



International Journal of Innovative Research in Science Engineering and Technology (IJIRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.699

Volume 14, Issue 6, June 2025

Doc Navigator: A Comprehensive Platform for Document Access and Management

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ABSTRACT: Doc Navigator, a web-based platform for the efficient creation, storage and retrieval of documents by its users, is presented to the public participants, and such tools for creating, organizing, and retrieving documents in cyberspace are already available. This paper performs in-deep analysis of the development, evolution and operation of the platform in conjunction with its major functions: cloud-based file management; monitoring of records; and available staff assistance.

The research also investigates the constraints and possibilities of creating such a system that will be able to combine multi-document from multiple domains and remain user-friendly as well as secure. There are many domains where there is a need to improve the overall document management process including, but not limited to, legal, financial, educational and medical. Doc Navigator is capable of penetrating all of them.

KEYWORDS: Document Management, Cloud Storage, Expiration Date Tracking, User Interface, Data Security, Automation

I. INTRODUCTION

In today's age dealing with documents along with financial statements and educational or medical records can often feel overwhelming and intricate for individuals who have to go through them regularly across platforms and online sites to find essential paperwork can result in inefficiencies and higher risks of errors. Failing to meet deadlines has become a common issue as web technologies advance and the need for seamless integration increases. The creation of Doc Navigator is driven via the need to address several challenges in modern document management.

One considerable issue is the fragmentation of document storage throughout various platforms and formats, that may result in inefficiencies and the risk of losing vital documents. Customers regularly struggle to preserve their documents organized, especially when dealing with multiple storage locations, making it hard to quickly retrieve essential information. Doc Navigator seeks to solve this by providing a centralized platform where users can add, arrange, and access their files seamlessly, thereby enhancing efficiency and lowering the risks associated with scattered storage.

It streamlines access to documents and their management, across industries. The platform offers functions, like storing documents in the cloud and keeping track of expiration dates. Admin supported assistance is provided to help users effectively and securely handle their documents.

II. LITERATURE REVIEW

Effective document management systems (DMS) require a combination of collaborative features, security mechanisms, retrieval efficiency, and user adoption strategies. The following literature provides detailed insights into various aspects of DMS that are relevant to the development of the Doc Navigator platform.

A. Collaboration and Version Control

Collaboration is a crucial aspect of modern DMS, enabling users to work together efficiently and enhance productivity. Choudhury (2021) emphasize the significance of real-time editing and document sharing, which facilitate seamless teamwork. These features allow multiple users to edit documents simultaneously while tracking changes, reducing redundancy, and improving workflow efficiency. Additionally, they highlight the role of cloud-based solutions in enhancing collaborative efforts by enabling remote access to documents.

Lee and Kim (2020) focus on version control as an essential mechanism in collaborative environments. Their research outlines the importance of maintaining document history to prevent data loss and ensure accountability. Version control systems allow users to revert to previous versions when necessary, track modifications over time, and manage conflicts that may arise from multiple users editing the same document.

B. Security and Document Integrity

Ensuring document security and integrity is a fundamental requirement for any DMS. Chowdhury and Gupta (2023) discuss the role of blockchain technology in maintaining document authenticity, providing a tamper-proof and decentralized method of verifying document integrity. They explore the implementation of smart contracts to control access permissions and track document changes transparently, minimizing the risk of data breaches.

Raghavan (2018) examine encryption techniques as an essential measure for securing sensitive information within document management systems. Their study compares symmetric and asymmetric encryption methods, evaluating their effectiveness in preventing unauthorized access. The findings emphasize that strong encryption protocols must be integrated into DMS to protect confidential documents from cyber threats.

Additionally, Hu (2019) explore various access control mechanisms, with a particular focus on role-based access control (RBAC). Their research highlights the advantages of RBAC in regulating user permissions based on organizational roles, ensuring that only authorized personnel can access specific documents. This method enhances security by reducing exposure to unauthorized modifications or leaks.

C. Data Recovery and System Reliability

Data loss can have severe implications for organizations relying on DMS. Garcia (2017) focus on data recovery strategies, underscoring the importance of automated backup systems, disaster recovery plans, and redundancy measures. Their research reveals that organizations that implement robust data recovery protocols experience significantly lower risks of information loss due to system failures or cyberattacks. The study also explores cloud-based recovery solutions that enable seamless restoration of documents in case of accidental deletion or corruption.

