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Review Article

Intelligent Business Document Processing Using SAP AI Business Services

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Abstract - *This document reviews a new feature introduced in SAP Business Technology Platform (BTP) for intelligent business document processing using SAP AI business services. The cost of manual processing of business documents, such as invoices and shipment notifications, is about 65% of the overall processing cost; hence, automation of business document processing can help businesses achieve significant cost reductions. Business Document Processing on SAP BTP provides strategic machine learning capabilities to automate and optimize this process.*

Keywords - *Business Document Processing, Business Data Matching, Machine Learning, SAP AI, SAP BTP.*

1. Introduction

Artificial intelligence (AI) and machine learning are omnipresent in all industries today. We encounter its applications in our day-to-day life, right from shopping online to browsing content on YouTube. Enterprise Resource Planning (ERP) systems are no exception, and SAP has laid down a solid foundation of AI on SAP BTP and has embedded AI capabilities in native applications across multiple lines of business on SAP Cloud offerings, including SAP S/4HANA Cloud, SAP SuccessFactors, SAP Concur, and SAP Fieldglass.

SAP has created AI services on BTP that can be leveraged for business applications. SAP Document AI is one such service available that helps to process large numbers of business documents containing a wide variety of content and structures. It can extract data across different sections and layouts from the uploaded document, irrespective of the arrangement of sections in the document. SAP Document AI automates information extraction from business documents and data enrichment by matching a business document to the enrichment data records based on the information extracted from the document. The solution can be shared across multiple customers by running on a shared compute unit.

2. The Concept of Business Document Processing

The objective of Business Document Processing is to enable automatic data extraction from the business documents and transform this data using the business context from the master data available in the system database, making it useful to insert into the existing business processes. It uses machine learning-based document processing to transform extracted data from input documents into structured information. Document processing is carried out in three steps: Information Extraction, Business Data Matching, and Information Embedding. Information extraction refers to the extraction of semantic information from documents. Business data matching enriches the extracted information in your business data. The data enrichment process is automated through machine learning algorithms. Information embedding is embedding the extracted and enriched data into systems and processes.

3. Business Document Processing Portfolio

The following four business services are currently available on SAP Business Technology Platform -

3.1. Document Classification

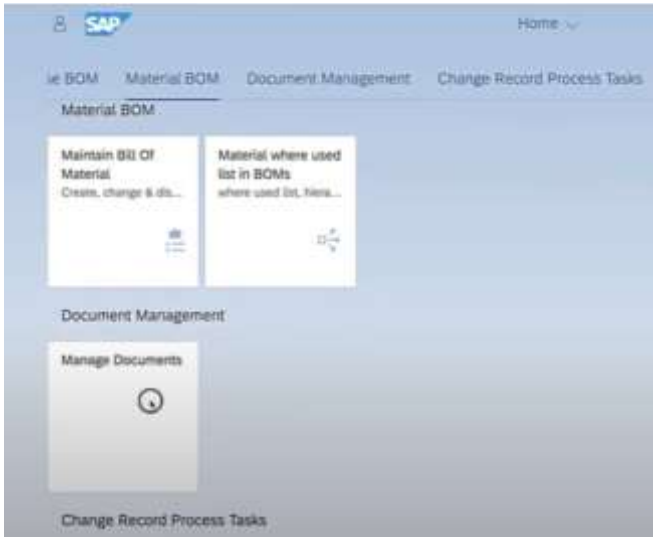
Document Classification is a machine learning solution that offers automatic and customer-specific classification of documents. Customer's training data creates a customer-specific classification model. The customer-specific classification models are trained based on a subset of already classified documents.

For example, a customer service representative, Jon, is responsible for classifying the incoming documents from a customer before forwarding them to various departments within the company. The earlier practice was to open each document to read and classify it manually, requiring significant manual effort and time. With the new Document Classification service, Jon can simply upload the incoming

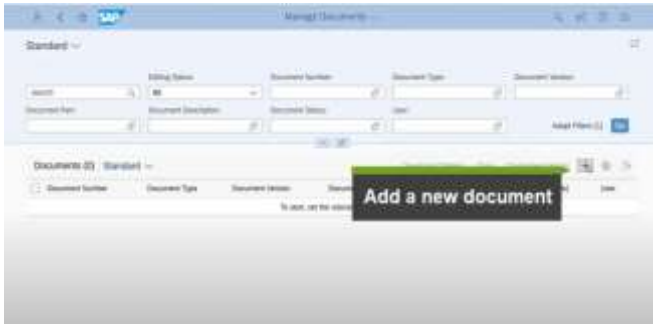
documents and let the system automatically scan and classify the documents, saving significant time and effort and making the entire process much faster.

