradise.

Process 1.1- Pre-Recorded Video Upload

Inputs:

Validate Formats- The format of the video file must be checked to be compatible with the platform used by Football Paradise

Retrieve Content- Streams that are requested from the user will be found in the content repository.

Outputs:

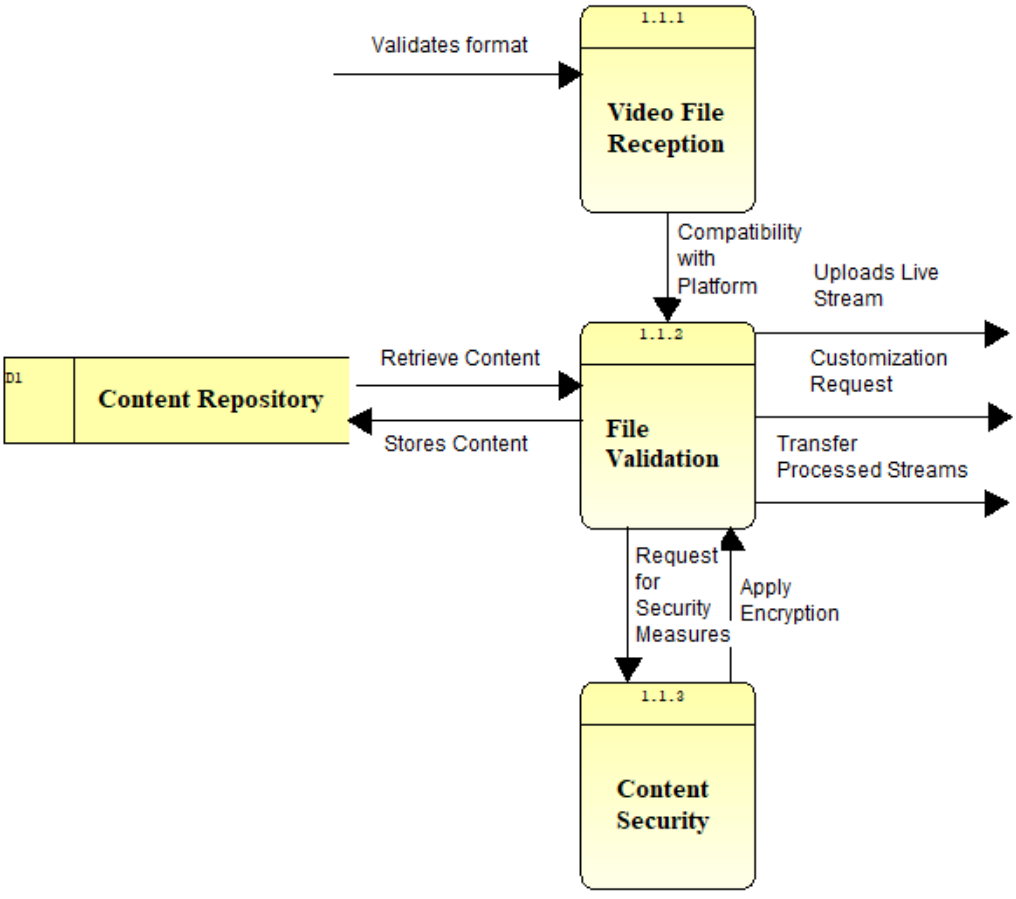
Stores Content- All different forms of content are sent to be stored in a content repository.

Uploads live stream- The stream that is needed by the website will be uploaded to the website through the content management system.

Transfer Processed Streams- Stream that are ready to be watched are sent to Stream Delivery where a user can watch whichever stream/video they want.

Customization request- Request to edit the video content as per admin requirements.

Level 3 Diagram



Football Paradise (Proposed):

Level Three Diagram

This is a level 3 process that comes from Pre-recorded video upload in level 2. This process diagram shows video content is stored, checked, and secured.

Process 1.1.1 Video File Reception

Inputs:

Validate Formats- The format of the video file must be checked to be compatible with the platform used by Football Paradise

Output:

Compatibility with Platform- Checks to make sure that the video type will work when used on Football Paradises Website

Process 1.1.2- File Validation

Inputs:

Compatibility with Platform- Checks to make sure that the video type will work when used on Football Paradises Website

Retrieve Content- Streams that are requested from the user will be found in the content repository.

Apply Encryption- Ensures that all content created by or for football paradise is stored in a safe way where hackers and other malicious things can't do anything to it.

Outputs:

Stores Content- All different forms of content are sent to be stored in a content repository.

Uploads live stream- The stream that is needed by the website will be uploaded to the website through the content management system.

Transfer Processed Streams- Stream that are ready to be watched are sent to Stream Delivery where a user can watch whichever stream/video they want.

Content Customization- Request to edit the video content as per admin requirements.

Request for Security measures- Each new video/stream/content needs to be secure; this request ensures that each one is kept securely.

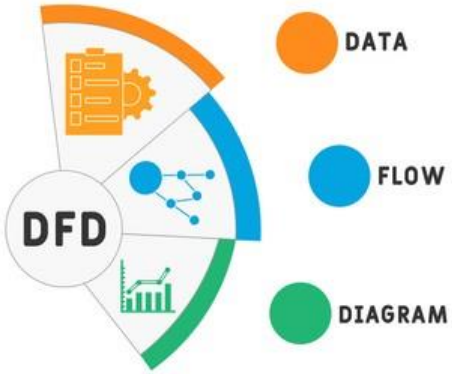
Process 1.1.3- Content Security

Inputs:

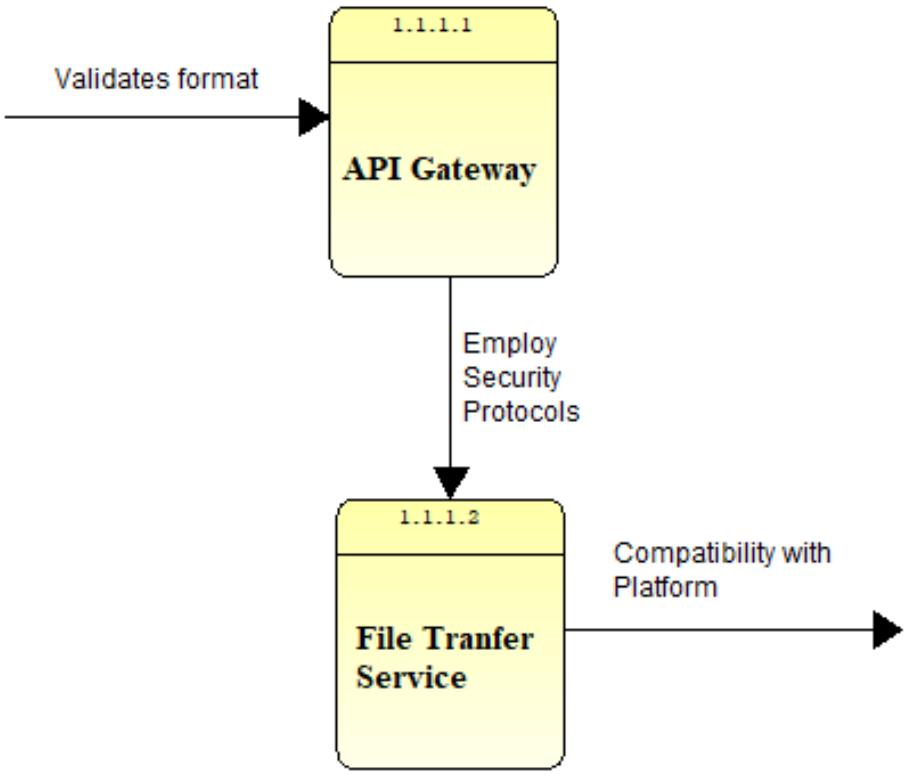
Request for Security measures- Each new video/stream/content needs to be secure; this request ensures that each one is kept securely.

Outputs:

Apply Encryption- Ensures that all content created by or for football paradise is stored in a safe way where hackers and other malicious things can't do anything to it.



Level 4 Diagram



Football Paradise (Proposed):

Level Four Diagram

This is a level 4 process that comes from Video File reception in level 3. This diagram shows how the capabilities of API usage will be used in order to check compatibility between streams, videos, and the website.

Process 1.1.1.1- API Gateway

Inputs:

Validate Formats- The format of the video file must be checked to be compatible with the platform used by Football Paradise.

Outputs:

Employ Security Protocols- Instructions that defines how the stream, and the website will communicate with each other.

Process 1.1.1.2- File Transfer Service

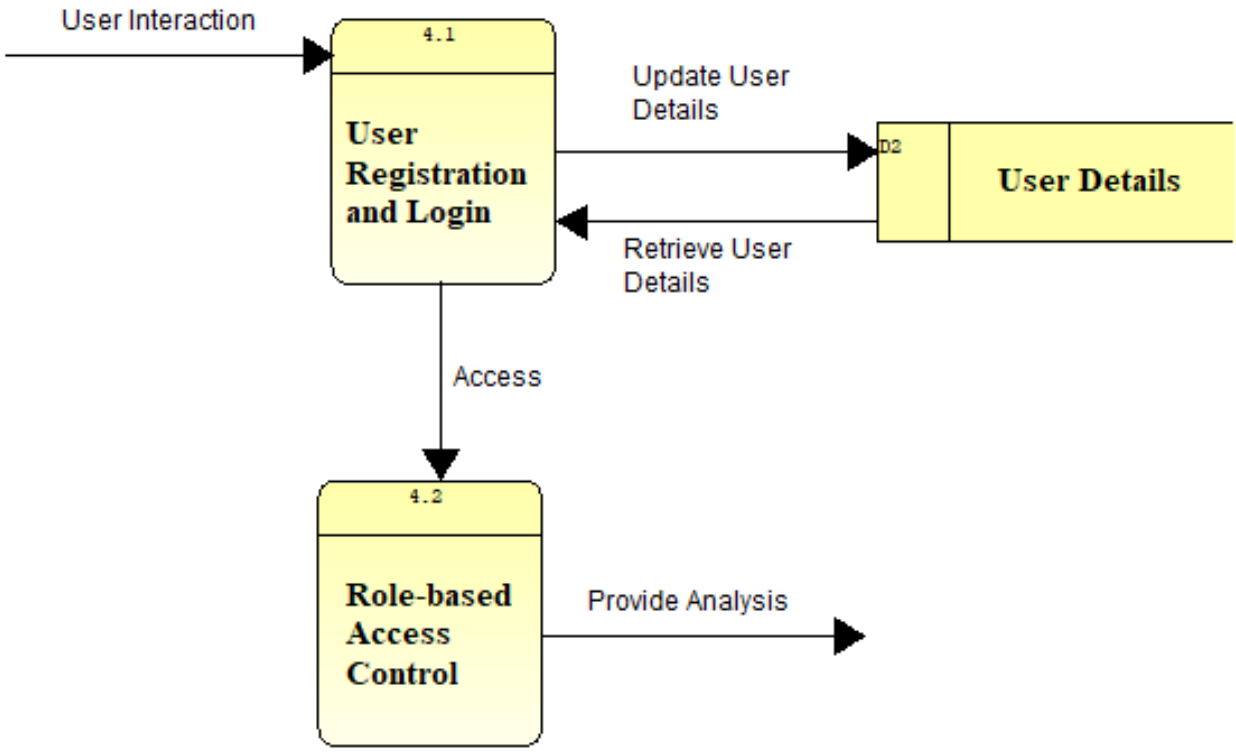
Inputs:

Employ Security Protocols- Instructions that defines how the stream, and the website will communicate with each other.

Outputs:

Compatibility with Platform- Checks to make sure that the video type will work when used on Football Paradises Website.

Level 5 Diagram



Football Paradise (Proposed):

Level Five Diagram

This is a level 5 process that comes from User Management from level 0. This diagram shows how user interactions and user information will be monitored stored and controlled.

Process 4.1- User Registration and Login

Inputs:

User Interaction- User interaction is monitored and sent from the website.

Retrieve user Details- Users that are watching the streams have their interactions monitored through the website and must be signed in to an email account.

Outputs:

Update User Details- When user interacts with streams that usage is updated.

Access- Different users of the system will be able to access different parts of the system. Ex. Football Paradies Developers will have access to backend control while users will only be able to request access to streams.