D. Advanced Search and Retrieval Mechanisms

Efficient document retrieval capabilities are essential for optimizing user experience within DMS. Patel and Singh (2019) analyze the effectiveness of metadata and indexing in enhancing searchability. Their findings suggest that structured metadata, including keywords, tags, and hierarchical classifications, improves retrieval speed and accuracy. Kumar (2022) explore the application of machine learning algorithms to improve document search functionalities. Their research identifies AI-driven techniques such as natural language processing (NLP) and recommendation systems that enhance search relevance and efficiency. By leveraging these technologies, DMS platforms can provide users with intelligent search capabilities that adapt to their preferences and past interactions.

E. Implementation and User Adoption

The successful implementation of DMS depends on various factors, including user engagement and adoption. Jones (2021) provide case studies of organizations that have successfully integrated document management systems. Their

findings highlight best practices such as comprehensive training programs, user-friendly interfaces, and continuous support to ensure smooth adoption.

Smith and Johnson (2020) address common barriers to user adoption, such as resistance to change, lack of technical knowledge, and perceived complexity. Their study suggests that addressing these concerns through targeted user training, simplified navigation, and incremental deployment strategies can significantly enhance adoption rates.

F. Future Trends and Innovations

The evolving landscape of document management systems is being shaped by emerging technologies. Miller and O'Reilly (2023) explore future trends, including artificial intelligence (AI), automation, and cloud-based solutions. Their research suggests that AI-powered document processing tools, such as automated classification and intelligent workflow management, will become integral to next-generation DMS platforms.

Furthermore, the integration of blockchain for enhanced security, predictive analytics for proactive document organization, and hybrid cloud storage solutions for improved scalability are expected to define the future of document management systems. These advancements will play a crucial role in shaping the capabilities of Doc Navigator.

The reviewed literature highlights key components necessary for an effective document management system, ranging from collaboration and security to searchability and user adoption. The incorporation of real-time collaboration, robust security measures, advanced search functionalities, and AI-driven enhancements will ensure that Doc Navigator remains an innovative and efficient platform for document management. By integrating these features, Doc Navigator will provide a comprehensive solution that enhances productivity, security, and user experience.

III. PROPOSED SYSTEM

To address the issues faced by many users a cloud-based system that provides a comprehensive solution to document retrieval, archiving and verification is proposed. Doc Navigator will address the concerns of users related to security and efficiency.

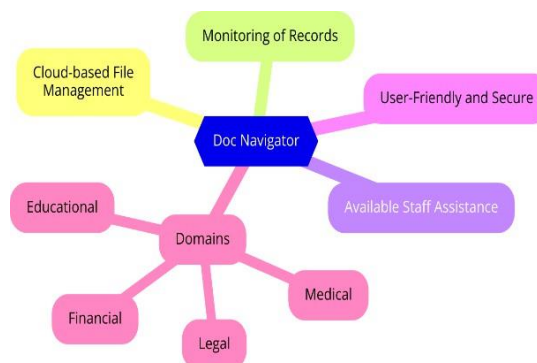


Fig. Proposed system

Doc Navigator is built for Scale, Security & Performance. The architecture has a modular structure containing different elements to support the requirements for running it.

a. Functional Requirements:

- User registration and authentication — enables users to register, log in and manage their profiles securely. Admins can create roles, such that users with a particular profile get access defined by the role.
- Document Upload & Management If a user choose to save anything against his research the file can be uploaded of different formats like PDFs, Word document and images. You also can easily organize them for your team to check with.
- Version Control: As the platform keeps a version history of documents, users can always restore data to earlier versions. File Sharing.

- Document Expiration Tracking: The system should allow users to set expiration dates for documents and receive notifications for upcoming renewals.

b. Non-Functional Requirements:

- Performance: The system should handle a large number of concurrent users without significant lag.
- Security: The system must follow industry-standard security practices, such as encryption, access control, and regular security audits.
- Scalability: The platform should be capable of scaling both vertically and horizontally to accommodate increasing numbers of users and documents
- Reliability and Availability: The system should have high availability with minimal downtime.

