

# Automated Manufacturing Record Book Generation

By -

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- Jayan Basak
- Ayan Mondal

# Scale at Speed



**KNCCI**  
Korea National Chamber of Commerce and Industry

*Growing your Business together*

**INVOICE**



**Account Name:** XYZ

**Account No.:** 07047130546

**Invoice Date:** 06/05/2017

**Invoice No.:** 10070617329556

**Invoice Expiry:** \_\_\_\_\_

No. Items	Items Description	Item Amount	
1. Items	Q10 1000 1000A		10.000.0
		<b>Total Item Amount</b>	<b>EUR 10000.0</b>
<b>Certificate of Origin Price Calculated</b>			
	Blank Fines	0001.0 - 10000.0	
	Blank % Fee	0.0	
	Blank Freight Charges	4.4	
	Blank Category	Exempt/Non-Exempt	
		<b>Total Invoice Amount</b>	<b>EUR 4.0</b>

**Payment Instructions:**

Please inform us immediately how to deposit your payment request in advance.

1. Bank Name

2. Account or Branch name (if different from the bank's name, please provide the details)

3. Bank Branch (if different from the bank's name, please provide the details)

4. SWIFT CODE (if different from the bank's name, please provide the details)

5. Bank Name

6. Branch Name

7. Bank Code

8. SWIFT CODE

**Account Information:**

**Account Name:**

1. KOSI 1510000000000000

2. USD 1510000000000000

3. EUR 1510000000000000

4. QIP 1510000000000000

**Bank Name:** KOSI BANK

**Branch Name:** KOSI BANK

**Bank Code:** 151

**SWIFT CODE:** KOSI2121

# Coversheet



# Databook



# Problem Statement

1. 'Index Page' (also known as 'Coversheet') is/are the typical first few pages that are used while exchanging documents between organizations
2. Each organization defines its own standard Index page format, including Branding.
3. Documents are in MS Word, MS Excel or PDF format.
4. Our ECM solution requires customer-provided Index pages to generate folder structures for storing correspondence/exchanged content (ex. Engineering Drawings, Manuals etc.)
5. Legacy programming struggles to accurately parse Index Pages due to varying template structures.
6. Currently Document Controllers manually convert the customer provided index to an oversimplified common interim format and then upload it to ECM as an input to generate the folder structure.
7. In the above point lies the following problem statements:
  - A. Manual conversion of customer Index pages takes between 10 – 30 minutes per exchange.
  - B. The simplified interim format loses some information (ex. Sub Section details)

# As-Is Coversheet Processing

1

Customer Template

2

Manually convert to Common Interim Template

3

Generate Folder Structure in ECM



Page | 1

<b>ABC Ltd</b> DLF IT Phase-II Kolkata, West Bengal Phone: 679443256	<b>COVERSHEET</b>  INVOICE # 100 DATE: 25-07-2024
<b>TO:</b> Jayan Basak Tech Mahindra DLF IT Phase-II Kolkata, West Bengal Phone: 679443256	<b>SHIP TO:</b> Ayan Mondal Tech Mahindra DLF Phase-II Kolkata, West Bengal Phone: 66789005

COMMENTS OR SPECIAL INSTRUCTIONS:

INVOICE

TERMS

Due on receipt

Experts in earning trusts

450 East 78th Ave  
Denver, CO 12345  
Phone: (123) 456-7890  
Fax: (123) 456-7891

**TO:**  
Jayan Basak  
Ayan Mondal  
89 Pacific Ave  
San Francisco, CA 78910

SECTION	DESCRIPTION
1	Unpriced Contract
2	Customer Inspection Release Certificate / Closed Punch Lists
3	Certificate of conformity
4	Certificates issued by Certifying Agency (i.e. DNV, Lloyd's Register).
4.1	Concession / Deviation Register
4.2	Approved Concession and Deviations
4.3	Technical Queries Register
5	Approved Supplier Document Register (detailing most recent revision)
5.1	Visual Inspection Procedure
6	Handling, packing, storage, shipping, unpacking & preservation procedures

Make all checks payable to ABC Manufacturing Ltd.  
Total due in 15 days. Overdue accounts subject to a service charge.