Process 4.2- Role-Based Access Control

Inputs:

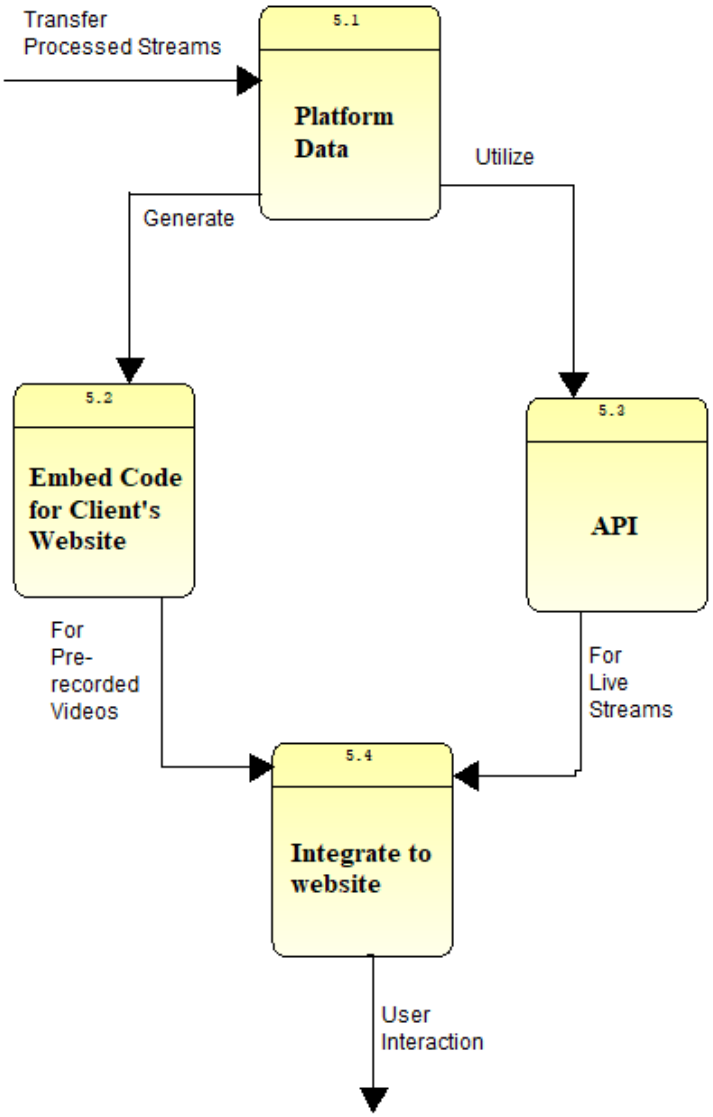
Access- Different users of the system will be able to access different parts of the system. Ex. Football Paradies Developers will have access to backend control while users will only be able to request access to streams.

Outputs:

Provide Analysis- Analysis of user interactions are sent here for reporting and analysis.

Data Store: User Details: Information of each type of Admin will be stored.

Level 6 Diagram



Football Paradise (Proposed):

Level Six Diagram

This is a level 6 process that comes from Website Integration in Level 0. This diagram shows how data regarding API validation and Code for pre-recorded videos will be integrated into the site for optimal user and creator experience.

Process 5.1- Platform Data

Inputs:

Transfer Processed Streams- Stream that are ready to be watched are sent to Stream Delivery where a user can watch whichever stream/video they want.

Outputs:

Generate- Code is sent to the client's website to request whatever data is required for the upcoming stream action.

Utilize- Using an API we can interact between the stream and the website.

Process 5.2 - Embed Code for Clients Website

Inputs:

Generate- Code is sent to the client's website to request whatever data is required for the upcoming stream action.

Outputs:

For Pre-recorded videos- pre-recorded videos are sent to be integrated within the website when they are ready to be published for views.

Process 5.3- API

Inputs:

Utilize- Using an API we can interact between the stream and the website.

Outputs:

For Live Streams- Streams for that day are sent to be integrated on the website. These are sent daily for each new game and stream that is available that day.

Process 5.4- Integrate to website.

Inputs:

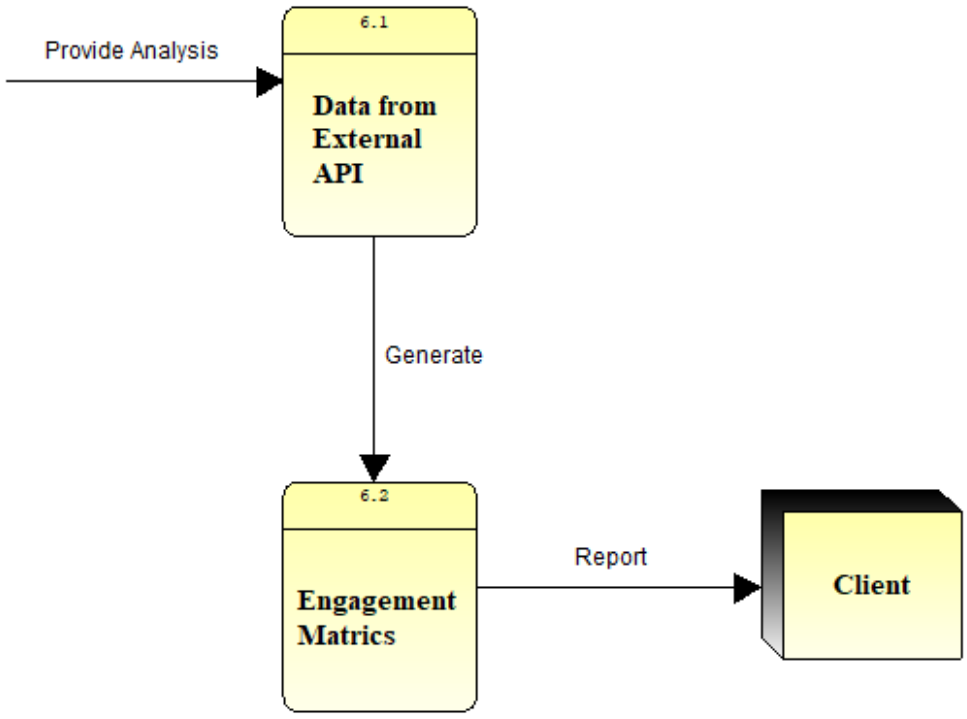
For Live Streams- Streams for that day are sent to be integrated on the website. These are sent daily for each new game and stream that is available that day.

For Pre-recorded videos- Pre-recorded videos are sent to be integrated within the website when they are ready to be published for views

Output:

User Interaction- User interaction is monitored and sent from the website.

Level 7 Diagram



Football Paradise (Proposed):

Level Seven Diagram

This is a level 7 process that comes from Reporting and Analysis in Level 0. This Process how Football Paradise will receive User metrics that come from video and stream interaction and engagement.

Process 6.1- Data from external API

Inputs:

Provide Analysis- Analysis of user interactions are sent to out for reporting and analysis.

Outputs:

Generate- Code is sent to the client's website to request whatever data is required for the upcoming stream action.

Process 6.2 – Engagement Metrics

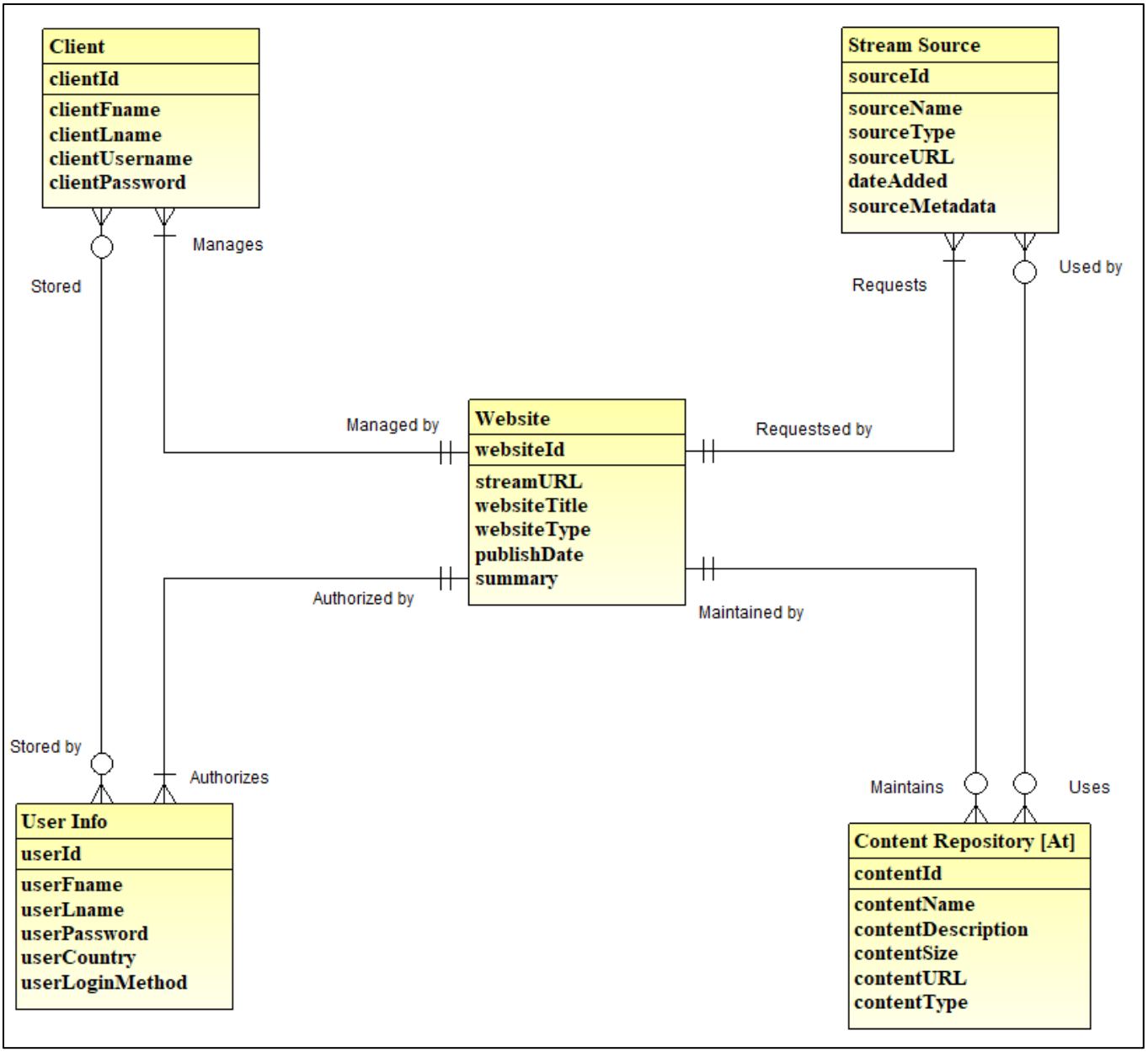
Inputs:

Generate- Code is sent to the client's website to request whatever data is required for the upcoming stream action.

Output:

Report- The system will output an analysis report of user engagement for football paradise to look at.

Entity Relationship Diagram



This represents the proposed entity relationship diagram for Football Paradise, illustrating all informational attributes stored for each instance of the depicted entities. It's normalized to 3NF, and it accurately reflects the current data storage approach on the Football Paradise website.

Synchronized System Models

Entity, Attributes	Process Stream Management System	Process Content Management	Process Live Stream Management	Video Management Process	User Management	Website Intergration Process	Reporting & Analysis Process	Process of Stream Reception & Monitoring	Video File Record & Upload Process	File Validation Process	User Registration Process	Stream Data Processing	Engagement Metrics
Client	RU	RU		R	CRUD		R	R		RU	R		R
clientId	RU	RU		R	CRUD		R	R		RU	R		R
clientFame	RU	RU		R	CRUD		R	R		RU	R		R
clientLname	RU	RU		R	CRUD		R	R		RU	R		R
clientUsername	RU	RU		R	CRUD		R	R		RU	R		R
clientPassword	RU	RU		R	CRUD		R	R		RU	R		R
Website	RU	RU				CRUD				R		R	
websiteId	RU	RU				CRUD				R		R	
streamURL	RU	RU				CRUD				R		R	
websiteTitle	RU	RU				CRUD				R		R	
websiteType	RU	RU				CRUD				R		R	
publishDate	RU	RU				CRUD				R		R	
summary	RU	RU				CRUD				R		R	
StreamSource	CRUD	R	CRUD			RU		CRUD				RU	
sourceID	CRUD	R	CRUD			RU		CRUD				RU	
sourceName	CRUD	R	CRUD			RU		CRUD				RU	
sourceType	CRUD	R	CRUD			RU		CRUD				RU	
sourceURL	CRUD	R	CRUD			RU		CRUD				RU	
dateAdded	CRUD	R	CRUD			RU		CRUD				RU	
sourceMetadata	CRUD	R	CRUD			RU		CRUD				RU	
ContentRepo				CRUD					CRUD	RU		RU	
contentId				CRUD					CRUD	RU		RU	
contentName				CRUD					CRUD	RU		RU	
contentDescription				CRUD					CRUD	RU		RU	
contentSize				CRUD					CRUD	RU		RU	
contentURL				CRUD					CRUD	RU		RU	
contentType				CRUD					CRUD	RU		RU	
UserInfo	RU				RU		RU				CRUD		R
userID	RU				RU		RU				CRUD		R
userFname	RU				RU		RU				CRUD		R
userLname	RU				RU		RU				CRUD		R
userPassword	RU				RU		RU				CRUD		R
userCountry	RU				RU		RU				CRUD		R
userLoginMethod	RU				RU		RU				CRUD		R

The above diagram simply displays the synchronization between the entity relationship diagram and the data flow diagrams. Each element of data can either be created, read, updated, or deleted by any given process; this diagram shows what process perform what operation on each data element.