The following screen sequence shows us the steps to be followed in SAP for document classification-

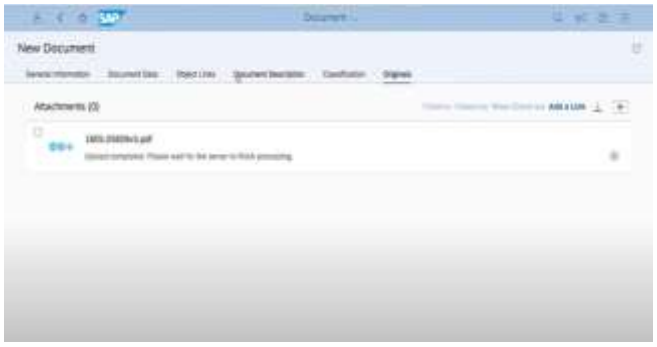
Click on the Manage Documents Fiori tile-



Add the input document to be classified as a new document-



The following screen shows the input document uploaded for classification-



Click on get classification proposal-

The service proposes the document type and confidence level-

3.2. Document Information Extraction

Companies receive paper-based documents from their business partner regularly, and the information from these physical documents must be entered into their enterprise resource management systems to maintain the system of records. When performed manually, this important activity can become a time-consuming chore for the employees.

For example, a Billing Analyst, Sandra, is responsible for scanning incoming invoices from suppliers and entering the information in the system to process the invoice and corresponding payment. This manual process is time-consuming and prone to errors. Document Information Extraction service automates this process by utilizing artificial intelligence and machine learning. It extracts information accurately from both standard and custom business documents.

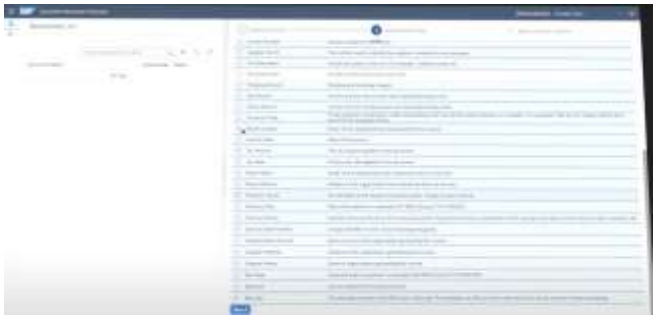
Document information extraction also enables the enhancement of extracted information from incoming documents by utilizing the master data from the ERP database. It uses an advanced algorithm to match the extracted information with the master data, providing more context for the extracted information. The service can also read 1D and 2D barcodes, including QR codes. It supports e-invoices in PDF and XML hybrid formats as well as the Factor X and Souq fairt standards. For documents in non-standard format, the service allows you to teach it to recognize the layout of custom documents by creating your own templates. It can detect the right template for custom documents the next time you process a similar document.

The following screen sequence shows us the steps to be followed in SAP for document information extraction-

Enter the document type, e.g., invoice, shipment notification, etc.

Select the document to be uploaded-

In step 2, select the header fields to be extracted from the document-



The following screen shows the header fields extracted from the document-

The extracted information is then reviewed and can be edited, if needed.

3.3. Business Entity Recognition

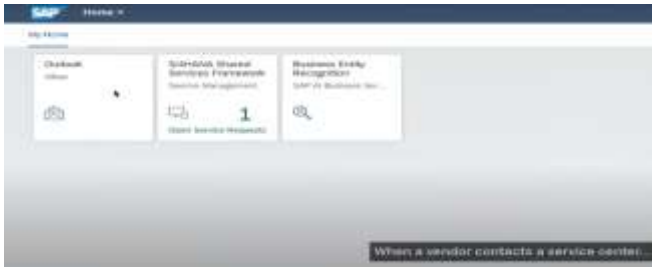
Business entity recognition is an AI business service that automatically extracts any given type of entity from unstructured text. It utilizes a pre-trained machine learning model to recognize entities in document text. With this service, any request received over email in an unstructured text format can be catered to by detecting and classifying the information into pre-defined categories.