THANK YOU FOR YOUR BUSINESS!

Invoice 10001

Jayan Ltd.

DLF IT Phase-II, Kolkata, West Bengal

Date	To	Ship To
November 21, 2024	Ayan Mondal Durgam West Bengal	None as recipient

Instructions

Section	Description	Unit Price	Page
1	Customer Inspection Release Certificate / Closed Punch Lists	7500.00	THC
1.1	Certificate of conformity	6347.34	THC
1.2	Concession / Deviation Register	504	THC
2	Quality Plan	7453	THC
3	DLF Plus	7453	THC
4.1	Inducted NDT Technicians Qualifications	2345	THC
4.2	Material Purchase Specifications (MPS)	1999	THC
4.3	Manufacturing Process Plans	2345.78	THC
4.4	Dimensional Control Procedure	6754.13	THC
5	Coating Procedures	556.99	THC
6	Material Traceability Procedures	666.33	THC

Sales Tax  
Shipping & Handling  
Total Due By 12.28.2024

Thank you for your business!

Customer Name: Tech Mahindra Courses & Certifications

Purchase Order No: 012345

Internal Order No: 050522test

Date of Issue: 25/05/2024

## CFAT/INSPECTION RELEASE BOOK INDEX

SECTION	DESCRIPTION
1	UI/UX Development Course
2	Certificate in Digital Marketing
3	Certificate Course in Android Development
4	Certificate in Nursing care
5	Certificate Course in Home Health Aide (HHA)
6	Certificate Course in General Duty Assistant (GDA)
7	Certificate Course in Hospital Hygiene Assistant
8	Certificate Course in Java Full Stack Development
9	Certificate Course in .NET Full Stack Development
10	Certificate Course in Graphic Design
11	Zero Flow Test Report
12	Pickling & Passivation Report
13	Painting Reports / Certificate
14	Certificate of Conformance NACE MR-01-75
15	Deviations / Waivers / Non-Conformances
16	Inspection Release Certificate
16.1	test 1

Select DataBook

Test1

CFAT\_Inspection Release Book Index-working-old.docx

Name	Document Name
<input type="checkbox"/> 1 UI/UX Development Course	
<input type="checkbox"/> 2 Certificate in Digital Marketing	
<input type="checkbox"/> 3 Certificate Course in Android Development	
<input type="checkbox"/> 4 Certificate Course in Home Health Aide (HHA)	
<input type="checkbox"/> 5 Certificate Course in General Duty Assistant (GDA)	
<input type="checkbox"/> 6 Certificate Course in Hospital Hygiene Assistant	
<input type="checkbox"/> 7 Certificate Course in Java Full Stack Development	
<input type="checkbox"/> 8 Certificate Course in .NET Full Stack Development	
<input type="checkbox"/> 9 Certificate Course in Graphic Design	
<input type="checkbox"/> 10 Zero Flow Test Report	
<input type="checkbox"/> 11 Pickling & Passivation Report	

# To-Be Coversheet Processing

1

Customer Template

Page 11

ABC Ltd

DLP IT Phase-II

Kolkata, West Bengal

Phone: 678443256

COVERSHEET

INVOICE # 100

DATE: 25-07-2024

TO:

Jayan Basak

Tech Mahindra

DLP IT Phase-II

Kolkata, West Bengal

Phone: 678443256

SHIP TO:

Ayan Mondal

Tech Mahindra

DLP Phase-II

Kolkata, West Bengal

Phone: 56789005

COMMENTS OR SPECIAL INSTRUCTIONS:

INVOICE

TERMS

Due on receipt

ABC

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Denver, CO 12345

Phone: (123) 456-7890

Fax: (123) 456-7891

TO:

Jayan Basak

Ayan Mondal

89 Pacific Ave

San Francisco, CA 78910

SECTION	DESCRIPTION
1	Unpriced Contract
2	Customer Inspection Release Certificate
3	Closed Punch Lists
4	Certificate of conformity
4.1	Certificates issued by Certifying Agency (i.e. DNV, Lloyd's Register)
4.2	Concession / Deviation Register
4.3	Approved Concession and Deviation Technical Queries Register
5	Approved Supplier Document Register (detailing most recent revision)
5.1	Visual Inspection Procedure
6	Handling, packing, storage, shipping, unpacking & preservation procedure

Make all checks payable to ABC Manufacturing Ltd. Total due in 15 days. Overdue accounts subject to a service charge.

THANK YOU FOR YOUR BUSINESS!

Invoice 10001

Jayan Ltd.

DLP IT Phase-II, Kolkata, West Bengal

Date

To

Ship to

Invoice as receipt

Instructions

Section	Description	Unit Price	Page
1	Customer Inspection Release Certificate / Closed Punch Lists	7500.00	TBC
1.1	Certificate of conformity	6347.34	TBC
1.2	Concession / Deviation Register	504	TBC
2	Quality Plan	7603	TBC
3	ISO Plus	7605	TBC
4.1	Induct NDT Technician Qualification	2343	TBC
4.2	Material Purchase Specification (MPS)	1999	TBC
4.3	Manufacturing Process Plan(s)	2543.78	TBC
4.4	Dimensional Control Procedure	4754.15	TBC
5	Coating Procedures	558.99	TBC
6	Material Traceability Procedures	880.15	TBC
Subs. Fee			
Shipping & Handling			
Total Due By 12.28.2012			

Thank you for your business!

2

ABBYY Vantage extracts item description from different templates as JSON data

```
1
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34
35
36
"Version": "3.0",
"Fields": {
  "Name": "Tech Mahindra",
  "Name_ConfidenceScore": "100%",
  "New Table": {
    {
      "Description": "CRISPR technology enables precise editing",
      "Description_ConfidenceScore": "100%",
      "Section": "1",
      "Section_ConfidenceScore": "100%"
    },
    {
      "Description": "Nanomaterials to enhance battery",
      "Description_ConfidenceScore": "100%",
      "Section": "2",
      "Section_ConfidenceScore": "100%"
    },
    {
      "Description": "Brain-Computer interfaces",
      "Description_ConfidenceScore": "100%",
      "Section": "2.1",
      "Section_ConfidenceScore": "100%"
    },
    {
      "Description": "Photonic Chips to accelerate data transfer",
      "Description_ConfidenceScore": "100%",
      "Section": "2.2",
      "Section_ConfidenceScore": "100%"
    },
    {
      "Description": "3D Bio printing",
      "Description_ConfidenceScore": "100%",
      "Section": "3",
      "Section_ConfidenceScore": "100%"
    }
  }
}
```