Candidate Systems Solutions Matrix

In the development of a live streaming platform, careful consideration of various aspects such as system solutions, data processing methods, input and output devices, and storage requirements is crucial to ensure the successful implementation of the project. We have explored three potential candidates: outsourced website development, utilizing third-party streaming platforms, and creating a custom solution. Each candidate presents unique opportunities and challenges, requiring thorough evaluation to determine the most suitable approach for achieving our goals. In this matrix, we'll delve into the implications of each candidate regarding Portions of System Computerized, input and output devices, data processing methods, and storage devices, highlighting key considerations and factors to weigh in our decision-making process.

For Football Paradise	**Candidate 1**	**Candidate 2**	**Candidate 3**
Characteristics	**Outsourced Website Development**	**3rd-Party Streaming Platforms**	**Custom Solution**
Portion of System Computerized Brief description of that portion of the system that would be computerized in this candidate.	Complete platform will be developed including streaming frontend, backend & integrating third party content.	Already existing platform will be used and we have to integrate our content and branding into the chosen platform's interface.	Same as candiate 1, but only with self coded APIs or open source resources.
Benefits Brief description of the business benefits that would be realized for this candidate.	Access to their expertise and experience in building complex web platforms, including live streaming services. This can result in a high-quality product delivered within a reasonable timeframe.	Leveraging existing third-party platforms enables us to launch our live streaming service quickly without the need for extensive development or customization. Further, Utilizing third-party platforms typically involves lower upfront costs compared to building a custom solution.	A custom solution can be designed to scale with our business as it grows, accommodating increasing numbers of users, higher traffic volumes, and additional features or integrations. We have full control over the features, user experience, branding, and monetization options.

<Table continued on next page>

Servers and Workstations A description of the servers and workstations needed to support this candidate.	Servers would typically include web servers (e.g., Apache, Nginx) to host the front-end interface, application servers (e.g., Node.js, Django) to handle the back-end logic, and possibly media servers for streaming content along with Standard Workstations with i3 or above processors.	The streaming platform provider handles the infrastructure required to host and stream our content to viewers worldwide. Our team would still require standard workstations as mentioned earlier. However, the specific tools and software needed may vary depending on our role in managing and promoting our content on the chosen streaming platform. For example, content creators might need video editing software, while marketing teams might use analytics tools to track engagement metrics.	We will utilize AWS for our development needs, or Self Hosted Server in case of the need for dedicated servers during this phase. Once development is complete, we'll deploy our platform along with the integrated APIs to a web hosting service or cloud platform like AWS, Google Cloud Platform, or Microsoft Azure for the production environment(owned by Client only). Our team would require standard workstations equipped with development tools, IDEs (Integrated Development Environments), version control systems (e.g., Git), database management software, and communication tools.
Software Tools Needed Software tools needed to design and build the candidate (e. g., database management system, emulators, operating systems, languages, etc.). Not generally applicable if applications software packages are to be purchased.	- Version control systems like Git, along with platforms like GitHub or Bitbucket - Project management tools such as Jira, Trello, or Asana - Communication tools like Slack, Microsoft Teams, or Zoom	- Software tools for video editing (e.g., Adobe Premiere Pro, Final Cut Pro), graphic design (e.g., Adobe Photoshop, Canva), or audio editing (e.g., Audacity). - Broadcasting software like OBS Studio or Streamlabs OBS	- Windows, linux or MacOS - DBMS like MySQL - Text editors or IDEs compatible with our chosen programming languages (e.g., Node.js, Python). - Tools like Postman can help in testing and debugging APIs.'
Application Software A description of the software to be purchased, built, accessed, or some combination of these techniques.	We wouldn't need to purchase specific application software since the development team would use their own tools and licenses. However, if specialized software is required for the project (e.g., proprietary plugins, design assets), we may need to purchase licenses or subscriptions as needed.	We don't need to purchase software licenses, but we may opt for premium or subscription-based plans to access additional features such as advanced analytics, monetization options, or customization tools.	For this candidate, we'll build custom components using self-coded APIs and open source resource for any functionality.

Method of Data Processing Generally some combination of: on-line, batch, deferred batch, remote batch, and real-time.	**- Online Processing**: With online processing, data is processed in real-time as it's received. For example, user interactions such as video views, likes, and comments on the live streaming platform would be processed immediately to update relevant statistics or trigger actions. **- Real-Time Processing:** Similarly, real-time processing may be employed for features like live chat or real-time analytics, where data is processed instantly to provide immediate feedback or insights to users.	**- Online Processing:** Data processing on third-party streaming platforms typically occurs online in real-time. For example, viewership statistics and engagement metrics are updated continuously as users interact with the content. **- Real-Time Processing:** Streaming platforms often provide real-time analytics dashboards that display viewer counts, chat activity, and other metrics as they happen.	- **Online Processing:** For our custom solution, Online Processing would be employed For handling user interactions, content management, and analytics. - **Real-Time Processing:** Real-Time Processing would be features like live streaming links and notifications, where data is processed instantly to provide a seamless user experience.'
Output Devices and Implications A description of output devices that would be used, special output requirements, (e.g. network, preprinted forms, etc.), and output considerations (e.g., timing constraints).	**- Output Devices:** Standard devices such as desktop computers, laptops, tablets, and smartphones. These devices would render the platform's interface and content for users to interact with. **- Special Output Requirements:** Support for high-resolution video streaming, compatibility with various web browsers and screen sizes, and accessibility features for users with disabilities. **- Output Considerations:** Timing constraints may include ensuring that the platform's content loads quickly and smoothly, minimizing latency for live streaming, and optimizing the user interface for responsiveness across different devices and network conditions.	**- Output Devices:** Similar output devices, including desktop computers, laptops, tablets, and smartphones. The platform's content is rendered directly within the user's web browser or dedicated mobile app. **- Special Output Requirements:** Third-party platforms typically handle output requirements such as video streaming quality, adaptive bitrate streaming, and compatibility with a wide range of devices and screen resolutions. **- Output Considerations:** Timing constraints may involve ensuring smooth playback of live streams, minimizing buffering or lag, and providing a consistent viewing experience across different devices and network conditions.	**- Output Devices:** Output devices for our custom solution would be the same as those for the outsourced website development and third-party streaming platforms, including desktop computers, laptops, tablets, and smartphones. **- Special Output Requirements:** Special output requirements for our custom solution may include integrating custom features such as real time data capture and intergrating analytics widgets into the platform's interface. **- Output Considerations:** Timing constraints would involve ensuring timely delivery of real-time updates and notifications, seamless integration of custom features with the platform's overall user experience, and optimization for performance and responsiveness.'
Input Devices and Implications A description of Input methods to be used, input devices (e.g., keyboard, mouse, etc.), special input requirements, (e.g. new or revised forms from which data would be input), and input considerations (e.g., timing of actual inputs).	**Input devices** such as keyboards, mice, touchscreens, and voice commands. **Special input requirements** may include support for user-generated content uploads (e.g., videos, images), form submissions for user registration or feedback, and integration with third-party input methods such as social media authentication.	**Input methods** for users accessing content on third-party streaming platforms are similar to those for the outsourced website development candidate. **Special input requirements** may include user interaction with platform-specific features such as live chat, donations, subscriptions, or content moderation tools provided by the streaming platform.	Users interacting with our custom live streaming platform would use similar input devices as mentioned in previous candidates. **Special input requirements** may include custom input forms for user registration, content submission, or feedback, as well as integration with external APIs for additional input sources such as social media feeds.

Storage Devices and Implications Brief description of what data would be stored, what data would be accessed from existing stores, what storage media would be used, how much storage capacity would be needed, and how data would be organized.	**- Data to be Stored:** Data to be stored would include user account information (e.g., usernames, passwords), content metadata (e.g., video titles, descriptions), user-generated content (e.g., uploaded videos, comments), analytics data (e.g., viewer statistics, engagement metrics), and system logs. **- Data Access:** Existing stores may include databases for user authentication and session management, as well as third-party APIs for accessing external data sources such as social media profiles or content distribution networks. **- Storage Media:** Storage would be managed using relational databases (e.g., MySQL) for structured data and object storage services (e.g., Amazon S3) for unstructured data such as media files. **- Storage Capacity:** 1 TB arrayed **- Data Organization:** Data would be organized into tables and collections within the database, following relational data modeling principles.	**- Data to be Stored**: Similar to the outsourced website development candidate. **- Data Access:** Third-party streaming platforms manage data storage internally. **- Storage Media:** Storage infrastructure used by third-party platforms. **- Storage Capacity:** Storage capacity requirements are managed by the streaming platform provider. **- Data Organization:** Data organization is handled internally by the streaming platform.	**- Data to be Stored:** Similar to the other candidates. **- Data Access:** Data access may involve a combination of self-coded APIs for accessing custom data sources and integrations with external services or databases for accessing additional data as needed. **- Storage Media:** Storage media used would include databases for structured data storage and object storage services for unstructured data storage, similar to the outsourced website development candidate. **- Storage Capacity:** Similar to the outsourced website development candidate. **- Data Organization:** Data organization would follow similar principles as the outsourced website development candidate.

In conclusion, the development of a stream management platform involves a comprehensive analysis of various factors, including candidate selection, input and output devices, data processing methods, and storage requirements. The three candidates we explored offer distinct advantages and considerations. Outsourced website development provides access to specialized expertise and resources, while leveraging third-party streaming platforms offers rapid deployment and access to built-in audiences. On the other hand, a custom solution using self-coded APIs allows for tailored functionality and control over the platform's features. Ultimately, the decision depends on factors such as budget, timeline, scalability needs, and the desired level of customization. By carefully weighing these considerations and understanding the implications of each option, we can make an informed decision that aligns with our project objectives and ensures the successful development and deployment of our live streaming platform.

Feasibility Analysis Matrix

The feasibility analysis matrix provides a structured approach to evaluate the viability of different candidates for developing a stream management platform. By systematically assessing criteria such as operational feasibility, technological readiness, cost implications, and time requirements, stakeholders can make informed decisions tailored to their organization's needs and priorities. This matrix serves as a valuable tool for comparing and contrasting the strengths and limitations of each candidate, enabling stakeholders to identify the most suitable solution that aligns with their strategic objectives and resource constraints. Let's delve into the analysis to uncover insights crucial for making sound business decisions.

