Document Management System

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Abstract

Record keeping has been done since time immemorial. As processes became complex, the number of documents created increased, and as technology evolved paper documents were replaced with digital documents. It became necessary to have systems that could make it easy for users to store and search documents. Document Management Systems (DMS) were developed to satisfy these requirements. This paper describes a typical DMS, its features, architecture, uses, and new technologies.

Keywords : Document Management System, workflow

I. INTRODUCTION

A document management system is a software used to store, manage, and track electronic documents and reduce use of paper. A Document Management System (DMS) can be a standalone application or it may be integrated with enterprise wide applications such as Enterprise Resource Planning (ERP) systems. The global document management system market was valued at USD 5.51 billion in 2020 and expected to reach USD 11.47 billion by 2026 and grow at a CAGR of 13.05% over the forecast period 2021 to 2026 [1].

II. FEATURES OF DOCUMENT MANAGEMENT SYSTEM (DMS)

A document management system includes the following:

↳ **Storage Location :** Electronic documents can be uploaded and stored in the system. The electronic documents are either scanned copies of paper documents or these documents come from different channels like the internet, email, mobile.

↳ **Security and Access Control :** This gives access to authorized persons only. Timed lockouts can be also be implemented. Access and editing can be allowed after approval from an authorized person.

↳ **Indexing :** Documents are associated with keywords or metadata that are used to search them faster using the metadata. Metadata can be date of creation of a document.

↳ **Version Control :** As documents are updated from time to time, version control is done to save different versions of a document and retrieve them as required. Notes can be associated with different versions to understand why changes were made. It is also possible that rollback to an older version is required because of errors or some other issues.

↳ **Comparison Tools :** These can be used to quickly compare different versions of a document.

↳ **Annotation Tools :** Users can use these tools to annotate documents or add comments.

↳ **Workflow :** Document management systems may have an in-built workflow system or may integrate with independent workflow systems. With rules-based workflow, the flow of a document through a process can be controlled. As an example, after an invoice is approved by the purchase department, it is routed to the accounts-payable department. Dynamic rules allow branches to be created in a workflow process. For example, if the invoice amount is lower than a certain amount, it is sent through different routes in the process. Advanced workflow

Fig. 1. Features of Document Management System

mechanisms can manipulate content or signal external processes while these rules are in effect [2].

↳ **Audit Trail :** An audit trail provides complete history of a file, when it was accessed, by whom, changes made. This information is important and can be used for regulatory compliance.

↳ **Disaster Recovery :** Disasters can be natural like floods, earthquakes or man-made such as IT system failure or fire. To ensure that business is not affected by loss of information :

(a) Information is stored offsite in protected data facilities that are easily accessible from anywhere via the internet.

(b) 24/7 operations provide uninterrupted data availability.

**(c)** Automated back-ups remove the burden on IT resources.

(d) Process and security controls ensure that information is safe and readily accessible system.

III. ARCHITECTURE

Fig. 2 shows the architecture of a document management system. It consists of Application administration layer which is composed of document alert system, integrity check system. backup, document scanning system, and indexing engine. Documents are stored in document database, key information is stored as metadata in repository. The documents are archived in archival data repository. User management, folder management, and work area management are done through web based user interface (UI). Users can access the document management system and make use of its functionalities through a web browser after authentication.

IV. USES

Document Management System can be used in different industries that require a large number of documents to be
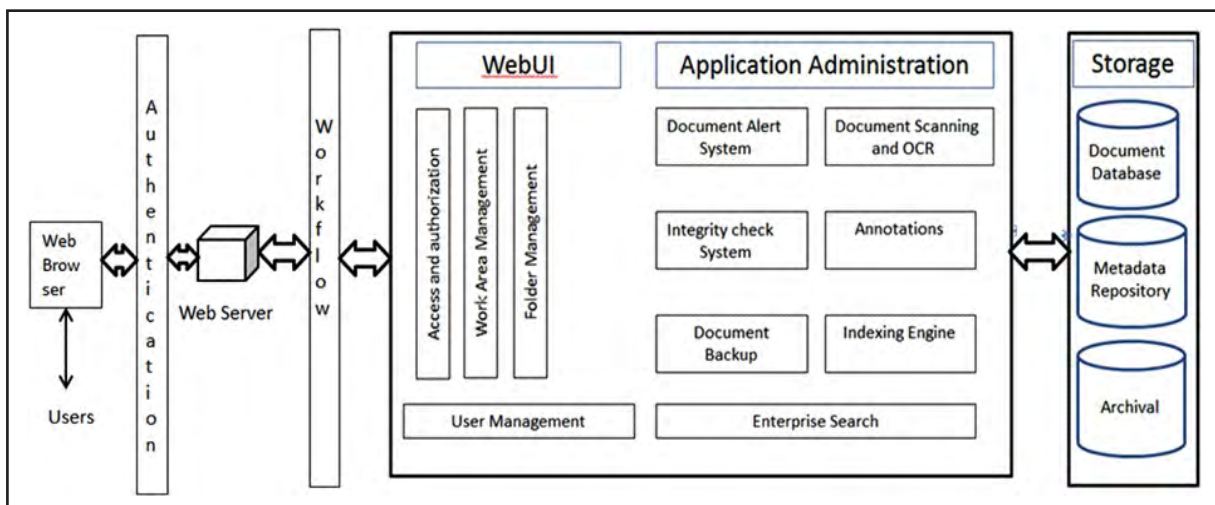
Fig. 2. Architecture of Document Management System

managed, for example, legal, healthcare etc. The features of a DMS help in record keeping, innovation, easy storage and retrieval, tracking changes, analyzing information, and project control [3].

- ↪ Accountancy
- ↪ Legal
- ↪ Medical
- ↪ Engineering
- ↪ Healthcare
- ↪ Insurance
- ↪ Manufacturing
- ↪ Government

V. NEW TECHNOLOGIES

New technologies like Artificial Intelligence are now being used for accurate content extraction, structured classifications, and sentiment analysis. Contextual content is used to automate business processes. Cloud platforms are now being used for DMS.

VI. CONCLUSION

DMS decreases cost of content management, streamlines processes and makes them efficient and intelligent. Nimble platforms such as Cloud for DMS will replace legacy systems that are difficult and costly to maintain. To be competitive, companies are looking at a more comprehensive view of digital content within and outside their organizations, for example, social media, and are also using Artificial Intelligence for intelligent extraction and interpretation of content.

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About the Author

Deepak Jain is an experienced engineer and product leader with a demonstrated history of working in the computer software industry solving technically challenging problems at scale. Eager to build products, solving real-time problems, Deepak founded Subtlelabs as a software engineering company that is today serving customers across the globe. He had earlier worked with global companies and architected solutions in Healthcare, Security, Fintech, Logistics, and CRM domains.