3

Generate Folder Structure in ECM using JSON Data Extracted

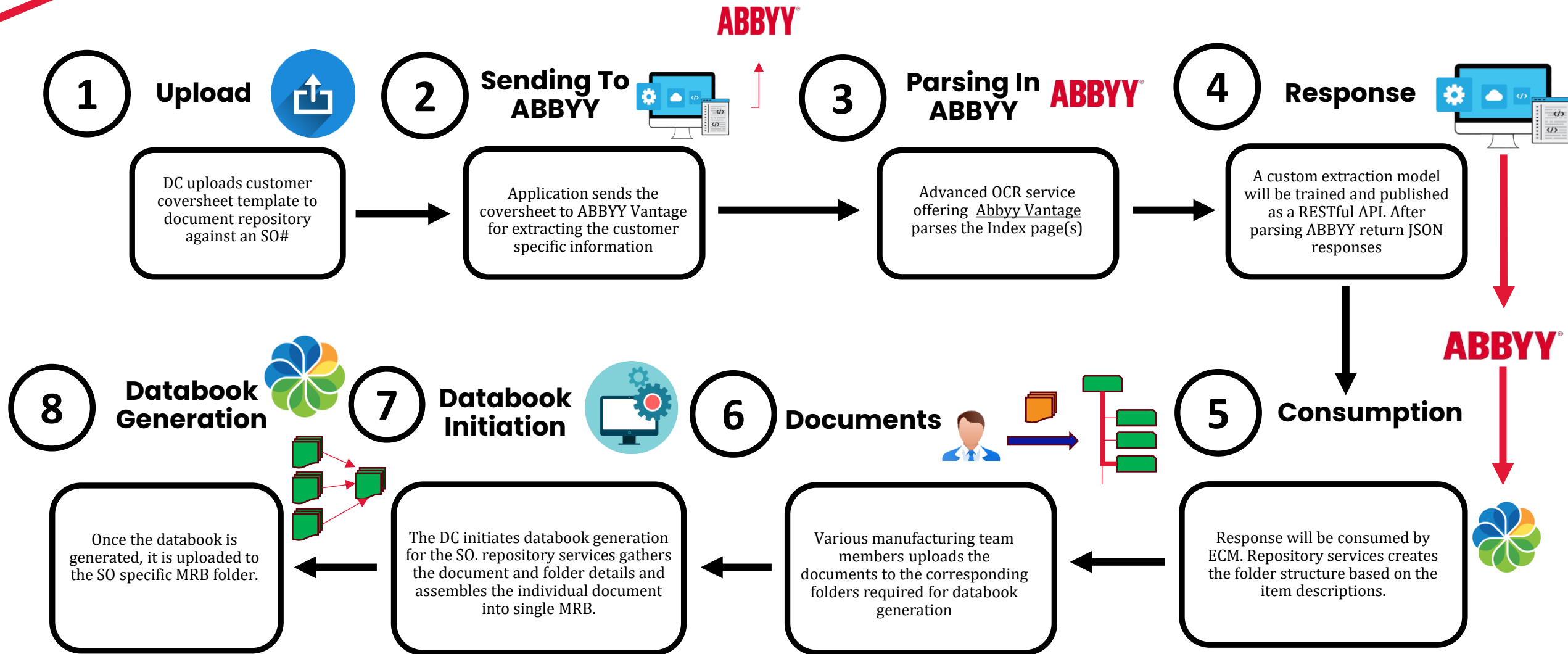
Select DataBook

Test1

CFAT\_Inspection Release Book Index-working-old.docx

Name	Document Name
<input type="checkbox"/> 1 UI/UX Development Course	
<input type="checkbox"/> 2 Certificate in Digital Marketing	
<input type="checkbox"/> 3 Certificate Course in Android Development	
<input type="checkbox"/> 4 Certificate Course in Home Health Aide (HHA)	
<input type="checkbox"/> 5 Certificate Course in General Duty Assistant (GDA)	
<input type="checkbox"/> 6 Certificate Course in Hospital Hygiene Assistant	
<input type="checkbox"/> 7 Certificate Course in Java Full Stack Development	
<input type="checkbox"/> 8 Certificate Course in .NET Full Stack Development	
<input type="checkbox"/> 9 Certificate Course in Graphic Design	
<input type="checkbox"/> 10 Zero Flow Test Report	
<input type="checkbox"/> 11 Dialing & Reception Report	