		Candidate 1	Candidate 2	Candidate 3
Feasibility Criteria	**Wt.**	**Outsourced Website Development**	**3rd Party Streaming Platforms**	**Custom Solution**
Operational Feasibility **Functionality:** A description of to what degree the candidate would benefit the organization and how well the system would work. **Political:** A description of how well received this solution would be from both user management, user, and organization perspective	**40%**	Offering potential benefits through well-executed website development. Quality and functionality may vary based on the capabilities of the chosen team or agency. Solution success will be well received if executed but it will not be in line with the goal of the client as they dont want to allocate a lot of funds to this part of the business. **Score: 70**	Provides diverse functionalities for content hosting and streaming. Benefits include seamless live streaming, audience interaction features, and robust analytics capabilities, though customization options may be limited compared to custom solutions. Familiarity may boost acceptance, but concerns over control and custom modification could arise among stakeholders. **Score: 35**	Offers tailored functionalities aligned with organizational needs. Flexibility in design and feature integration through self-coded APIs, allowing for precise customization and scalability to meet specific requirements and goals. Tailored functionalities aligned with organizational needs may increase stakeholder confidence, but effective communication is essential for acceptance and understanding of the solution's benefits. It would likely be well received by users too. **Score: 90**
Technical Feasibility **Technology:** An assessment of the maturity, availability (or ability to acquire), and desirability of the computer technology needed to support this candidate. **Expertise:** An assessment to the technical expertise needed to develop, operate, and maintain the candidate system.	**20%**	Relies on established web development technologies. Relies on the expertise of the chosen development team or agency. Minimal in-house technical knowledge needed, but oversight and communication skills are crucial for managing the outsourced project effectively. **Score: 80**	Mature technology readily available, reducing development effort. However, customization options may be limited, impacting desirability for specific requirements. Requires minimal technical expertise for operation as platforms handle infrastructure. Limited development required but may need technical skills for integration and customization. **Score: 80**	Utilizes complex web development tools and platforms, readily available but continuously evolving. High desirability for tailored solutions but requires technical proficiency for self-coded APIs. Demands technical expertise for developing and maintaining custom functionalities. Proficiency in web development, API integration, and platform management necessary for operation and ongoing maintenance. **Score: 75**
Economic Feasibility 1. Cost to develop: 2. Payback period (discounted): 3. Net present value: 4. Detailed calculations:	**30%**	1. $5000 - $10,000 (One time Cost) 2. 4.8 years 3. $1,205 /- 4. See Appendix A. **Score: 30**	1. Free to Use 2. 3 Years 3. $11,009/- 4. See Appendix A. **Score: 70**	1. Free or $ 100(May include minor cost) 2. 3.1 Years 3. $ 74,736/- 4. See Appendix A. **Score: 90**
Schedule Feasibility An assessment of how long the solution will take to design and implement.	**10%**	2 Months **Score: 60**	1 Month **Score: 80**	4-6 Months **Score: 50**
Ranking	**100%**	**60%**	**66.25**	**76.25%**

Rationale for Weights:

The rationale for assigning weights to each criterion in the feasibility analysis matrix is essential for ensuring that the evaluation process aligns with the organization's priorities and objectives. Here's the rationale for the specified weights:

Operational Feasibility (40%): Given the critical importance of ensuring that the chosen solution is operationally feasible, a significant weight of 40% is assigned to this criterion. Operational feasibility encompasses factors such as functionality, user acceptance, and alignment with organizational goals. *We understand that our custom solution will be able to match the operational feasibility goals and would be able to provide a robust experience.*

Technological Feasibility (20%): With a weight of 20%, technological readiness reflects the organization's focus on selecting a solution that leverages mature, available, and desirable computer technologies. This criterion evaluates the feasibility of acquiring and implementing the necessary technology to support the chosen solution. *Though technical feasibility is very important being that the solution is a tech solution, we still choose to give it less weight as other factors require more consideration.*

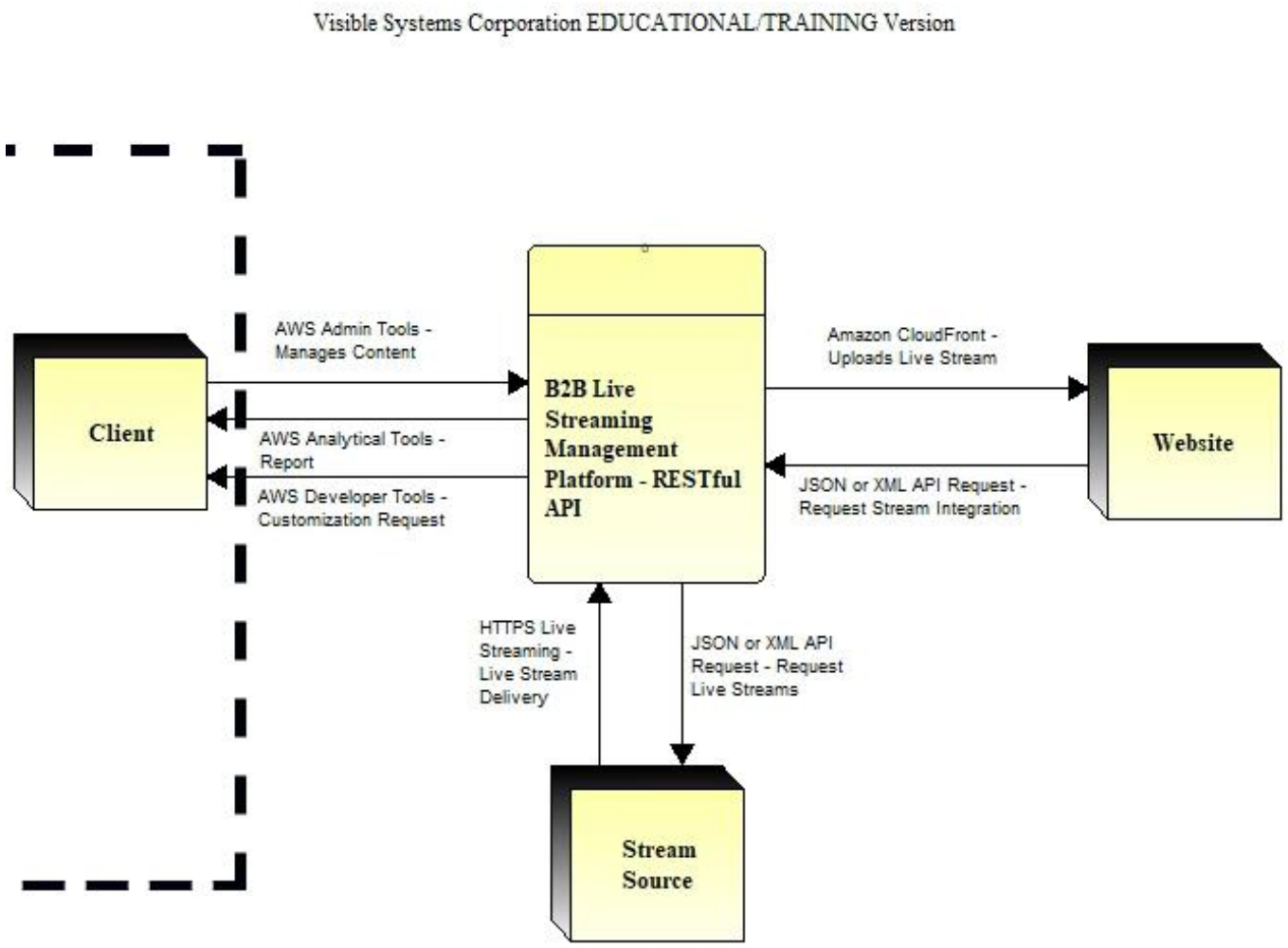
Economic Feasibility (30%): Economic considerations, including cost implications and resource requirements, are crucial determinants in the decision-making process. With a weight of 30%, economic factors are assigned significant importance, reflecting the emphasis on selecting a solution that offers optimal value for investment. *Our solution is not only economically viable but also scalable. That means, if any change occurs in the current system of the organization, the platform will still be able to meet the desired goals and produce same economic impact as intended.*

Schedule (10%): While schedule considerations are important, they are given a relatively lower weight of 10% compared to other criteria. This weight reflects our recognition of the importance of timely implementation but also acknowledges that schedule constraints should be balanced against other critical factors such as operational feasibility and economic considerations. *Our solution requires the most time in development but that is because we are creating a customised solution.*

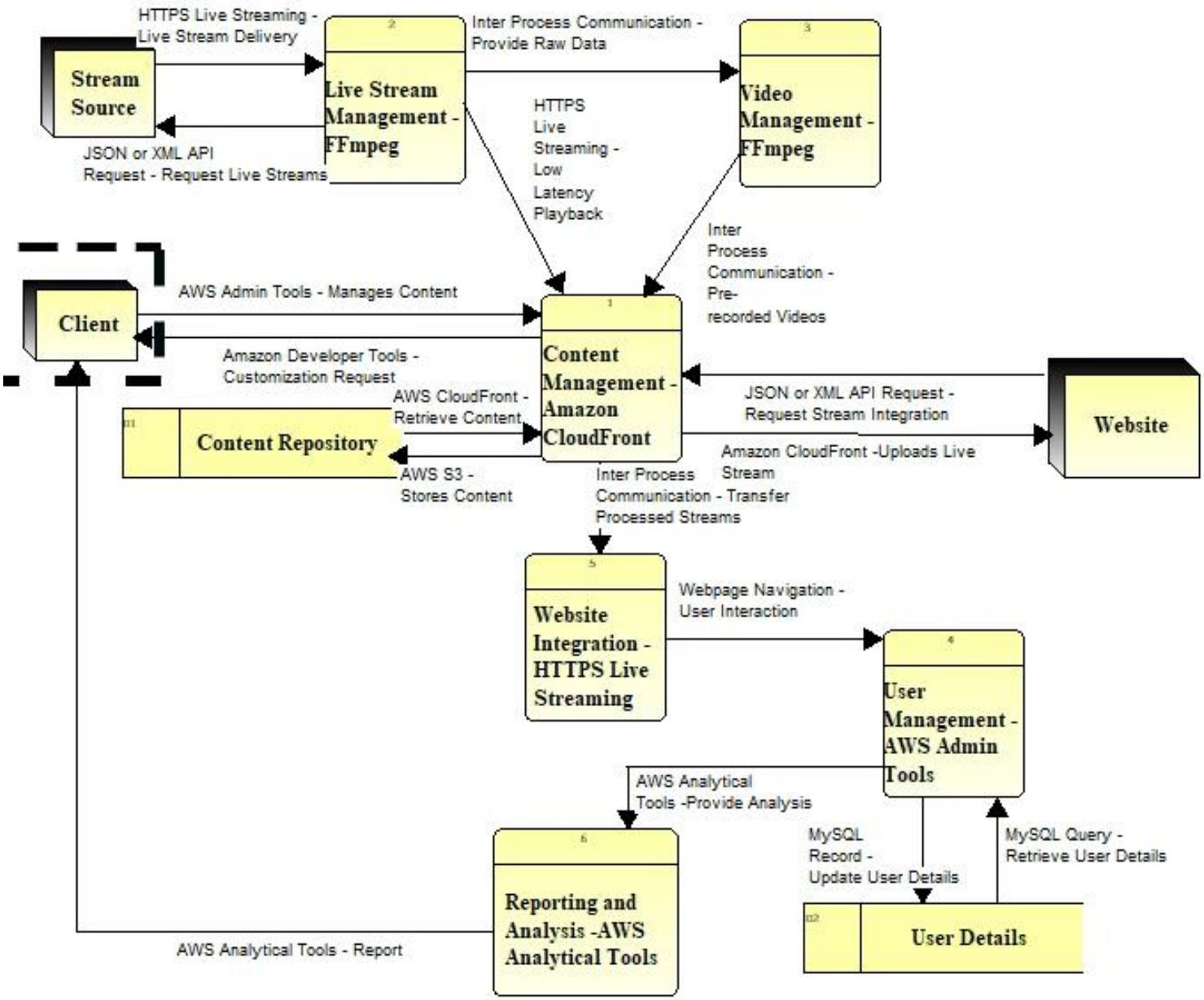
Physical Data Flow Diagram of the Proposed System

The Physical Data Flow Diagram (DFD) serves as a detailed blueprint for the implementation of the proposed system, Football Paradise's Live Stream Management System. Unlike the logical DFDs, which focus on the flow of information without specific technological ties, the Physical DFD delves into the technical aspects, illustrating how data moves through the system's components and interfaces. It provides a granular view of data processing, storage, and transmission, guiding developers in the creation of a robust and efficient system infrastructure. Through this diagram, stakeholders gain insight into the technical intricacies of the system's operation, facilitating informed decision-making and effective implementation strategies.

