Modern Workspace-Based Policy Management with Automated Keyword Extraction and AI Based Records Management using Azure Cognitive Services

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ABSTRACT

Every Organization will have their own standards and work formats, to establish their standards among employees and other users, the organization will create policies. These policies need to be maintained properly and need to be retrieved whenever needed. The main difficulties in the process of creating policies are, getting approval from approvers (authorities) and keeping track of approval status, and extracting keywords from the policies for easier search and future retrieval. The measures to overcome these difficulties are discussed in this paper. The main aim of this paper is to explore the ways to create a modern workspace-based policy management with multiple level authoring and approval with both publishing and consumption views, in order to overcome the inefficient and complex methods of maintaining and managing documents across the organization. This system has multi-level approval workflow, AI based records management and use of Microsoft Office 365 Graph APIs to take care of regulatory functions based on certain business criteria.

KEYWORDS: extraction, Policy management, Azure cognitive services, Power automate workflow, Text analytics, Document library

1. INTRODUCTION

Several Organizations created a number of policies during their evolution to define their standards and work formats. These policies are created, verified, approved, published and maintained by the organization with lots of effort. To make these things simpler and easier we are discussing a few techniques in this paper. The main scope of this paper is to explore the ways to overcome the difficulties and reduce the efforts of users in the process of policy creation and management.

The policies created by the organization can be retrieved easily with the help of keywords, which enhances the efficiency of search. The keyword extraction can be done automatically by applying key phrase extraction API which is a Text analytics API of Azure cognitive services.

The Power automate workflow will keep track of policy approvals. Modern workspace-based policy management with multiple level authoring and approval enables entitlement-based access to create, edit and approve policy along with AI based records management function to take care of regulatory functions. The Policy creation and management can be made easier by implementing the above mentioned techniques.

1.1. Existing Policy management system

Companies have their policies created and maintained locally within the legal department or by individual policy owners. In order to get approval from authorities the policy owner needs to inform the authorities about the context of the policy and he has to send links to them to review the policy. If the policy is rejected by the authority, he has to inform the policy owner then the policy owner needs to change the policy and resubmit it for approval. Once the authority approves the policy, then the policy owner has to send it to the next authority for approval. These steps require continuous monitoring and take huge time of the policy owner, to do everything manually.

Periodic updates need to be done to the policy documents before the validity ends, this needs proper governance and to be done appropriately. The policy documents reside in the local computers of the policy owners and sometimes in multiple locations, without suitable controls. This leads to inefficient management of policy documents and sometimes leads to data loss due to deletion or corruption of the document.

1.2. Modern workspace-based policy management system

To overcome the business problem in existing method, we are going to create an entitlement-based platform where users can create policies, have them approved through a workflow based on metadata information within SharePoint and then view them and edit in future revisions. This system will also feature an AI based records management function to take care of regulatory functions based on certain business criteria. This system reduces the efforts and time of policy owners to create and maintain the policies.

The above will be achieved using existing public cloud based cognitive services. This will also leverage Microsoft Office 365 Graph API to provide records management.

2. Policy management and maintenance

In this modern workspace-based policy management system two portals are available, one is an admin portal and the other is a public portal. The admin portal will be accessible to only Admin, Policy Owners and Policy Approvers. This portal will be used for creating policy and approving the policy. In the admin portal authors will have the ability to upload the document into the "Policy Documents" library. The public portal will have all the published policy documents in PDF format. Here, the site will be provisioned with Read Only access to all users except admin. In the public portal only the policies that are currently in act will be displayed. In the admin portal, the users can access all the policies that are created in that organization, here the policy owners can create new policies and submit them for approval.

2.1. Authorities approval workflow

In an organization whenever a policy is created, it needs to get approval from a series of authorities, while creating the policy the policy owner can select the list of authorities who need to approve the policy. Once the policy is created and submitted for approval, the list of authorities will be getting an auto generated email with a link to the policy document for approval. The authorities need to know about the context of the policy, and they need to approve the policy. If the first level authority feels like something need to be changed in the policy, then the authority can write a review about the policy which will be sent as an email to the policy owner, with the help of the review the policy owner can make changes to the policy document and resubmit it for approval from the authorities. If the first level authority approves the policy, then the next level authority will be getting an email to approve the policy. Once the policy is approved by all the authorities it will be automatically published in the public portal in the form of PDF for normal user's access. Once the policy is published in a public portal the user can view as well as can download the policy PDF. All these steps are done automatically as a workflow with the help of power automate workflow.

In existing systems these processes need to be taken care of by a person and that person needs to manually get approval from each authority and needs to publish the policy once everything is done, but here these processes are done automatically as a power automate workflow.

2.2. Searching of Policies

The retrieval and accessing of policies that are created by that organization can be done with the help of keywords. The users can get the policy document which they wish to see, by searching the documents using the keywords, these keywords are extracted from the document with the help of key phrase extraction API, which increases the efficiency of search and decreases the accessing time of the user.