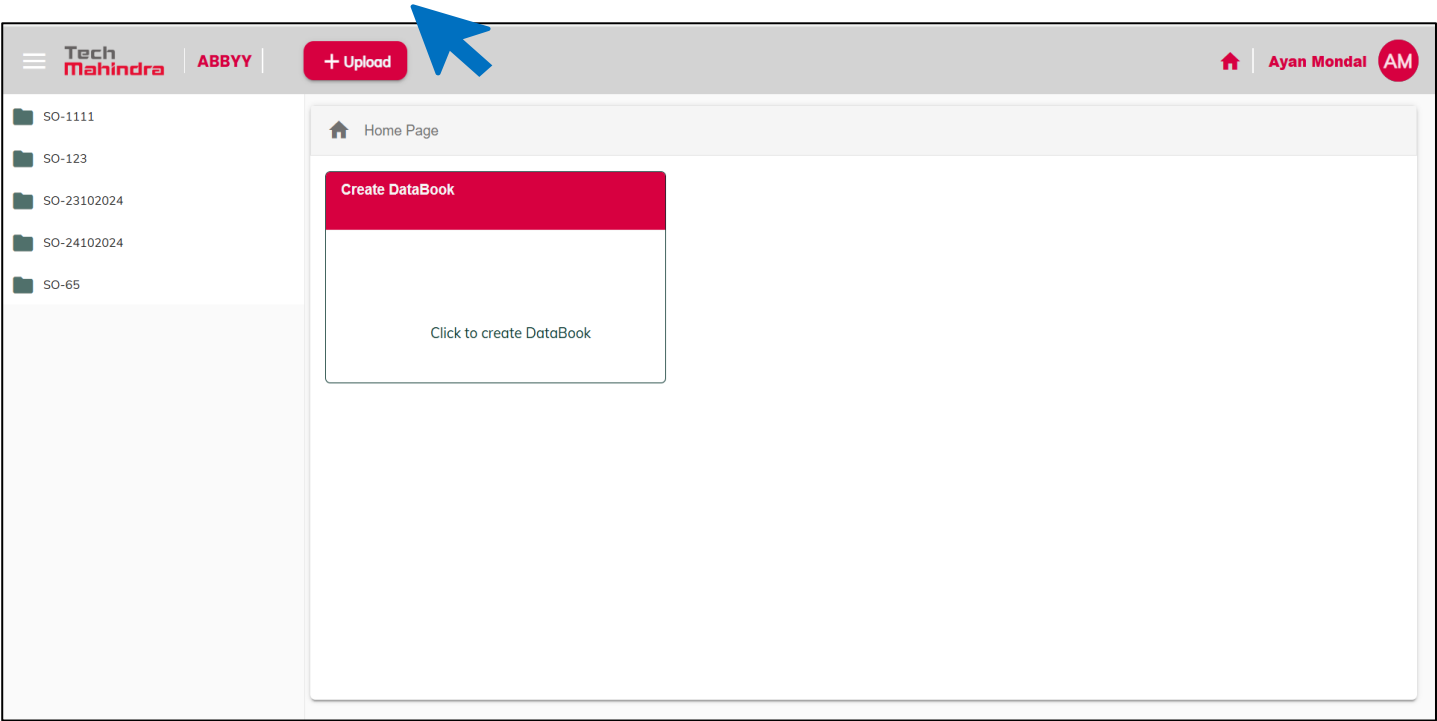
# Overall Solution Approach



# MRB Flow

## Step 1

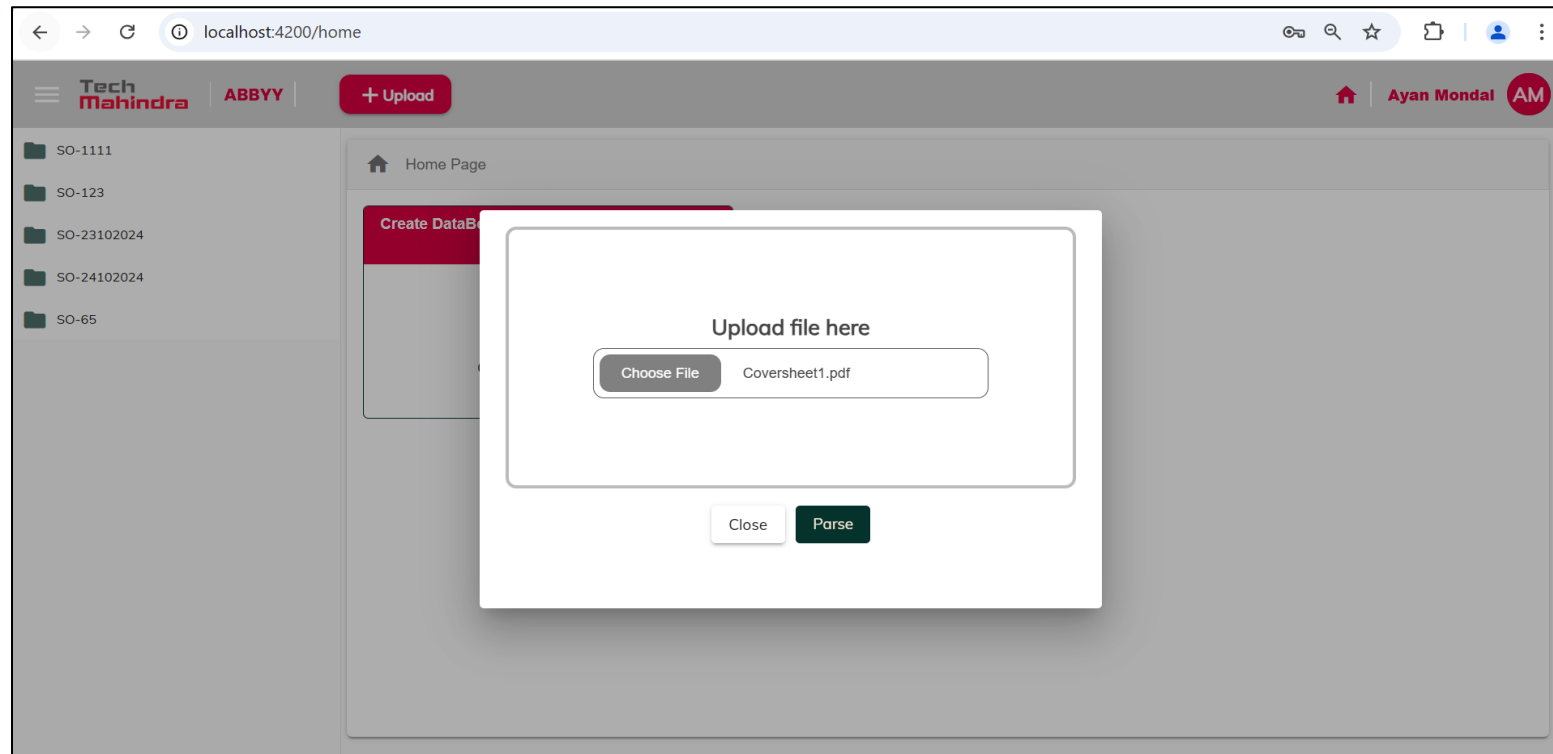
**Upload Customer Coversheet Template:** DC uploads customer coversheet template to document repository against an SO#.