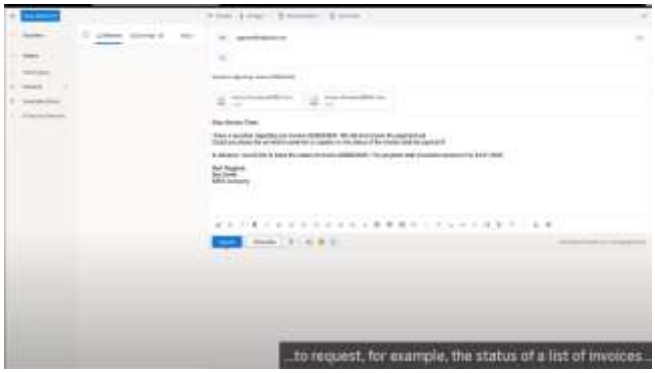
For example, a customer service representative, Jon, is responsible for responding to customer queries and providing information on the status of customer deliveries and invoices. He receives these requests via email. In the earlier manual process, Jon would need to raise a service ticket to extract the information from the email and search for it manually in the ERP systems. This increases lead time in responding to the customer.

With the Business Entity Recognition service, the process can be automated to detect and classify the information received in the email. By further integrating this service with solutions such as the SAP Shared Services Framework and SAP Service Ticket Intelligence, the relevant information can be extracted from SAP without the need to switch between multiple systems.

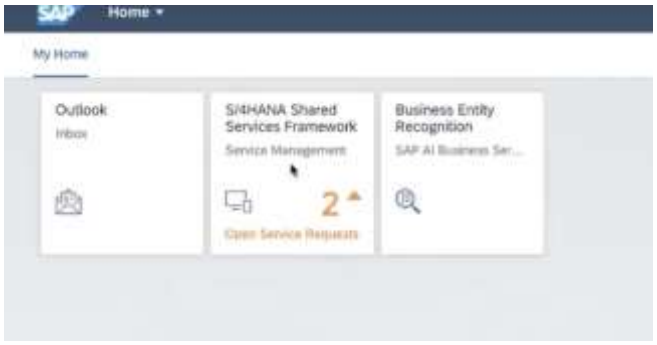
The following screen sequence shows us the steps to be followed in SAP for business entity recognition-

Sample email received from the vendor to request, for example, the status of a list of invoices-

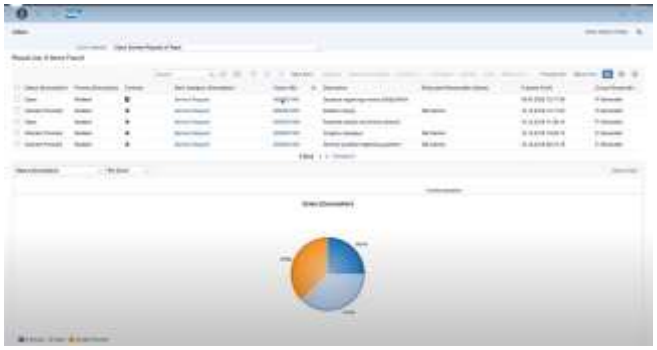




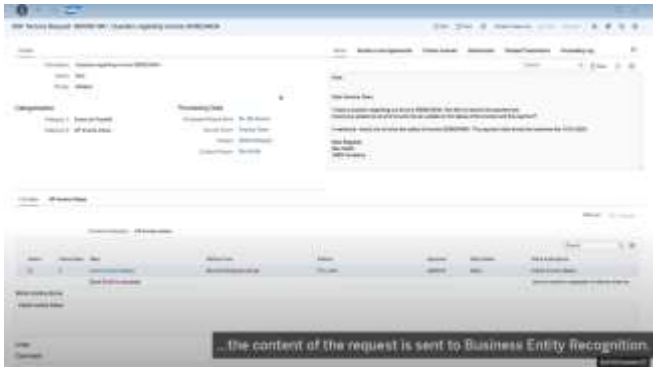
Open the service request using the S/4HANA Shared Services Framework-