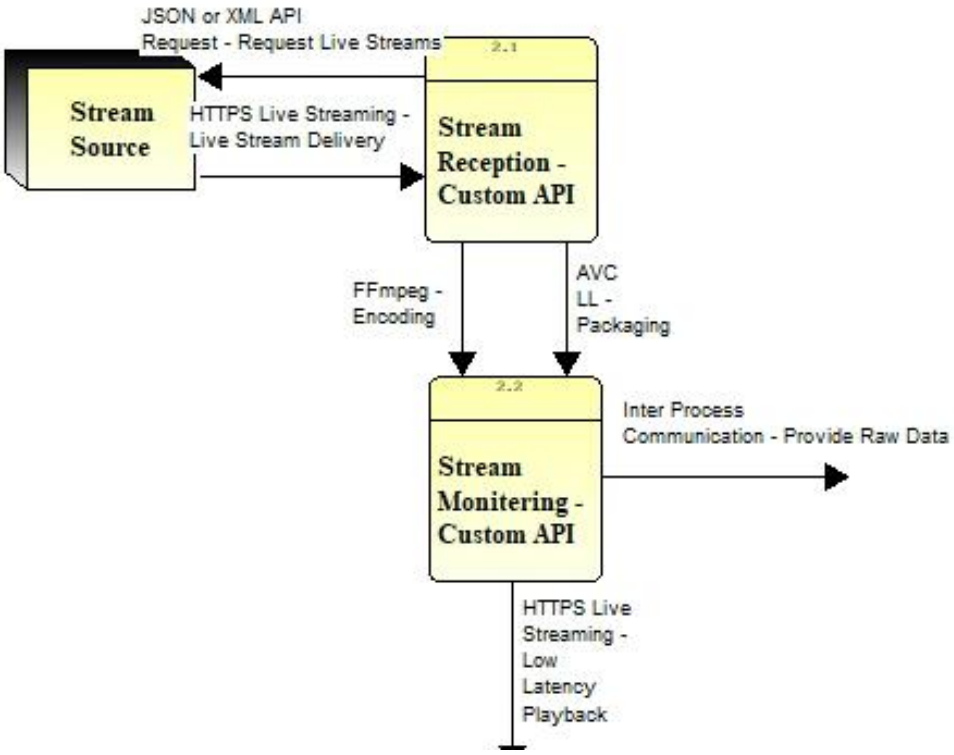
The Context Diagram



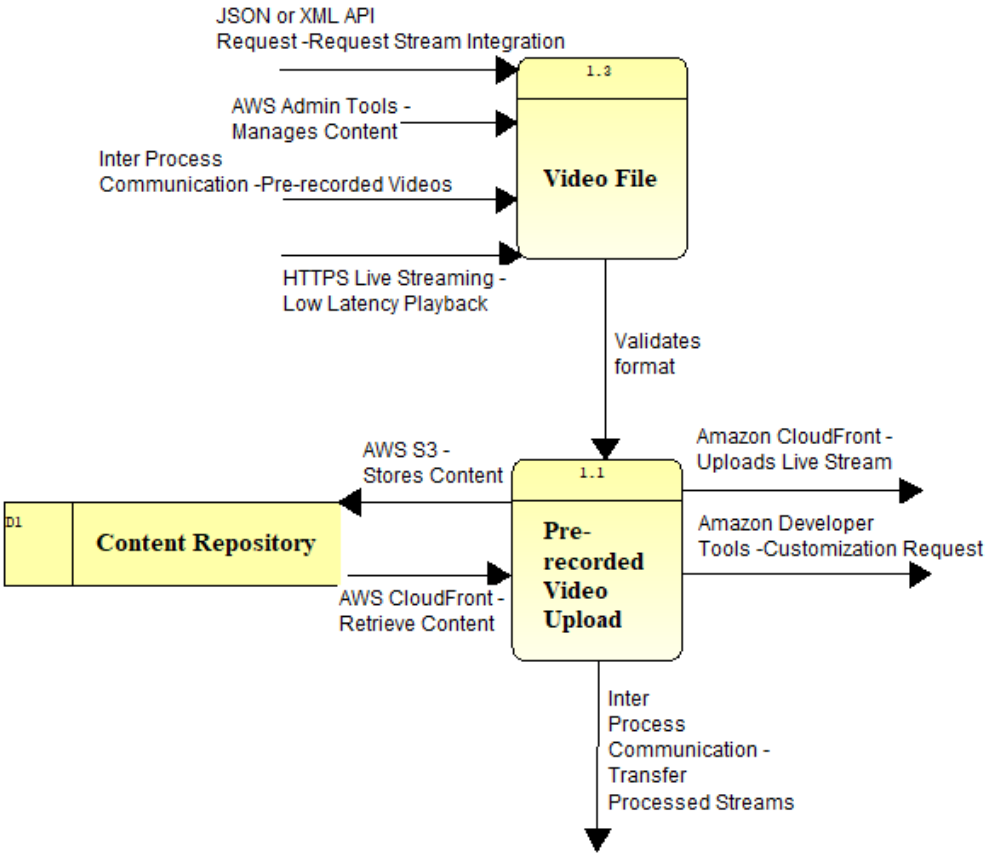
The Level 0 Diagram



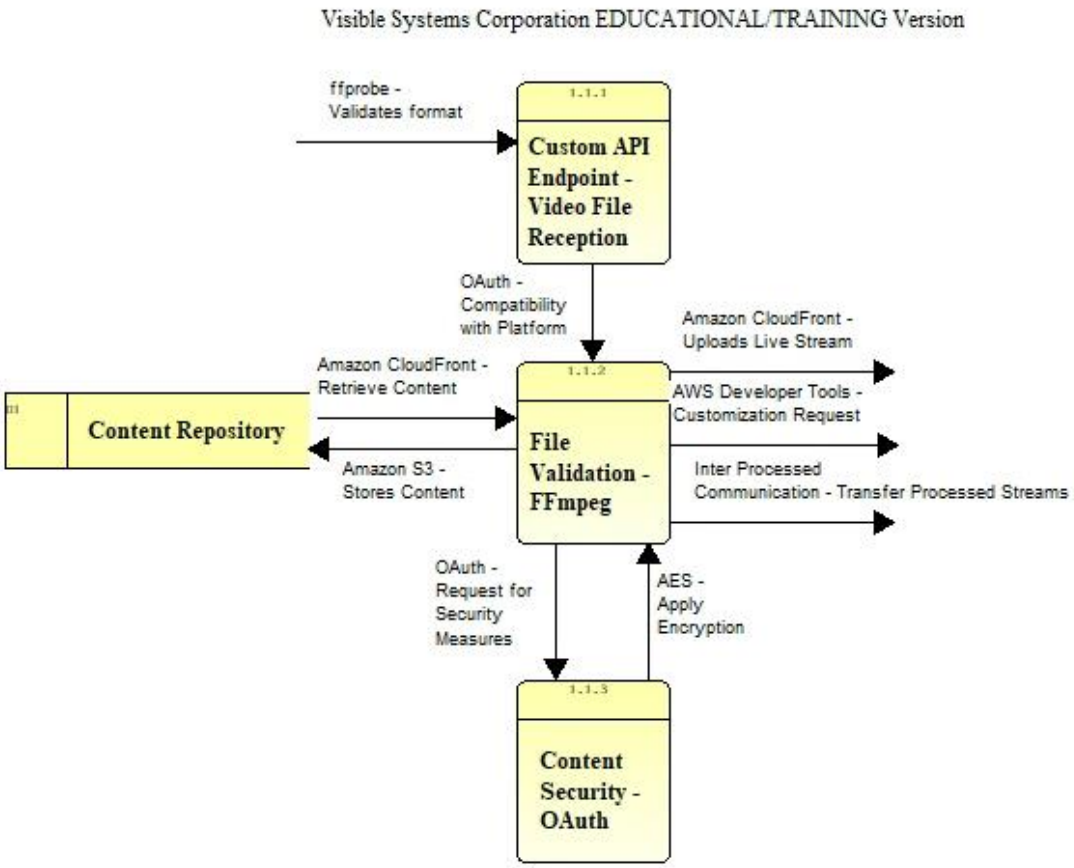
The Level 1 Diagram



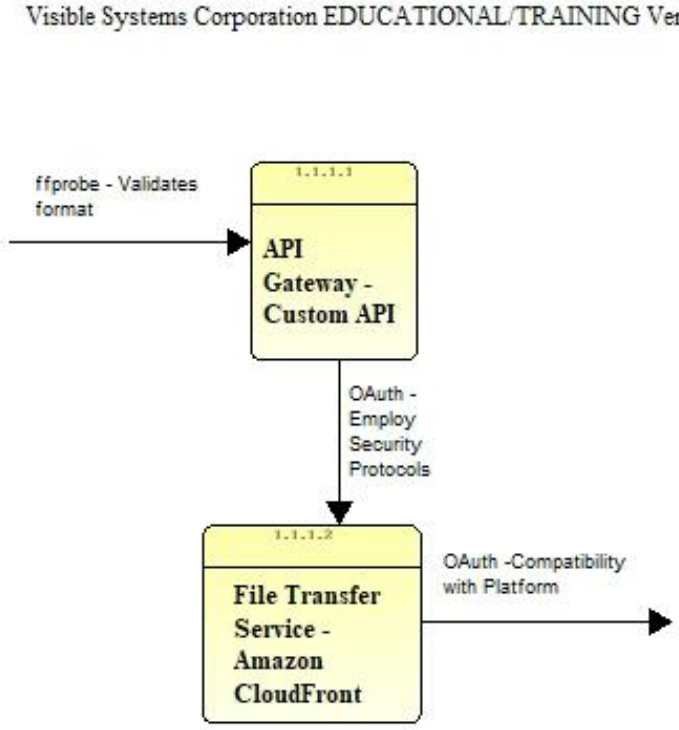
The Level 2 Diagram



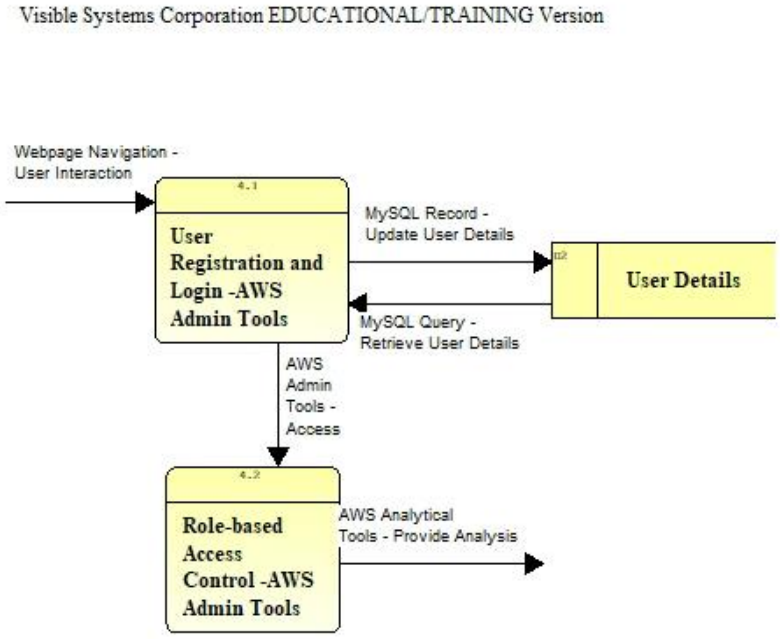
The Level 3 Diagram



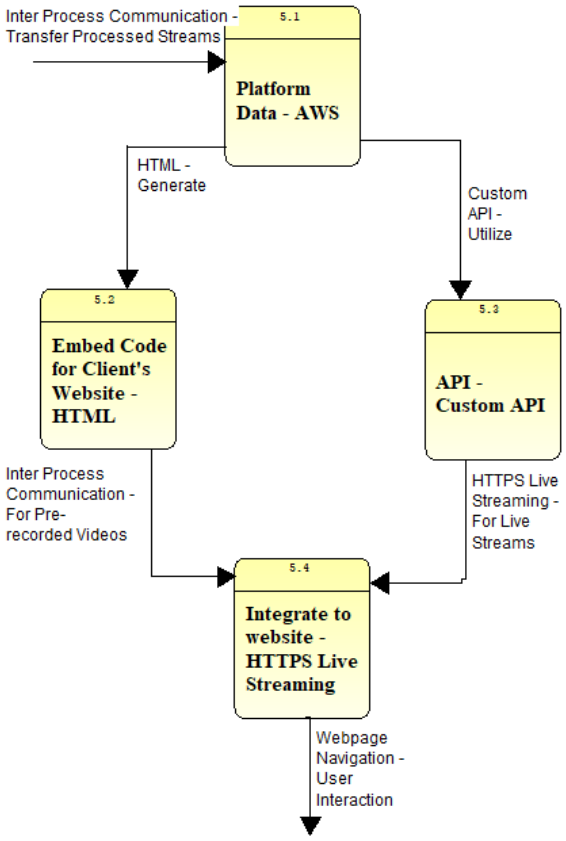
The Level 4 Diagram



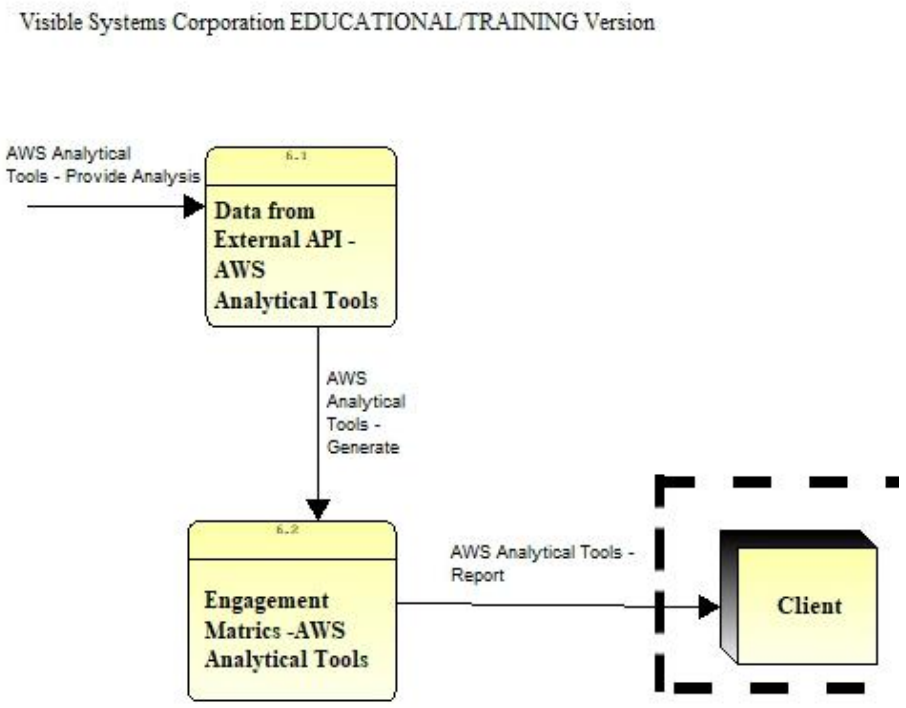
The Level 5 Diagram



The Level 6 Diagram

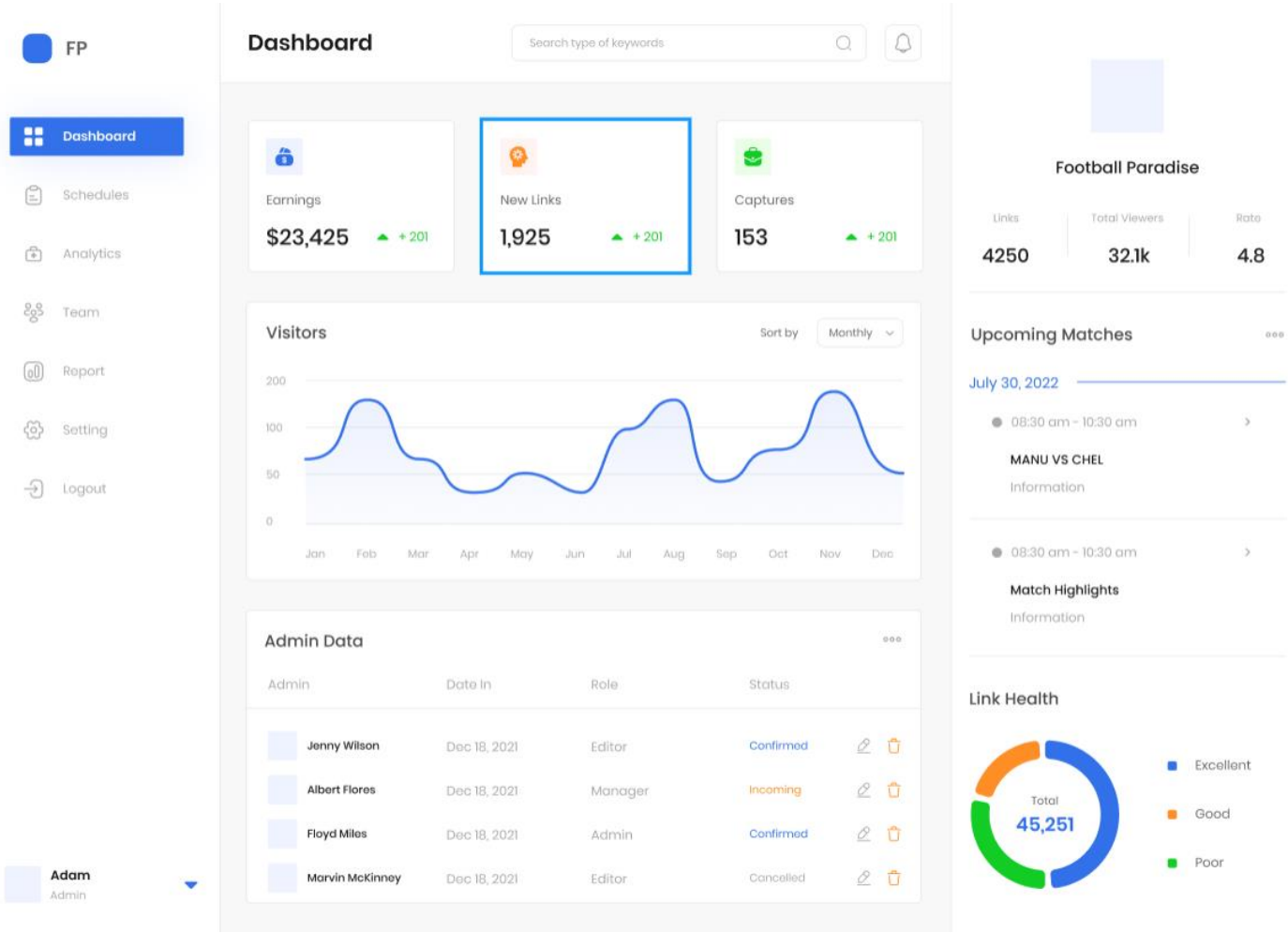


The Level 7 Diagram