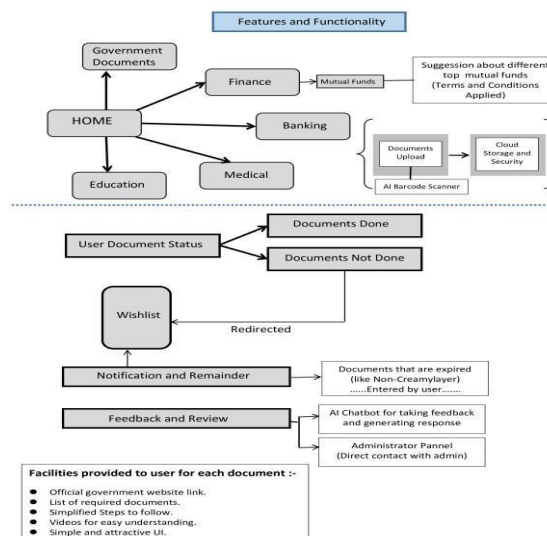


Fig. Features and Functionality

IV. METHODOLOGY

a. System Architecture

Doc Navigator is developed using modern web technologies to ensure both responsiveness and security. The platform's frontend was built using HTML, CSS, JavaScript, and React.js to create an intuitive and responsive interface.

The backend was developed using node.js, express.js and basic blockchain functionality, which provides robust server-side functionality, while Rust API was utilized for API creation.

One of the core components of the platform is cloud storage integration.

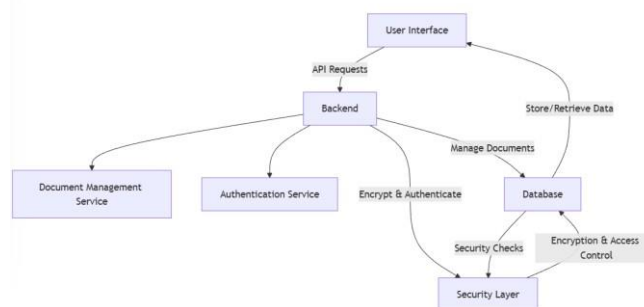


Fig. System architecture

b. System Development Methodology

Development Approach: Follow an iterative development model, incorporating user feedback after each development cycle to refine system functionalities.

Technology Stack Analysis: Document the selection and integration of frontend (HTML, CSS, JavaScript, React.js) and backend technologies (Rest API, express.js, node.js), Blockchain to maintain Transactions, as well as cloud services (e.g., AWS, Google Drive) to support document storage and retrieval.

b.1. Algorithm Implementation

Search and Retrieval: Implement TF-IDF and Elasticsearch for document indexing and search functionality.

Metadata Extraction: Use Optical Character Recognition (OCR) techniques for text extraction from documents.

Security: encryption algorithms (AES, RSA) for data protection, and implement role-based access control (RBAC) for secure user management.

b.2. Tools and Software Used

Development Tools: GitHub for version control, Scrum for project management.

Data Analysis Software: Python for statistical analysis and performance testing.

Cloud Services: AWS and Google Drive for testing cloud storage integrations.

b.3. A layered architecture was designed to separate concerns and enhance maintainability:

Presentation Layer (Frontend): Built using HTML, CSS, JavaScript, and React.js, ensuring an intuitive and responsive user interface.

Application Layer (Backend): Developed using Node.js and Express.js to handle authentication, document management, and user interactions.

Security Layer: Implements encryption, access control, and blockchain verification to protect document integrity and prevent unauthorized access.

Database Layer: Stores document metadata, access logs, and user credentials using a combination of cloud storage and distributed ledger technology.

b.4. Implementation and Development

Frontend Development: Utilized React.js for dynamic user interactions and API calls.

Backend Development: Implemented RESTful API services using Node.js and Express.js.

Blockchain Integration: Deployed basic blockchain functionality to ensure tamper-proof document storage.

Security Features: Implemented RBAC, encryption, and secure authentication mechanisms.

b.5. Testing and Evaluation

The system underwent multiple levels of testing:

Unit Testing: Individual components were tested for functionality.

Integration Testing: Ensured seamless interaction between frontend, backend, and security layers.

Performance Testing: Assessed response time and system load handling.

Security Audits: Verified encryption strength and access control effectiveness.

User Testing: Conducted usability tests with participants to collect feedback on system efficiency.

b.6. Deployment and Maintenance

Monitoring and Updates: Implemented logging mechanisms to track system performance and apply updates as needed.

Continuous Improvement: Future enhancements will focus on AI-driven document classification and integration with enterprise software.

