

# Motherson Technology Services Helps **Max Healthcare** Enable OCR Document Processing Using Amazon Textract

## Client Overview

Max Healthcare Institute Limited ("Max Healthcare") is one of India's largest healthcare organizations operates at 16 healthcare facilities (3400 beds) across the NCR Delhi, Haryana, Punjab, Uttarakhand, and Maharashtra. Almost 85% of bed capacity is in Metro/Tier 1 cities. Apart from hospitals, Max Healthcare also operates a homecare business and pathology business under brand names Max@Home and Max Labs respectively. Max@Home offers health and wellness services at home while Max Lab provides Pathology Services outside the hospital network.)

## Business Challenges

Max Healthcare's back-office operations team used to process thousands of supplier documents every month in multiple formats. The documents 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 29 resources (17 Back Office & 12 Accounts Payable Team) were engaged in the process leading to undifferentiated activity and increased operations cost.

Ultimately, Max Healthcare realized the need to automate the whole document 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

Max Healthcare 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 Max Healthcare and determined a ML-based solution as the best fit for document handling.

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

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

The workflow consists of the following steps:

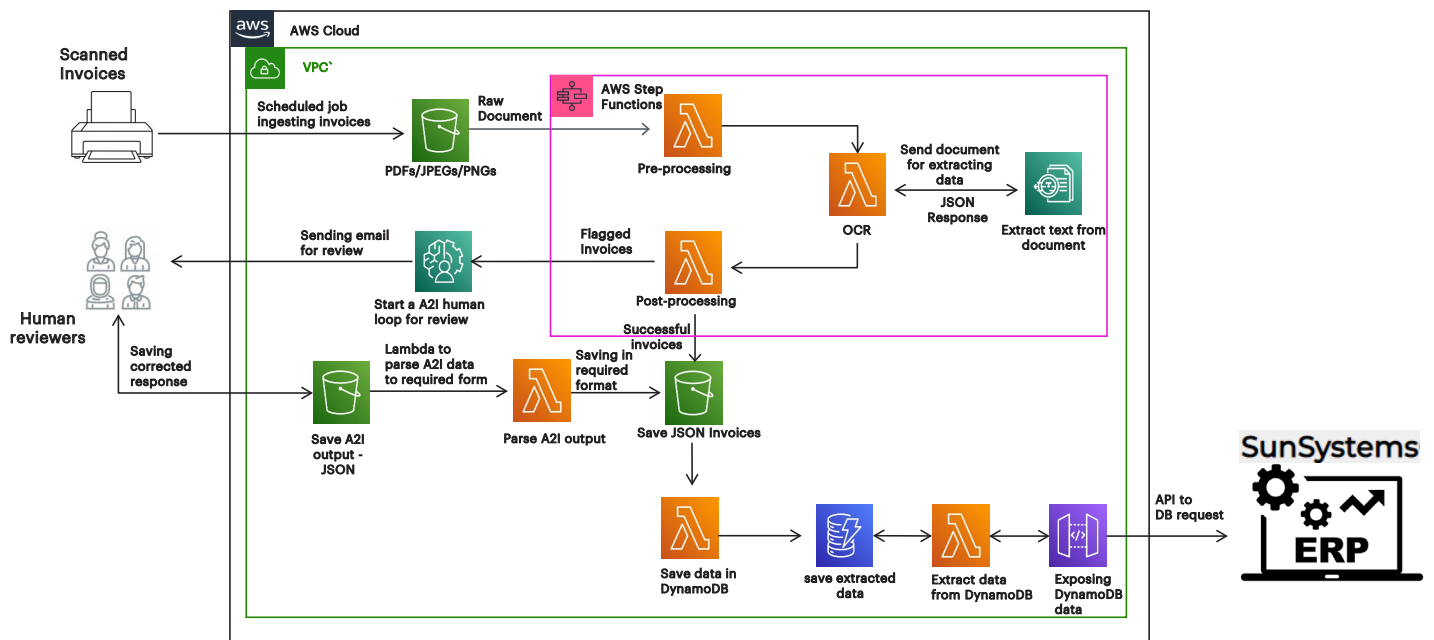
- The job starts with running the scheduler (daily); the document ingestion program picks up the scanned documents and puts them in an Amazon S3 bucket.
- As the documents get uploaded into the bucket, it triggers step functions that orchestrate document Processing for each document.
- **Pre-processing** – documents are cleaned using an image processing library to increase readability.
- **Textextract Extraction** – The document 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 document template. Data is further validated to improve the quality of the solution and help ensure the extraction of relevant mandatory fields with high confidence.
- **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 document processing ERP application.

### 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 Max Healthcare 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 Max Healthcare 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 Max Healthcare 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 Max Healthcare successfully deploy the solution enabling document processing with high accuracy. Resulting only 15% of the invoices required manual review, leading to 36% savings in manual efforts (FTE's) immediately. Below are the major benefits derived:



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**36% Reduction in Overall Efforts and Cost -> 40% efforts for back-office team and 30% for AP team**

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**> 50% Reduction in End to End Cycle Time for Invoice Processing**

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**Improvement in Processing Quality with Reduced Errors**

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## About The Partner

Founded in 1975, Motherson Group is an industry leader and one of the world's largest manufacturers of components for their 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.