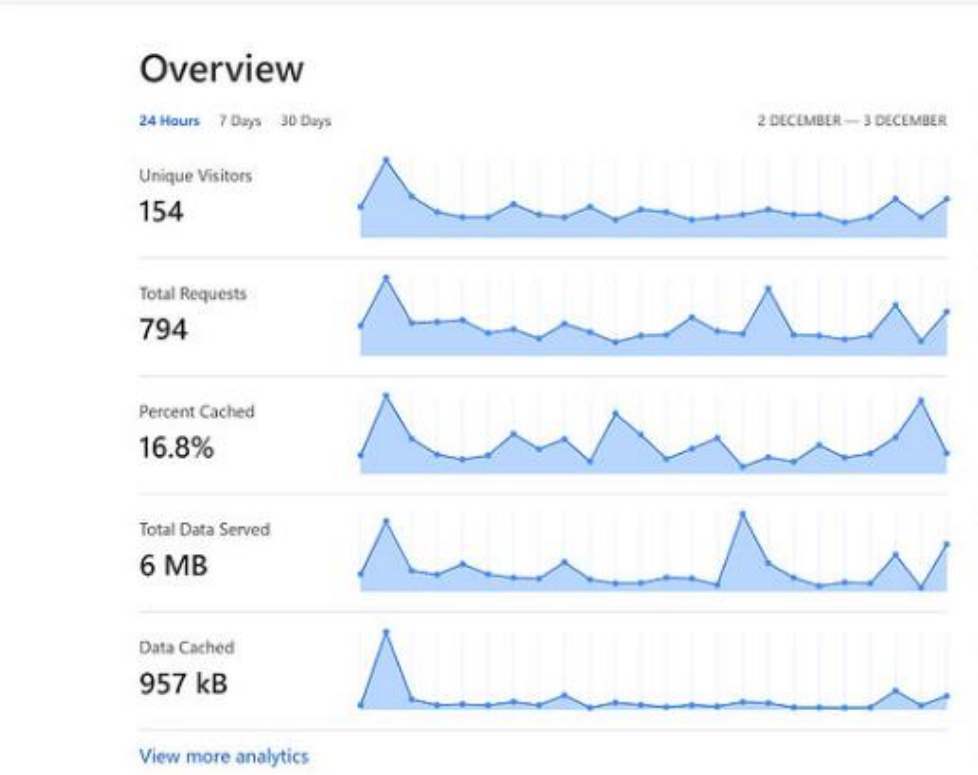


Sample Interface Screens

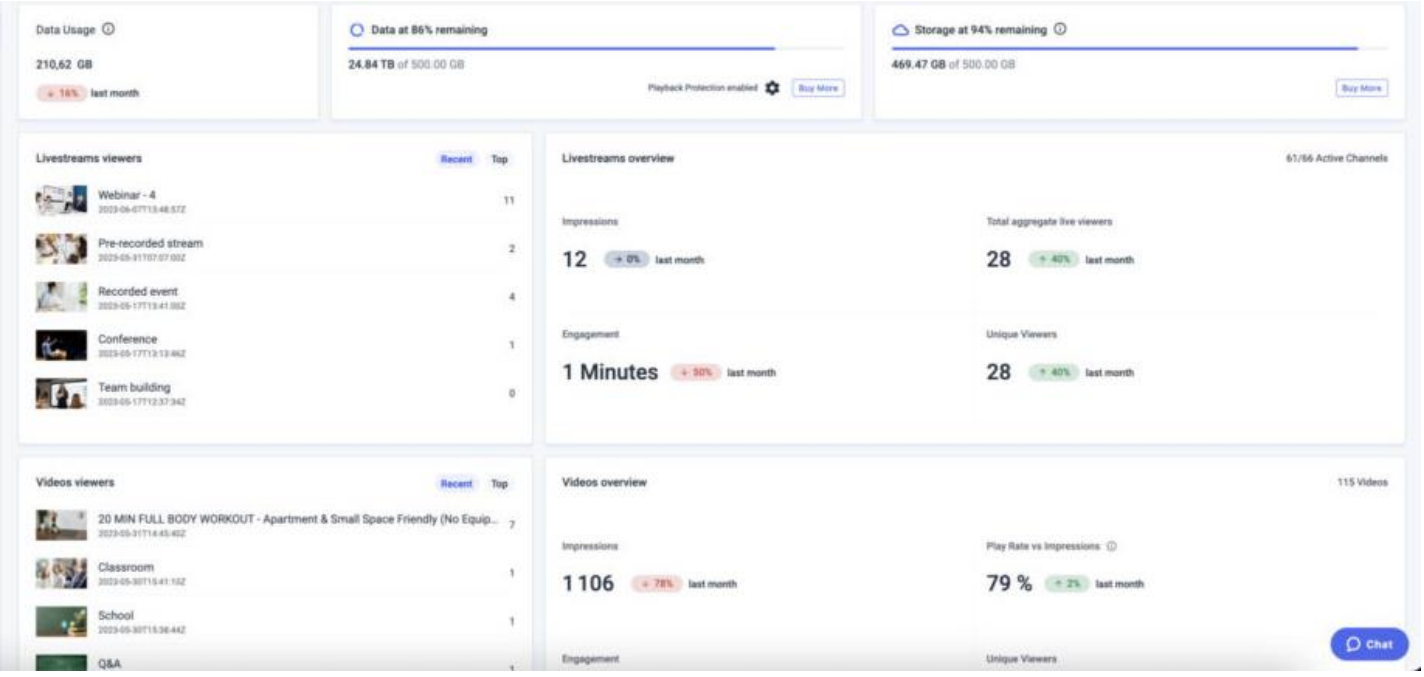
The Sample Interface Screens offer a glimpse into the visual representation of Football Paradise's Live Stream Management System. These high-fidelity wireframes showcase the user interface design, providing stakeholders with a preview of the system's look and feel. Designed to prioritize functionality, these screens give a demo of the expected navigation, controls, and possible features that characterize the platform.



