Section 4 - Project Methodology

FMSS utilizes several methodologies, therefore, we used Hybrid Methodology in completion of the system. Mixture of agile for flexibility, waterfall for step-by-step progress, and prototype methodology for clear responses from our users provided a well-rounded project development which is detrimental for our proposed system.

Agile Method

The Agile Methodology is an iterative and incremental approach to software development that prioritizes flexibility, collaboration, and customer satisfaction. It emphasizes adaptive planning, continuous delivery, and the ability to respond quickly to changing requirements. We used Agile Framework, namely Scrum framework for the File Management and Storing System. Scrum provides a structured yet flexible framework with defined roles, events, and artifacts. It encourages collaboration, transparency, and regular inspection and adaptation.

Waterfall Methodology

Aside from the Agile Methodology, we also utilized waterfall methodology as this approach is beneficial for our system. This traditional sequential approach involves completing each phase of the project (requirements gathering, design, implementation, testing, deployment) before moving on to the next.

Prototype Methodology

We created early prototypes of the system early in the development process to gather feedback and validate requirements. We then used each feedback to build a robust and maintainable codebase for our system.

4.1 IPO Diagram

For a better quality, proceed to this link:
https://drive.google.com/drive/folders/1adY6ew4PduSF3ApzfRBxi3x-U0atS4he?usp=sharing

4.2 Analysis – Methodologies and IPO Diagram

The development of FMSS employed a hybrid methodology, blending elements of Agile, Waterfall, and Prototype methodologies to create a comprehensive and adaptable approach. Agile Methodology, specifically the Scrum framework, provided flexibility, collaboration, and customer satisfaction by prioritizing iterative development, continuous delivery, and responsiveness to changing requirements. This approach allowed the team to adapt to evolving needs, foster collaboration, and deliver working software increments in a timely manner. However, Agile's iterative nature could introduce unpredictability and require careful management of scope and stakeholder expectations. In parallel, the Waterfall methodology was utilized to ensure a structured and sequential progression through project phases, from requirements gathering to deployment. This approach facilitated clarity and predictability, with each phase producing well-documented deliverables and stable product baselines. Yet, Waterfall's rigidity posed challenges in accommodating changes and incorporating late-stage feedback effectively. Additionally, the Prototype methodology was employed to gather early feedback from users and validate requirements through iterative prototyping. This approach reduced risks, enhanced user experience, and facilitated iterative

improvement throughout the development process. However, it required additional time and resources and necessitated careful management to avoid scope creep and misalignment with stakeholder expectations.

The IPO diagram for FMSS illustrates the input, process, and output components of the system. Inputs consist of various user interactions and data entry points, including email and password for authentication, login credentials, file upload requests, viewing, downloading, and deleting files, uploading profile pictures, and entering user information such as name, age, program and course, and block. These inputs initiate the processes within the system, driving the execution of tasks and functionalities. The processes encompass authentication and authorization mechanisms, file management operations, user profile management, and data retrieval procedures. Authentication verifies user credentials, granting access to authorized functionalities based on user roles and permissions. File management processes handle the storage, retrieval, and manipulation of files, ensuring secure and efficient handling of user data. User profile management encompasses the creation, updating, and retrieval of user profiles, facilitating personalized experiences within the system. Data retrieval processes fetch requested information from the system database, enabling users to access their files and profile information. Outputs generated by the system include user authentication status, file operations outcomes (e.g., upload success, download availability), updated user profiles, and retrieved file contents. These outputs provide feedback to users, indicating the status and results of their interactions with the system, thereby facilitating a seamless and intuitive user experience.

4.3 SWOT Analysis

The File Management and Storage System (FMSS) represents a crucial component in the digital infrastructure of educational institutions, offering students and professors a streamlined platform for storing and accessing academic and personal files. As FMSS continues to evolve and adapt to the changing needs of its users, it becomes essential to conduct a comprehensive SWOT analysis to assess its internal strengths and weaknesses, as well as external opportunities and threats.

This SWOT analysis aims to provide valuable insights into FMSS's current position in the market, its competitive advantages, and potential areas for improvement and growth. By examining both the internal and external factors that influence FMSS's performance and strategic direction, stakeholders can make informed decisions to capitalize on strengths, mitigate weaknesses, seize opportunities, and address threats effectively.

Through this analysis, we seek to uncover actionable recommendations and strategies that will empower FMSS to enhance its value proposition, optimize user experience, and maintain a competitive edge in the increasingly dynamic landscape of digital file management and storage solutions.

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Strengths

- Institution-Focused – The system has a very small target of users. This hinders the possibility of network traffic.
- Free – The system aims to be available without the students and professors spending a dime, making it very ideal for students.
- Efficient – The system is very simple, leading to efficiency and speed-oriented system.
- Simple and Compact – The system is user-centered; meaning that it is built for better controls and interface.
- User-Friendly Interface – The system offers a simple and intuitive interface, making it easy for students and professors to upload, organize, and access their files.
- Secure Data Storage – The system employs robust security measures to protect user data, including encryption and regular backups, ensuring the safety and confidentiality of stored files.
- Cross-Platform Accessibility – The system is accessible from various devices and platforms, allowing users to access their files anytime, anywhere, enhancing flexibility and convenience.

Weaknesses

- Limited Storage Capacity – The system may have limitations on storage capacity, particularly for free or basic accounts, which could restrict users' ability to store large files or extensive collections.
- Dependency on Internet Connection – Users require a stable internet connection to access and use the system, which may pose challenges in areas with limited connectivity or during network outages.
- Lack of Advanced Features – Compared to more robust file storage solutions like Google Drive, the system may lack advanced features such as document editing, real-time collaboration, or integration with other productivity tools.
- Potential for Data Loss – Despite security measures, there is always a risk of data loss due to technical issues, cybersecurity threats, or human error, which could compromise user files and data integrity.
- Limited File Compatibility – The system may have limitations in supporting certain file types or formats, which could impact its suitability for storing specific types of academic or multimedia files.

Opportunities

- Integration with Educational Tools: The system could explore partnerships or integrations with educational platforms or learning management systems, enhancing its value proposition for students and educators.
- Expansion of Storage Services: The system could offer additional storage options or premium features, such as increased storage capacity, advanced security features, or enhanced collaboration tools, to attract and retain users.
- Targeted Marketing Campaigns: By identifying and targeting specific user segments, such as educational institutions, research organizations, or freelance professionals, the system can expand its user base and increase adoption rates.
- Mobile Application Development: Developing a mobile app version of the system could enhance accessibility and convenience for users, particularly those who prefer mobile devices for file management and access.
- Data Analytics and Insights: The system could leverage user data and analytics to provide personalized recommendations, insights, or productivity tools, enhancing user experience and engagement.

Threats

- Competition from Established Players: The system faces competition from established file storage and cloud computing providers like Google Drive, Dropbox, and Microsoft OneDrive, which may offer more extensive features, brand recognition, and market share.
- Cybersecurity Risks: The system is vulnerable to cybersecurity threats such as hacking, malware, or data breaches, which could compromise user data and damage the system's reputation and trustworthiness.
- Regulatory Compliance: Compliance with data protection regulations such as GDPR, HIPAA, or COPPA imposes legal and regulatory requirements on the system, which may require additional resources and efforts to ensure compliance.
- Technological Obsolescence: Rapid advancements in technology and changing user preferences may render the system obsolete or less competitive over time, requiring continuous innovation and adaptation to stay relevant.
- Economic Instability: Economic downturns or financial crises could impact user spending habits and investment in technology services, affecting the system's revenue and growth prospects.

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SWOT Analysis

FMSS
ICTe-Solutions