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Overall Description

This document outlines the software requirements for the DocuPal Demo project, which Docupal Demo, LLC is developing for Acme, Inc (ACME-1). The system will enhance ACME-1's document management capabilities. It is designed to integrate smoothly with ACME-1's current document management system and user authentication services.

User Characteristics and Environment

The target users are expected to be familiar with web-based applications. They will need access to a modern web browser to effectively use the system. The system is designed to be user-friendly for those with basic computer skills.

Dependencies and Constraints

The DocuPal Demo project has some dependencies. It requires the continuous availability of ACME-1's authentication service. Access to ACME-1's document storage is also essential for the system to function properly. These external components are critical for the system's operation. The system must adhere to ACME-1's existing security protocols.

System Features and Functional Requirements

The DocuPal Demo system provides core functionalities designed to streamline document handling and analysis for ACME-1. These functionalities include document upload, automated summarization, keyword extraction, and document comparison.

Core Functionalities

- **Document Upload:** Users can upload documents to the system. The system will support common file formats such as PDF, DOC, and TXT. Upon uploading a document, the system displays a progress indicator to the user. A notification

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confirms successful processing.

- **Automated Summarization:** The system automatically generates summaries of uploaded documents. Summaries capture key information and reduce the time needed for content review.
- **Keyword Extraction:** The system identifies and extracts relevant keywords from uploaded documents. This helps users quickly understand document topics. Extracted keywords will be displayed in a clear and concise manner.
- **Document Comparison:** Users can compare two documents to identify similarities and differences. The system highlights these variations.

Detailed Functional Requirements

1. **User Authentication:** The system requires secure user authentication. It validates user credentials before granting access to system features.
2. **Document Processing:** The system must accurately process documents of varying lengths and complexities. It maintains data integrity throughout the processing.
3. **Summary Generation:** The summarization algorithm must generate concise and coherent summaries. These summaries should retain the original document's meaning.
4. **Keyword Identification:** The keyword extraction algorithm must identify relevant keywords. It excludes common stop words and irrelevant terms.
5. **Comparison Accuracy:** The document comparison functionality must accurately identify differences. It presents the findings in an understandable format.
6. **Reporting and logging:** All uploads, summarization, keyword extraction, and comparisons are logged with date and time. Logs are used to generate various reports.
7. **User Interface:** The system provides an intuitive user interface. The design focuses on ease of use and clear navigation.
8. **Error Handling:** The system handles errors gracefully. It provides informative error messages to guide users.

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9. **Performance:** The system must perform efficiently. It should minimize processing time for all functionalities.
10. **Data Storage:** The system securely stores uploaded documents and extracted data. Access to this data is restricted.
11. **Scalability:** The system should be scalable. It accommodates increasing volumes of documents and users.

Priority Features

Document summarization and keyword extraction are the priority features for the initial release of the DocuPal Demo system. These features provide immediate value to ACME-1 by streamlining document review and analysis.

Non-Functional Requirements

The DocuPal Demo system must adhere to specific non-functional requirements to ensure quality and meet Acme Inc's expectations. These requirements cover performance, security, usability, and other crucial aspects.

Performance

The system should process a typical 10-page document within 30 seconds. This benchmark ensures efficient document handling and user satisfaction.

Security and Privacy

The system must comply with Acme Inc's established data security policies. It must also adhere to the General Data Protection Regulation (GDPR) to protect user data and privacy.

Usability and Accessibility

The DocuPal Demo system should be user-friendly and accessible to individuals with disabilities. It must conform to WCAG 2.1 Level AA accessibility standards. This ensures that the system is usable by a wide range of users, including those with visual, auditory, motor, or cognitive impairments.

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External Interface Requirements

User Interfaces

Users will interact with the system through a web-based user interface (UI). The UI will provide access to all system functionalities and present information in a clear, intuitive manner. Specific UI design and usability requirements are detailed in the User Interface Specification document.

Hardware Interfaces

The system does not directly interface with any specific hardware components beyond standard computing infrastructure (servers, network equipment, user workstations).

Software Interfaces

The system will interface with the following external software systems:

- **Acme Inc User Directory:** The system will integrate with ACME-1's existing user directory via API. This integration will be used for user authentication and authorization.
- **Acme Inc Document Repository:** The system will connect to ACME-1's document repository for secure storage and retrieval of documents. This connection will be established using secure file transfer protocols.

Communications Interfaces

All data exchange between the system and external entities (user directory, document repository, user browsers) will utilize the following standards:

- **Data Format:** JSON (JavaScript Object Notation) will be used for data exchange.
- **Protocol:** HTTPS (Hypertext Transfer Protocol Secure) will be used to ensure secure communication and data transmission.

System Architecture and Design

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Constraints

The DocuPal Demo project will use a microservices architecture. This choice supports scalability and ease of maintenance. The system must operate within Acme Inc's existing cloud infrastructure. This includes compatibility with their specific operating system and database versions.

We will adhere to DocuPal Demo's coding standards throughout the project. Our Agile development methodologies will guide the development process. These standards and methodologies will ensure code quality and efficient project delivery.

Use Cases and User Stories

Document Upload

A user logs into the system and uploads a document. The system must support various document formats. If the upload fails or the format is unsupported, the system will notify the user with a clear error message. Success means the document is stored securely and ready for processing.

Document Summarization

After uploading, the user requests a summary of the document. The system analyzes the document and generates a concise summary. The success of this use case depends on the accuracy and relevance of the generated summary.

Keyword Extraction

The user can also request the system to extract key words from the uploaded document. The system identifies and lists the most relevant keywords. Successful keyword extraction means the keywords accurately represent the document's main topics.