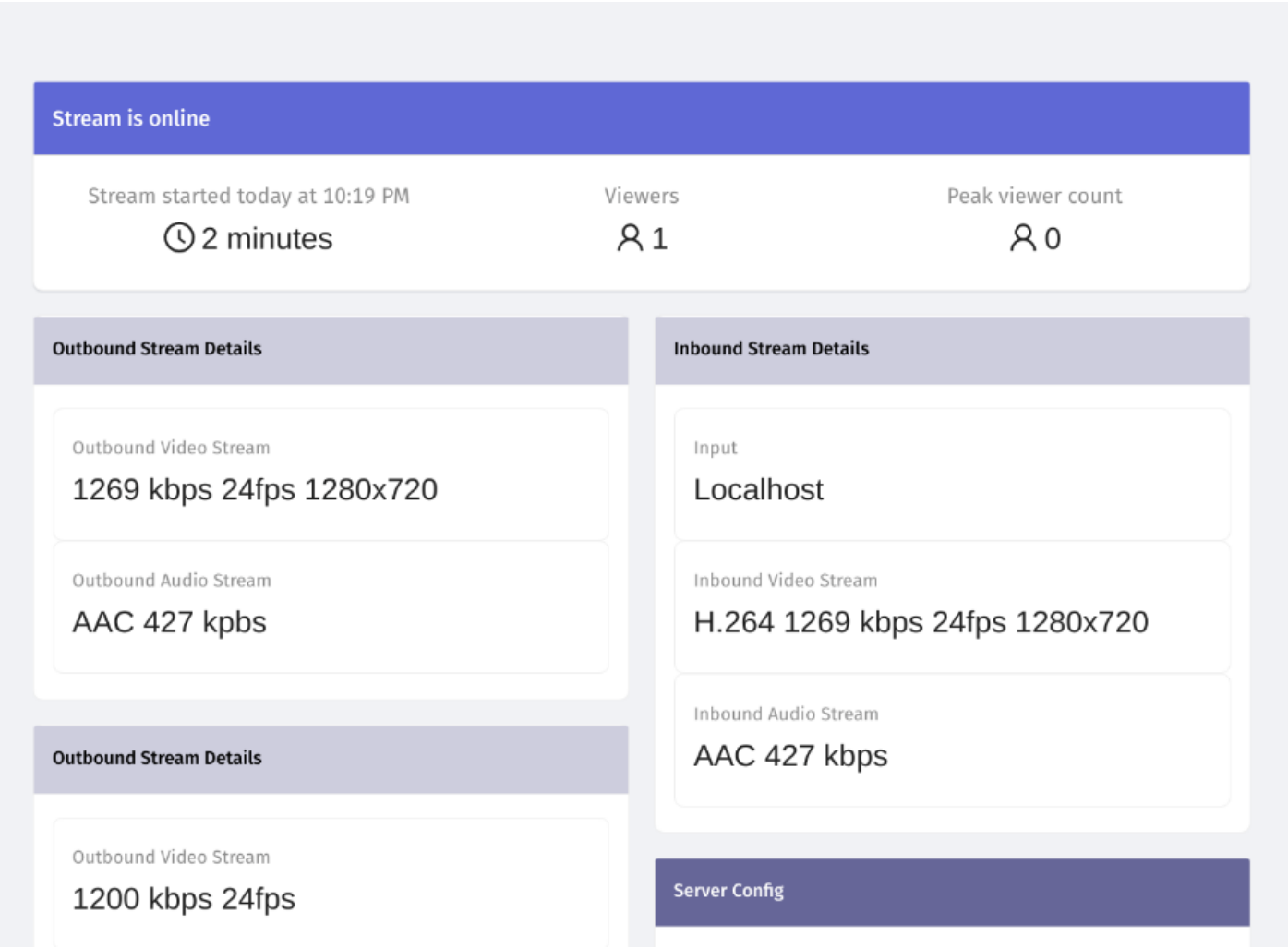
OUTPUT SCREEN – 01 – High Fidelity Wireframe – Overall Dashboard – Demo - Cast



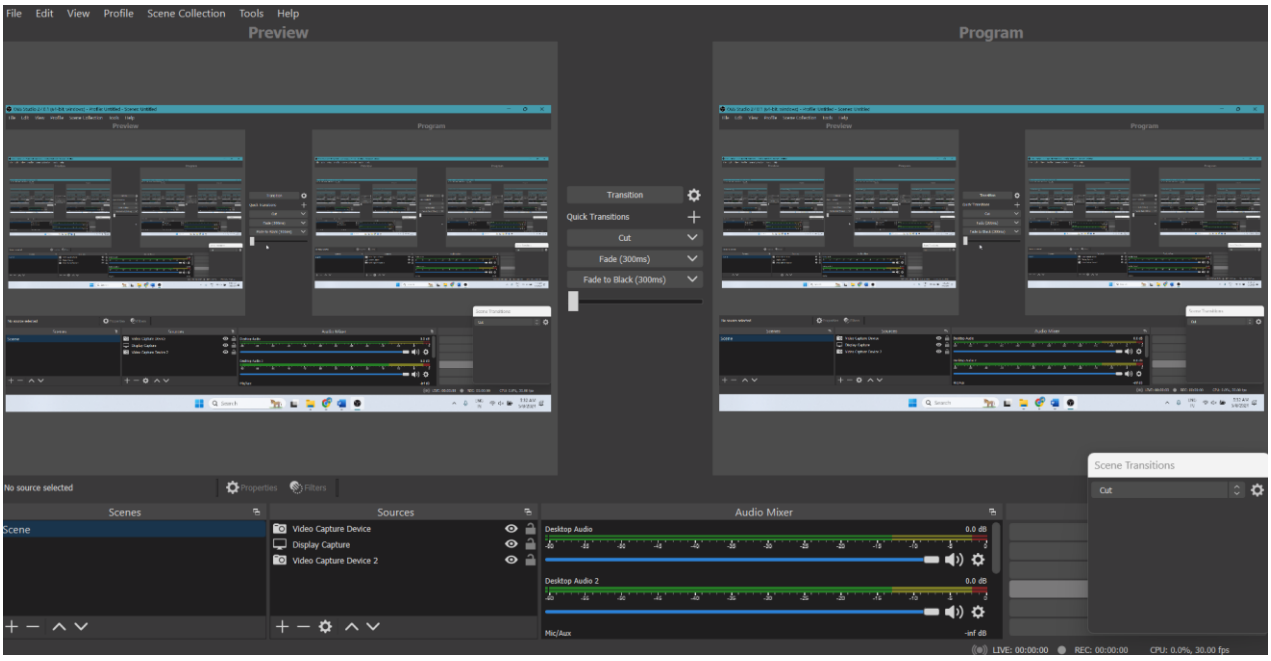
OUTPUT SCREEN – 02 – High Fidelity Wireframe – Link Health – Demo



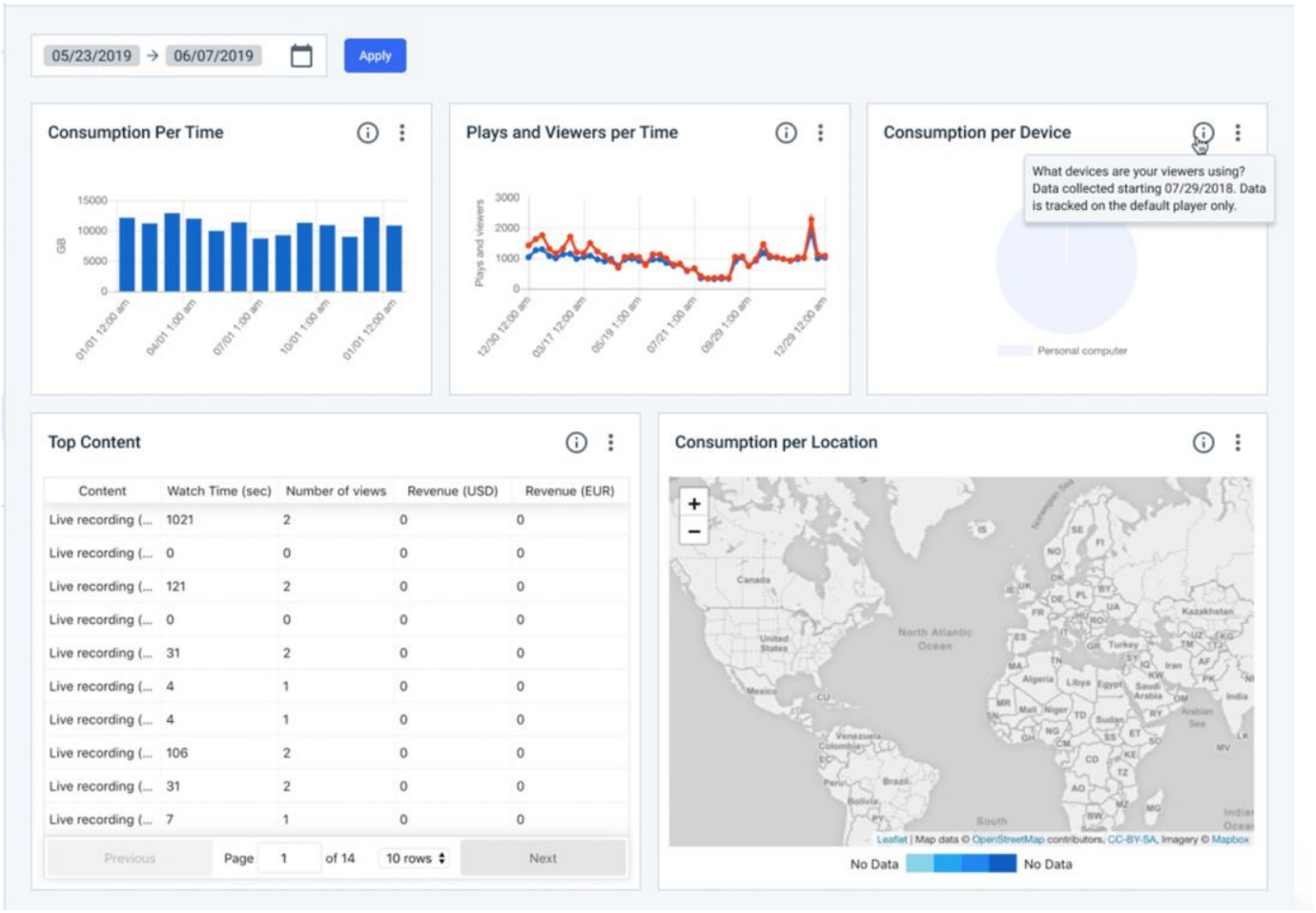
OUTPUT SCREEN – 03 – High Fidelity Wireframe – Analytics Dashboard – Demo - Cast



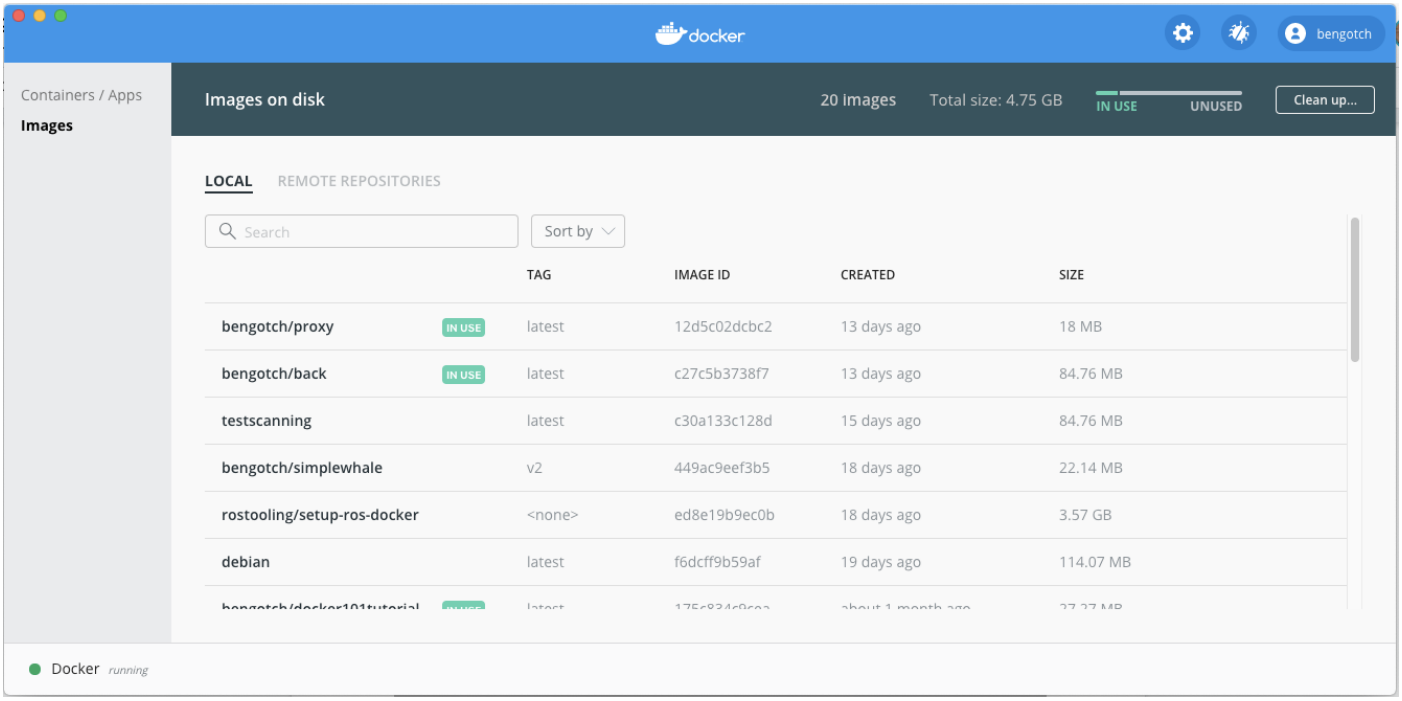
OUTPUT SCREEN – 04 – High Fidelity Wireframe – Streaming Metadata – (Cloudflare)



