

Mother'son Technology Services Helps

MATE

Enable Intelligent Invoice Processing Using Amazon Textract



Client Overview

Mother'son Automotive Technologies & Engineering (MATE) is the polymer division of Mother'son Sumi Systems Ltd spanned across India in multiple locations. MATE manufactures a wide range of plastic components for the automotive and non-automotive industry and specializes in large-size injection molding, blow molding, compression molding and vacuum forming, supported by post-molding operations.

Business Challenges

MATE's back-office operations team used to process thousands of supplier invoices every month in multiple formats. The invoices were received and scanned, following which they were manually updated into the system for downstream processing by operators, thus formed the basis for on-time supplier payments. A team of 12 resources was engaged in the process leading to undifferentiated activity and increased operations cost.

Ultimately, MATE realized the need to automate the whole invoice processing system using off-the-shelf OCR solutions as the complete process was time-consuming and error-prone. However, they failed to achieve satisfactory results due to the below challenges:

1 Multiple Invoice Templates

2 High Licensing Costs

Our Solution

MATE was looking for a solution involving reasonable cost and minimal operations overhead. As a result, they partnered with us to overcome these challenges and attain optimal performance. We evaluated the overall challenges faced by MATE and determined an ML-based solution as the best fit for invoice handling.

Being an APN partner in the incubation initiative of Amazon Textract, we used this opportunity to demonstrate its success in invoice processing to MATE. The solution provided the required level of accuracy with minimal operational overhead and faster time to production.

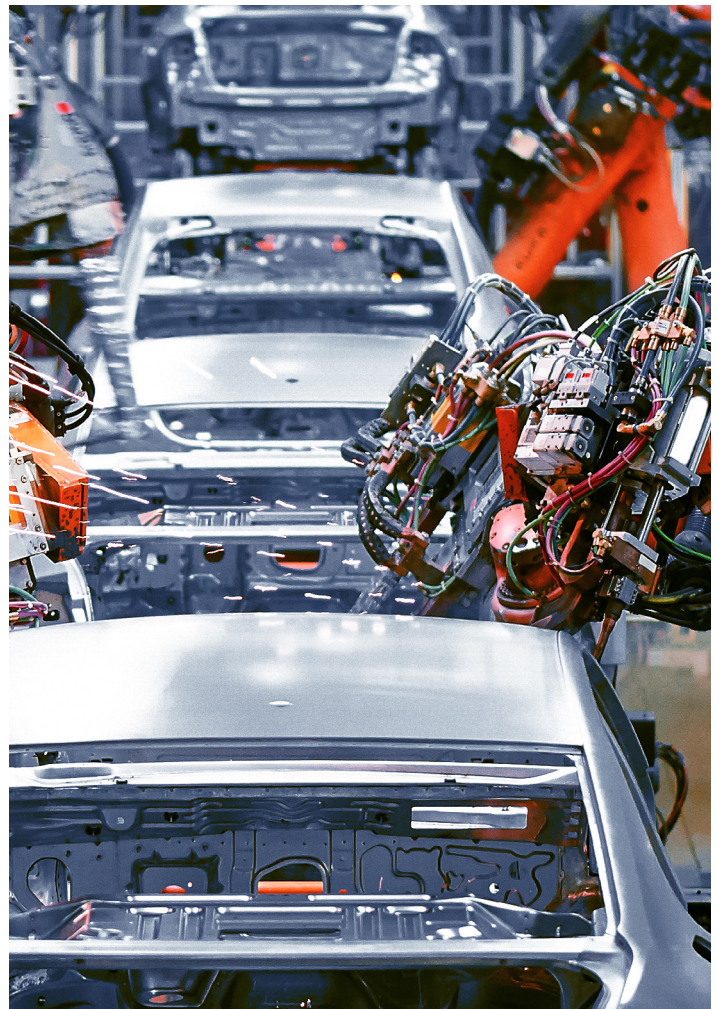
The overall invoice processing solution was architected using serverless technologies, including AWS Lambda, Dynamo DB and Amazon Textract. The supplier invoices are now scanned and uploaded into an S3 bucket which triggers a workflow to process the invoice through steps based on the confidence that the detected data is integrated into the downstream system.

The workflow consists of the following steps:

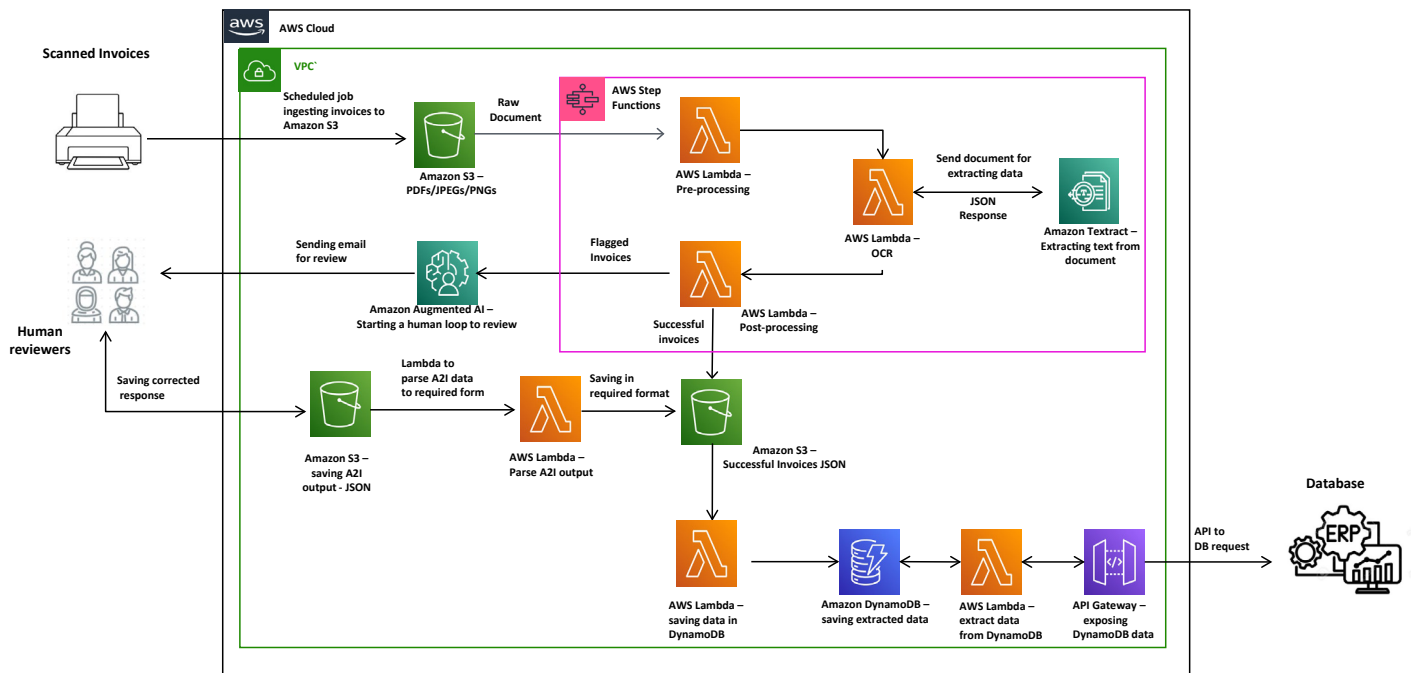
- **Augmented Human Loop** – Amazon A2I is used to review and edit the flagged invoices manually.
 - **ERP Integration** – The processed data is entered into DynamoDB, from where it is further extracted periodically to post it to the invoice processing ERP application.
- The job starts with running the scheduler (daily); the invoice ingestion program picks up the scanned invoices and puts them in an Amazon S3 bucket.
 - As the invoices get uploaded into the bucket, it triggers step functions that orchestrate Invoicing Processing for each Invoice document.
 - **Pre-processing** – Invoice documents are cleaned using an image processing library to increase readability.
 - **Textextract Extraction** – The invoice data is extracted based on the identified template. Both form and raw data are extracted for post-processing.
 - **Post-processing** – Information is extracted based on the invoice template. Data is further validated to improve the quality of the solution and help ensure the extraction of relevant mandatory fields with high confidence.

AWS services used

- Amazon API Gateway
- AWS Lambda
- Amazon S3
- Amazon DynamoDB
- Amazon A2I
- Amazon Textract
- Amazon CloudWatch
- AWS Step Functions



Solution Architecture



A Quick View of how AWS Services Helped in Invoice Digitization

- Amazon Textract to extract data from PDF**
 Amazon Textract is a fully managed machine learning service that automatically extracts printed text, handwriting, and other data from scanned documents beyond simple optical character recognition (OCR) to identify, understand, and extract data from forms and tables. With its implementation, we helped MATE extract data from scanned invoice documents format and used machine learning to read and process the invoice instantly.
- Amazon S3 to store files in different stages**
 Amazon S3 helped store raw invoice documents, pre-processed invoice documents, and store final JSON output files.
- AWS Lambda to run code serverless for pre-processing and post-processing**
 we helped MATE implement AWS Lambda, allowing them to run code for the invoice processing- all with zero administration. Here, pre-processing lambda and post-processing lambdas were set to be automatically triggered from different S3 buckets.
- DynamoDB to store key-value pairs from processed JSON**
 With DynamoDB, we enabled MATE to achieve single-digit millisecond performance and helped to store processed JSON for invoice documents.
- AWS Step functions to orchestrate pipeline**
 Using AWS Step Functions, a serverless function orchestrator, we made it easy to sequence AWS Lambda functions and multiple AWS services into invoice processing. Its built-in operational controls make the output of one step act as an input to the next.

Benefits

We helped MATE successfully deploy the solution enabling invoice processing with high accuracy. Resultingly, only 20% of the invoices required manual review, leading to 40% savings in team efforts (FTE's) immediately. Below are the major benefits derived:



40% Reduction in Overall Efforts and Cost



> 60% Reduction in End to End Cycle Time for Invoice Processing



Improvement in Processing Quality with Reduced Errors

About The Partner

Founded in 1975, Motherson Group is an industry leader and one of the world's largest manufacturers of components for the automotive and transport industries. The group's diversified portfolio makes it a complete solutions provider across the globe. Motherson Group serves its customers with a wide array of products and services through multiple business divisions including wiring harness, vision systems, modules and polymer, technology & software, aerospace, health & medical, logistics, retail and metal products. Motherson Technology Services is a global technology company that offers a consulting-led approach with an integrated portfolio of industry leading solutions that encompass the entire enterprise value chain. Our technology-driven products and services are built on two decades of innovation, with a future focused management philosophy, a strong culture of invention and co-innovation, and a relentless focus on customer-centricity. An SEI CMMI Level 5 company, we have delivered best-in-class services to 430+ clients in 41+ global locations across all continents. We are a business division of Motherson Group, one of the largest manufacturers of components for the automotive and transport industries worldwide with 150,000 employees across the globe.