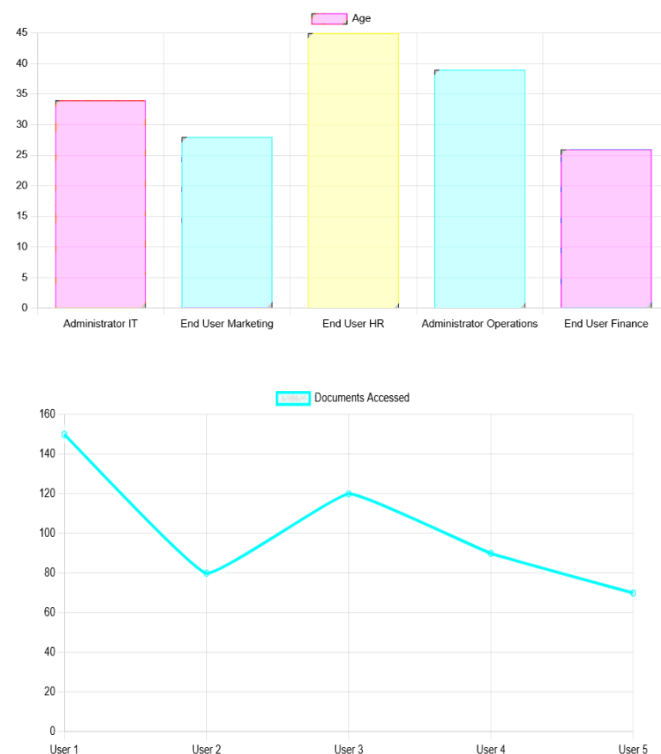
V. RESULT

The Doc Navigator study is all about building a digital platform that makes managing documents easier for everyone. It focuses on important areas like legal, financial, educational, and medical records, and it finds that many users struggle with having their documents scattered across different places. This highlights the need for a single platform that brings

everything together.

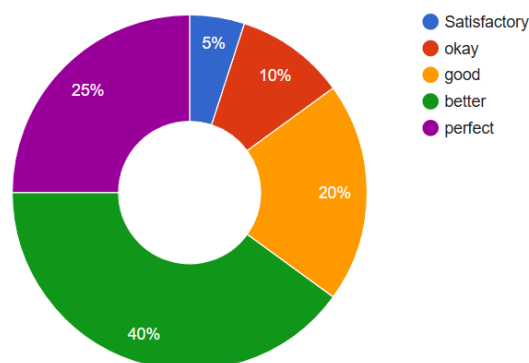
One big concern for users is making sure their documents are secure and authentic. That's why the platform plans to use blockchain technology to help with verification. The study also shows that users really want to work together on documents, which is why features for real-time editing and sharing are being added.

A. Usability Testing: ask participants to use the Doc Navigator prototype, and collect data on user interactions to evaluate system usability functionality, and user satisfaction.



B. User Acceptance Testing: Conduct user acceptance testing (UAT) to validate that the platform meets user requirements and performs functions effectively.

User Satisfaction Ratings



C. System Performance Testing: Test the platform for scalability, security, and reliability by simulating various user loads and document storage conditions.

System Performance Metrics

Metric	Value
Average System Uptime (%)	99.5
Average Response Time (ms)	200
Total Documents Stored	10,000
Number of Active Users	250
Number of Collaborations Last Month	150

Search functions are another crucial part of the project. By using machine learning, the platform will help users find what they need quickly. Lastly, the importance of keeping documents safe is a key takeaway, and the platform will implement strong security measures like encryption and role-based access control (RBAC) to protect sensitive information. Overall, the findings align well with the project's aim of meeting user needs with innovative document management solutions.

VI. CONCLUSION

Managing documents across various domains whether legal, financial, educational, or even medical has become an increasingly complex task in today's fast-paced world. That's where Doc Navigator steps in, offering a solution that brings together several key functionalities in one easy-to-use platform. It's designed to simplify the way users handle their documents, whether it's about generating, storing in the cloud, tracking expiration dates, or simply providing user support.

The platform consolidates these elements, making it much easier for individuals and organizations alike to stay on top of their document management. The user-friendly interface ensures that anyone can navigate the system without hassle.

And with its integration into the cloud, you have the flexibility to manage your documents no matter where you are or what time it is. What's more, it doesn't just stop at helping users with documents, it proactively sends out reminders before documents expire, ensuring that renewals happen on time.

Security is another critical aspect that Doc Navigator prioritizes. Knowing that sensitive data is often involved, the platform employs encryption and secure cloud services, giving users peace of mind that their information is safe. Looking ahead, there's great potential for growth. The platform could evolve to include AI-powered features like chatbots for customer service or automated systems for document verification. These enhancements would only serve to make the platform more efficient, offering even greater convenience for users.

At its core, Doc Navigator aims to address the growing need for reliable, secure, and scalable solutions to document management. And in a world where remote and digital services are only becoming more essential, it's well-positioned to rise to the occasion...

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