Document Comparison

A user uploads two documents and requests a comparison. The system analyzes both documents and highlights their similarities and differences. Success is achieved when the comparison accurately identifies the key points of overlap and

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divergence between the documents.

Data Requirements

This section outlines the data requirements for the DocuPal Demo project. It covers critical data entities, validation methods, storage protocols, and privacy/retention policies.

Data Entities and Attributes

The system will manage several key data entities. These include:

- **Documents:** Each document will be identified by a unique document ID.
- **Users:** Each user will be assigned a unique user ID.
- **Summaries:** Summaries will contain the extracted summary text.
- **Keywords:** Keywords will be stored as a list associated with each document.

Data Validation and Storage

Data integrity is paramount. All data will be validated against predefined schema definitions before storage. The system will employ a secure database with encryption to protect sensitive information.

Data Privacy and Retention

Data privacy will adhere to GDPR guidelines. Data retention policies dictate that user data will be deleted after one year of inactivity. This ensures compliance and minimizes storage overhead.

Data Definitions, Flows and Database Needs

The system will handle structured and unstructured data, primarily text. Data flows involve ingestion of documents, extraction of summaries and keywords, and storage in a relational database. The database must support efficient text search and retrieval.

Data growth projections over the next three years necessitate a scalable database solution. We anticipate a significant increase in data volume as the user base expands and more documents are processed.

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Assumptions and Dependencies

Assumptions

The successful implementation of DocuPal Demo relies on several key assumptions. It is assumed that all users possess a stable internet connection, enabling consistent access to the application's features and functionalities. We also assume that ACME-1 will provide timely access and support for their existing authentication service.

Dependencies

This project is dependent on ACME-1's authentication service for user authorization and access control. Furthermore, the application relies on ACME-1's document storage solution for storing and retrieving documents. The system also incorporates third-party natural language processing libraries to enhance its functionality. Any changes to these external components may impact the project.

Constraints

The DocuPal Demo project is subject to several constraints that may impact its design and implementation.

Technological Constraints

Limited bandwidth may affect the speed and reliability of large document uploads. Storage capacity limits the total amount of data that the system can accommodate.

Legal and Compliance Constraints

The system must comply with all applicable copyright laws regarding document handling. Data privacy regulations also impose restrictions on how user data is stored, processed, and accessed.

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Impact on System Functionality

These constraints may limit the size of individual documents that can be processed. The number of documents that can be processed concurrently may also be limited. Careful consideration will be required in the design to mitigate these potential impacts.

Acceptance Criteria

Acceptance of the DocuPal Demo project hinges on several objective measures. The system must achieve stakeholder approval during User Acceptance Testing (UAT). Performance benchmarks, including processing time and summarization accuracy, must be met. Adherence to all specified security policies is mandatory for acceptance. User satisfaction scores will also be a key indicator of successful delivery. System quality will be tested through unit and integration testing in addition to UAT. Load testing will assess performance under expected usage conditions, ensuring the system's stability and responsiveness.

Traceability Matrix

This traceability matrix ensures that each requirement is linked to its corresponding design elements, code implementation, and testing procedures. We will use Jira and Confluence to maintain end-to-end traceability throughout the software development lifecycle. This approach confirms that all requirements are addressed and verified, contributing to a high-quality final product for ACME-1.

Requirements Traceability

Each requirement will have a unique identifier to facilitate traceability. This identifier will be used in design documents, source code comments, test cases, and other relevant artifacts. The requirements management tool will link requirements to specific tasks in Jira, allowing for real-time tracking of progress and status. Confluence will serve as a central repository for all related documentation, including design specifications and test plans. This integrated approach ensures that any changes to requirements are quickly identified and communicated to the relevant teams.

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Glossary

This glossary defines specialized terms, acronyms, and abbreviations used within this Software Requirements Specification (SRS) document. It ensures clarity and common understanding among all stakeholders involved in the DocuPal Demo project for ACME-1.

Technical Terms

- **Document Summarization:** The process of condensing a large document into a shorter version that retains the most important information. This involves analyzing the text and extracting key sentences or paragraphs to create a concise summary.
- **Keyword Extraction:** An automated process that identifies the most relevant words and phrases in a text. These keywords provide a quick overview of the document's subject matter and help in information retrieval.
- **Natural Language Processing (NLP):** A field of computer science focused on enabling computers to understand, interpret, and generate human language. NLP techniques are used for tasks such as text analysis, machine translation, and chatbot development.

Abbreviations

- **API (Application Programming Interface):** A set of protocols and tools for building software applications. APIs define how different software components should interact, enabling seamless integration and data exchange.
- **GDPR (General Data Protection Regulation):** A regulation in EU law on data protection and privacy for all individuals within the European Union and the European Economic Area. It also addresses the export of personal data outside the EU and EEA areas.
- **WCAG (Web Content Accessibility Guidelines):** Part of a series of web accessibility guidelines published by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). They are universally accepted standards for web accessibility.

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Revision History

This section tracks changes made to this Software Requirements Specification (SRS) document. It ensures that all stakeholders are aware of the evolution of requirements throughout the project lifecycle.

Document Revisions

Version	Date	Author	Approver	Description
1.0	2024-11-15	John Smith	John Smith	Initial draft of the Software Requirements Specification for the DocuPal Demo project, covering core functionalities and system architecture.
1.1	2025-01-20	Jane Doe	Jane Doe	Updated the security requirements to align with the latest industry standards and address potential vulnerabilities identified during review.

Appendices

Supporting Documentation

Acme Inc.'s security policies serve as a key reference point. These policies guide our security implementation. GDPR compliance documentation from Acme Inc. also informs our data handling practices.

Technical Standards

We adhere to WCAG 2.1 to ensure accessibility. Our processes also align with GDPR standards for data privacy. These standards shape our development and testing efforts.

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