2.3. Periodic policy updates

In some cases, the policies created in an organization will be valid only for a certain time period, within that period the policy document needs to be updated. In such cases, the user will be getting notification with a link to update the policy, if the validity of the policy is going to get over soon. The user can update the policy document by clicking the update option in the notification. This helps the user to update the policies on time before losing the valuable data.

3. Architecture Diagram
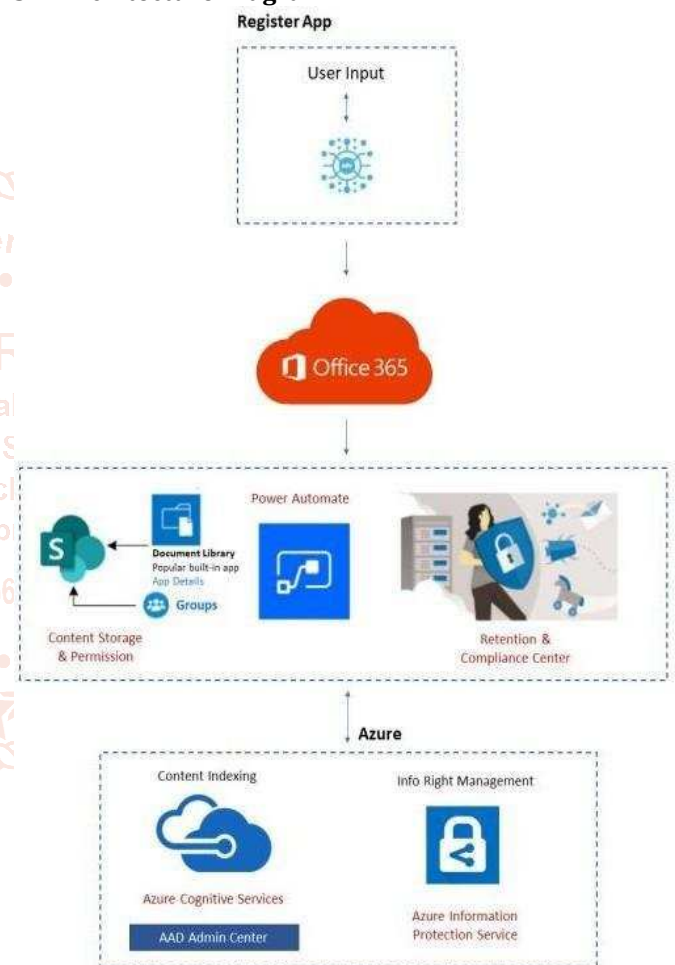
The proposed solution uses SharePoint as its primary document repository. In SharePoint there is a built-in entity called Document Library. This document library is used as a repository for storing the documents.

The document library will have the metadata fields which will be used for storing the properties of the document.

Users will have a form which they will be using for keying the details of the policy and will upload the policy. The uploaded policy will be stored in the document library by using Microsoft Graph REST API call. Once the policy is uploaded, Power Automate workflow gets triggered and the approval process gets started. Workflow is responsible for sending email notification and updating the status of the

policy based on approver input. Once all the policy is approved by all approvers the workflow will call the Azure Cognitive Services and pass the policy document as input to the service. The service will extract the keywords based on the defined text extraction algorithm and populate the metadata for the uploaded policy.

4. Technologies employed in modern workspace-based Policy management system

The following are the technology stack that has been used to develop the modern workspace-based Policy management system, Power Automate for approval and email notifications workflow, text analytics API for keyword extraction, SharePoint online a repository for storing the policy documents.

4.1. Power Automate workflow

Workflow is a series of steps that needs to be done in a sequential order. Power automate is a service in Microsoft Power platform, using which we can design logics for a workflow. It maintains data consistency when multistage workflows are created. Workflows can be created easily with help of this power automate, which increases collaboration and productivity in business. It can be integrated with SharePoint, OneDrive for Business, and Dynamics 365. In our system, the Power Automate is responsible for sending out emails and updating status after each approval process is completed. This workflow gets triggered as soon as the "Approver" or "Reject" option is selected by the approver.

4.2. Text Analytics API:

Text Analytics API is a cloud-based service for text analytics developed with the machine learning algorithms of Microsoft. This API falls under the Azure Cognitive services for text analytics. Natural language processing techniques are used in this API to analyze unstructured text. The text can be analyzed in following ways for sentiment analysis, key phrase extraction, language detection, and named entity recognition.

4.3. Key Phrase Extraction API

Key phrase extraction API is one among the Text analytics API, it is very powerful in text analysis that is to index data, it provides a list of relevant keywords and phrases in order to make the search more efficient and focused. It also reduces the search time of the user. In our system the keywords are extracted from the document and stored as indexed data in the document library.

5. CONCLUSIONS

Modern workspace-based policy management system makes the process of policy creation and maintenance much easier, by providing automated workflows and notifications for updates, with the help of the workflows the multi-level authoring and approval tasks are made easier. This also features automatic keyword extraction which makes the search of policy document much efficient and less time consuming. This system makes use of the Azure cognitive services for extracting keyword information from the document and saving it as properties of the document. It has an AI based records management function to take care of regulatory functions.

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