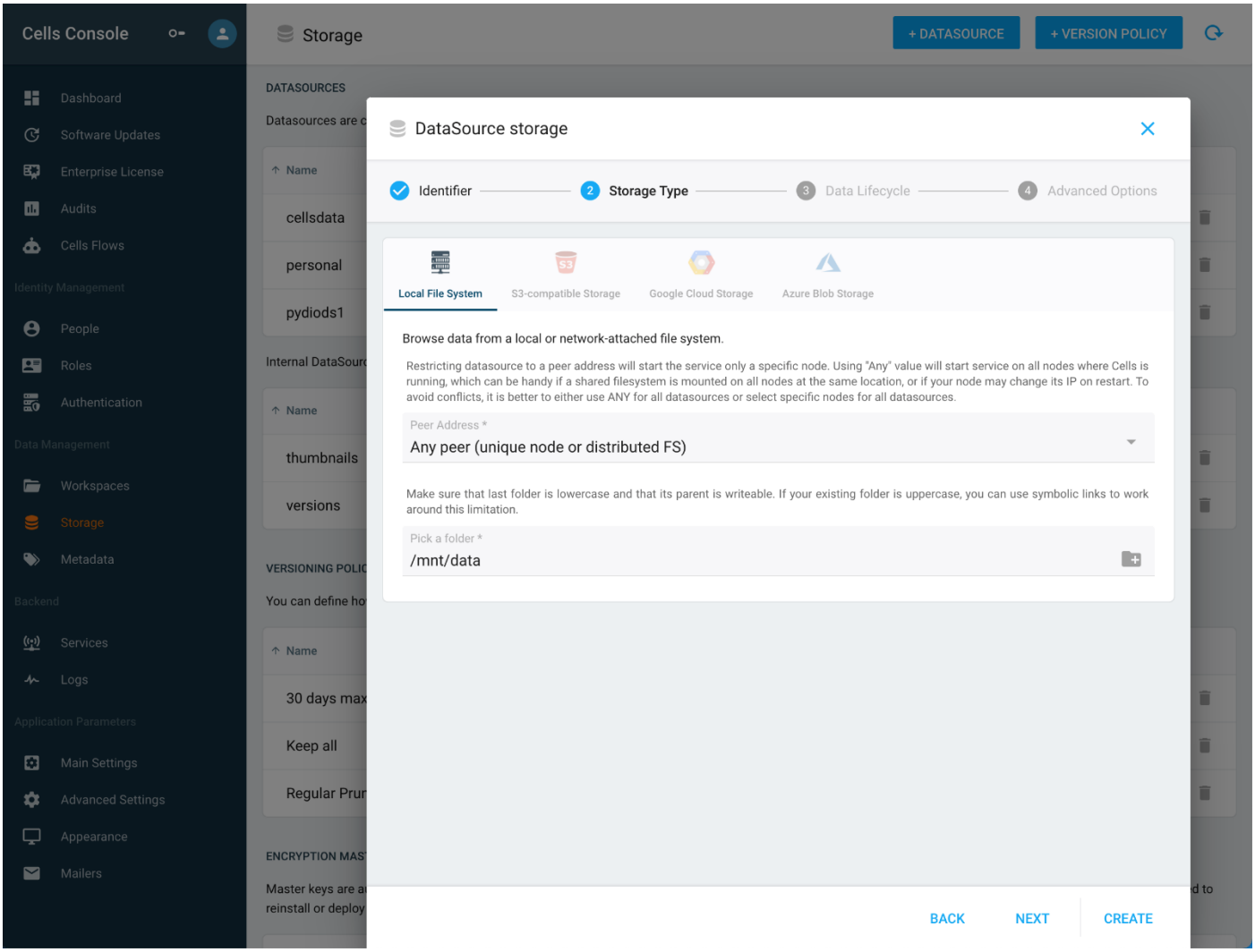
INPUT SCREEN – 01 – High Fidelity Wireframe – Live Stream Input (Open Source OBS platform)



INPUT SCREEN – 02 – High Fidelity Wireframe – Analytics - Integration Cast



INPUT SCREEN – 03 – High Fidelity Wireframe

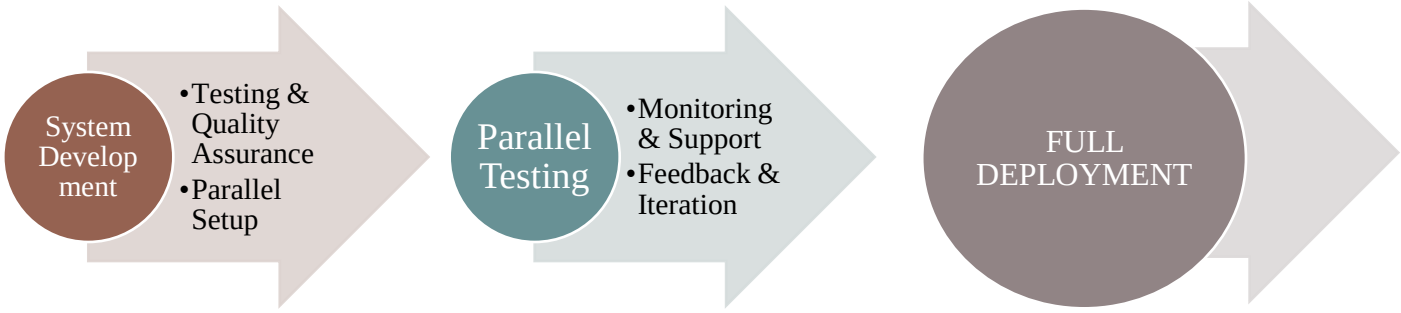


INPUT SCREEN – 04 – High Fidelity Wireframe – Cloud Storage

Implementation Plan

The implementation process will be considered a parallel process in which once the platform is developed, it will run parallel to already existing website. Given that the type of system we are recommending is completely new and does not exist in the current system, running the new system parallel is the most logical and best way to move ahead. The following steps outline recommended implementation. Note that construction of the new system is not necessarily due to the fact that the solution is a custom package.

Recommended implementation steps:



1. **System Development:** Begin by developing the new system based on the outlined requirements and specifications. Develop the live stream management platform with features such as stream management and scheduling, stream analytics, and content management.
2. **Testing and Quality Assurance:** Conduct thorough testing to ensure the platform functions seamlessly under various streaming conditions, including different devices, network speeds, and audience sizes.
3. **Parallel Setup:** Configure the live stream management platform to run parallel to the existing system. Ensure compatibility with existing hardware, software, and streaming protocols.
4. **Parallel Testing:** Conduct parallel testing by running test streams with both the new platform and the existing system simultaneously. Compare performance, reliability, and user experience metrics.
5. **Monitoring and Support:** Monitor live streams closely during the parallel run phase. Provide real-time support to address any technical issues or user concerns.
6. **Feedback and Iteration:** Gather feedback from moderators, and viewers about their experience with the new platform. Use feedback to make improvements and iterate on features.
7. **Full Deployment:** Once the new platform has proven its reliability and effectiveness during the parallel run phase, fully initiate the live streaming operations to the new platform.

Lessons Learned

As students tasked with analyzing the development and implementation of Football Paradise's Live Stream Management System, the journey has been both educational and enlightening. Here are some key lessons learned throughout the process:

1. Comprehensive System Analysis: One of the most valuable lessons learned is the importance of conducting a comprehensive system analysis before embarking on any development project. Through data flow diagrams, entity-relationship diagrams, and synchronized system models, we gained a deeper understanding of how information flows within the system and how different components interact with each other. This analysis provided a solid foundation for identifying requirements, defining functionalities, and planning the system architecture.

2. Integration of Technology and Business Processes: Another crucial lesson learned is the significance of integrating technology with business processes to achieve organizational objectives. The Live Stream Management System is not just about streaming matches; it's about enhancing user experience, optimizing content delivery, and driving engagement. By aligning technological solutions with business goals, Football Paradise can create a competitive advantage in the digital sports media landscape.

3. Evaluation of Candidate System Solutions: The process of evaluating candidate system solutions, including outsourced website development, third-party streaming platforms, and custom solutions, taught us the importance of considering multiple options and weighing their pros and cons. Each solution has its advantages and challenges, and the decision-making process requires careful consideration of factors such as cost, timeline, scalability, and customization needs. This exercise highlighted the complexity of decision-making in real-world scenarios and the need for informed, strategic choices.

4. Parallel Implementation Approach: The implementation plan, which outlines a parallel setup approach for running the new system alongside the existing website, provided valuable insights into phased deployment strategies. By testing the new system in parallel and gathering feedback from users and moderators, Football Paradise can minimize operational risks and ensure a smooth transition with the new platform. This approach emphasizes the importance of iterative development, continuous testing, and user feedback in achieving successful project outcomes.

5. Strategic Planning and Vision: Finally, the project underscored the importance of strategic planning and vision in driving organizational success. Football Paradise's vision to redefine the football content landscape and establish itself as a premier destination for football enthusiasts requires a clear roadmap, robust infrastructure, and unwavering commitment to excellence. By aligning project

objectives with broader organizational goals, students can appreciate the strategic thinking and long-term vision required to drive meaningful change in dynamic industries.

Overall, the experience of analyzing Football Paradise's Live Streaming Management System provided valuable insights into the intersection of technology, business, and strategic planning. From system analysis and solution evaluation to implementation planning and vision alignment, the project offered a holistic view of real-world challenges and opportunities in the sports publishing industry. These lessons will undoubtedly inform our future endeavors as a student and aspiring professionals in the field of technology and business.

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Appendix A

Cost- Benefit Analysis:

Outsourced Solution							
Payback period (discounted):							
Cash Flow Description (in $)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Benefits	0	500	925	1711	3166	5857	**12159**
Total Costs	10000	150	150	200	200	230	**10930**
Net Benefits	**-10000**	**350**	**775**	**1511**	**2966**	**5627**	**1229**
Cumulative Net Cash Flow	-10000	-9650	-8875	-7364	-4398	1229	
BEP: (in years)	**4.8**						
ROI:	**11.24%**						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
PV of Total Benefits	0	490	907	1678	3104	5742	**11920**
PV of Total Costs	9804	147	147	196	196	225	**10716**
Net Present Value	**-9804**	**343**	**760**	**1482**	**2908**	**5516**	**1205**
NPV (in $)	**1205**						
Assumed RoR= 10%							

Third Party Streaming Solution							
Payback period (discounted):							
Cash Flow Description (in $)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Benefits	0	500	925	1711	3166	5857	**12159**
Total Costs	0	150	150	200	200	230	**930**
Net Benefits	**0**	**350**	**775**	**1511**	**2966**	**5627**	**11229**
Cumulative Net Cash Flow	0	350	1125	2636	5602	11229	
BEP: (in years)	**3.0**						
ROI:	**1207.40%**						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
PV of Total Benefits	0	490	907	1678	3104	5742	**11920**
PV of Total Costs	0	147	147	196	196	225	**912**
Net Present Value	**0**	**343**	**760**	**1482**	**2908**	**5516**	**11009**
NPV (in $)	**11009**						
Assumed RoR= 10%							

Custom Solution							
Payback period (discounted):							
Cash Flow Description (in $	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Total Benefits	0	5000	7500	13875	25669	47487	**99531**
Total Costs	100	1000	1200	7000	7000	7000	**23300**
Net Benefits	**-100**	**4000**	**6300**	**6875**	**18669**	**40487**	**76231**
Cumulative Net Cash Flow	-100	3900	10200	17075	35744	76231	
BEP: (in years)	**3.1**						
ROI:	**327.17%**						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
PV of Total Benefits	0	4902	7353	13603	25165	46556	**97579**
PV of Total Costs	98	980	1176	6863	6863	6863	**22843**
Net Present Value	**-98**	**3922**	**6176**	**6740**	**18303**	**39693**	**74736**
NPV (in $)	**74736**						
Assumed RoR= 10%							

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