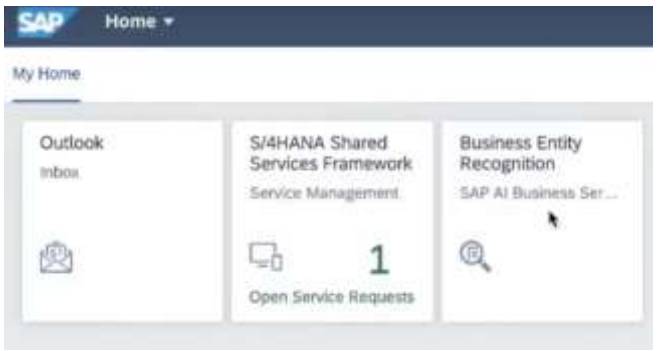
List of service requests available in the Shared Services Framework-



The content of the service request is sent to business entity recognition-



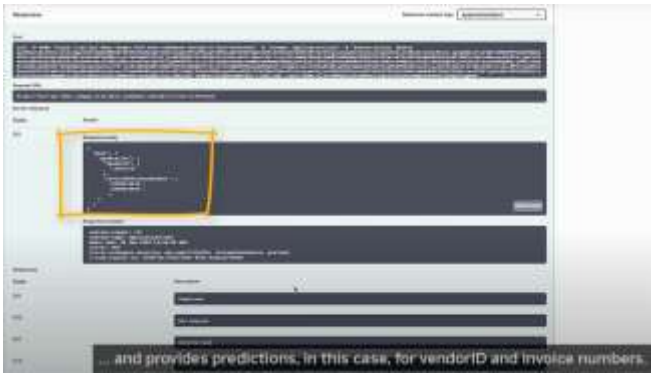
Click on the Fiori tile for the Business Entity Recognition service-



API for Business Entity Recognition-

Business entity recognition extracts the entities from the text-

The business entity recognition provides predictions on the extracted entities-



3.4. Business Optical Character Recognition

The Business Optical Character Recognition service is used ot detect the language of the text and to select the best Optical Character Recognition (OCR) model to extract text from the business documents.

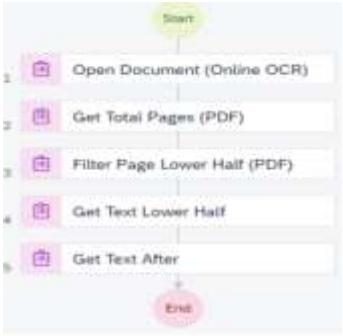
For example, an Account Business Manager, Neha, needs to upload a customer contract in the system. In the earlier system, she would enter the details, such as the customer name, product details, quantity, etc., manually. The process was tedious, time-consuming, and prone to errors. With the Business Optical Character Recognition service, the system has the ability to extract these details from the uploaded contract copies. This makes the process a lot easier for Neha, allowing her to focus on more important tasks.

The difference between the Business Optical Character Recognition service and the Document Information Extraction service is that the former focuses on extracting the information string for further processing, whereas the latter also processes semantics post information extraction.

The following screen sequence shows us the steps to be followed in SAP for the business optical character recognition service-

Enter the document path of the input document in the documentPath field-

Drag and drop the required PDF activities-



4. Conclusion

Intelligent business document processing with SAP AI Business Services has demonstrated immense potential in automating repetitive tasks, allowing employees to focus on more strategic activities, such as continuous improvement and continuous development. This promotes a culture of innovation and growth, as employees get to focus on more interesting ideas and value-adding tasks, leading to higher job satisfaction and better employee retention.

By reducing manual effort, organizations can achieve substantial savings in both time and operational costs, allowing resources to be reallocated to higher-priority areas. The consistency and accuracy offered by AI-driven automation also minimize the risk of human error, leading to improved data quality and more reliable decision-making. Furthermore, automated document processing supports greater scalability, enabling businesses to handle increased workloads without a proportional rise in staffing or administrative overhead.

Collectively, these benefits contribute to a significant increase in overall operational efficiency, ultimately strengthening an organization's ability to remain competitive in a rapidly evolving market landscape.

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