# MRB Flow

## Step 2

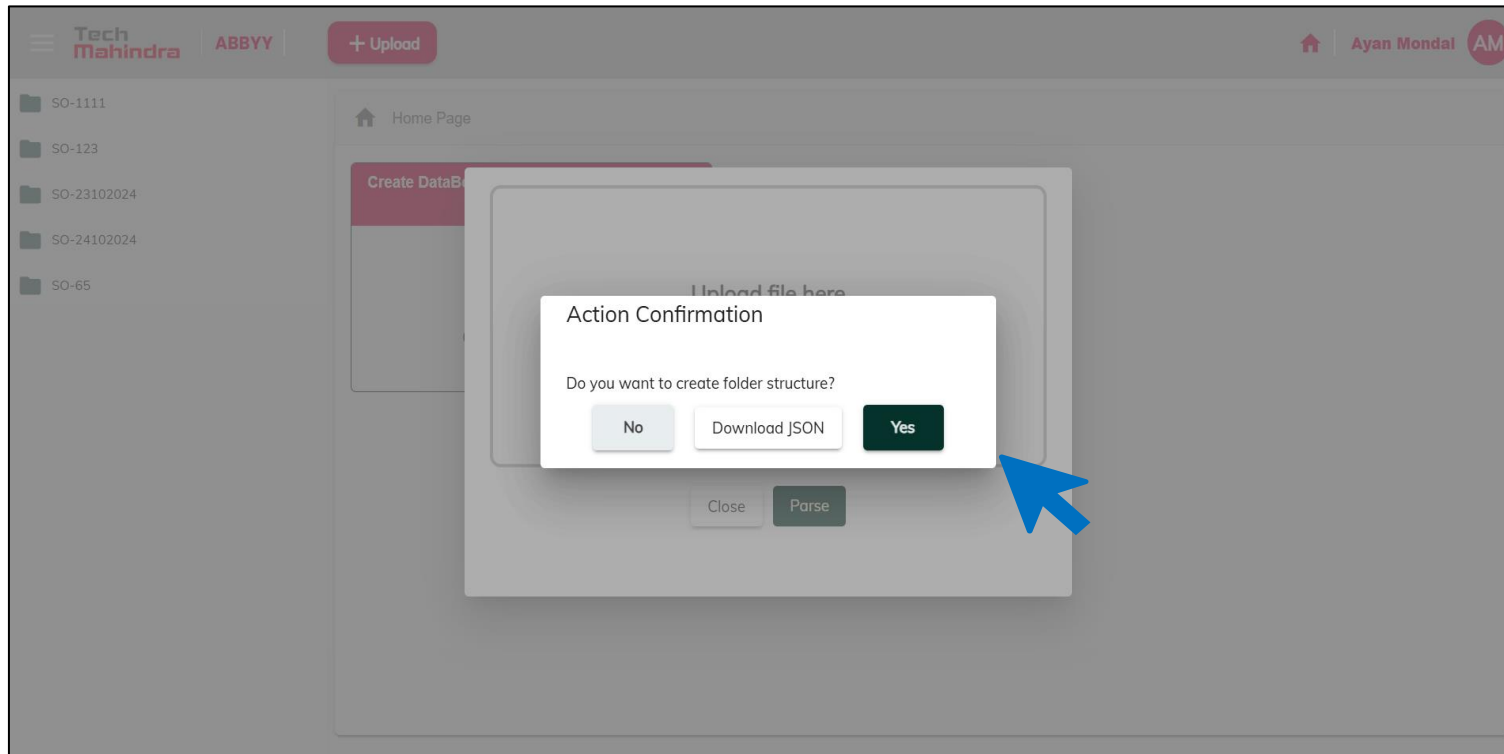
**Parse Document:** DC starts parsing document after clicking on “**Parse**” Button



# MRB Flow

## Step 3

**Download JSON / Folder Creation Initiation:** DC can choose to download the response in JSON format & proceed to create folder structure by clicking on “Yes” button.





# MRB Flow

## Step 4

**Create Folder Structure:** Response will be consumed by ECM. Repository services creates the folder structure based on the item descriptions.

Tech Mahindra

ABBY

+ Upload

SO-1111

BIOMETRIC DETAILS FOR AUTHENTICATION TBC

CERTIFICATE FOR LICENSING TAGG TBC

certification report passed status

Cloud reports on features idgh TBC

Cryptoreport and secure connection g TBC

DATA ANALYTICS TBC

DATA REPORT FOR PRODUCTS

DATASET FOR MODEL TRAINING REPID

DOC FGGHF REPORT

DOC GHGH ONGOING

DOC GHJDHT TAG

DOC SAFG TAG

DOC SFGV ITEM GH

Personal Files > Sites > testsite > documentLibrary > ABBY > Sales Order > SO-1111

Create Databook

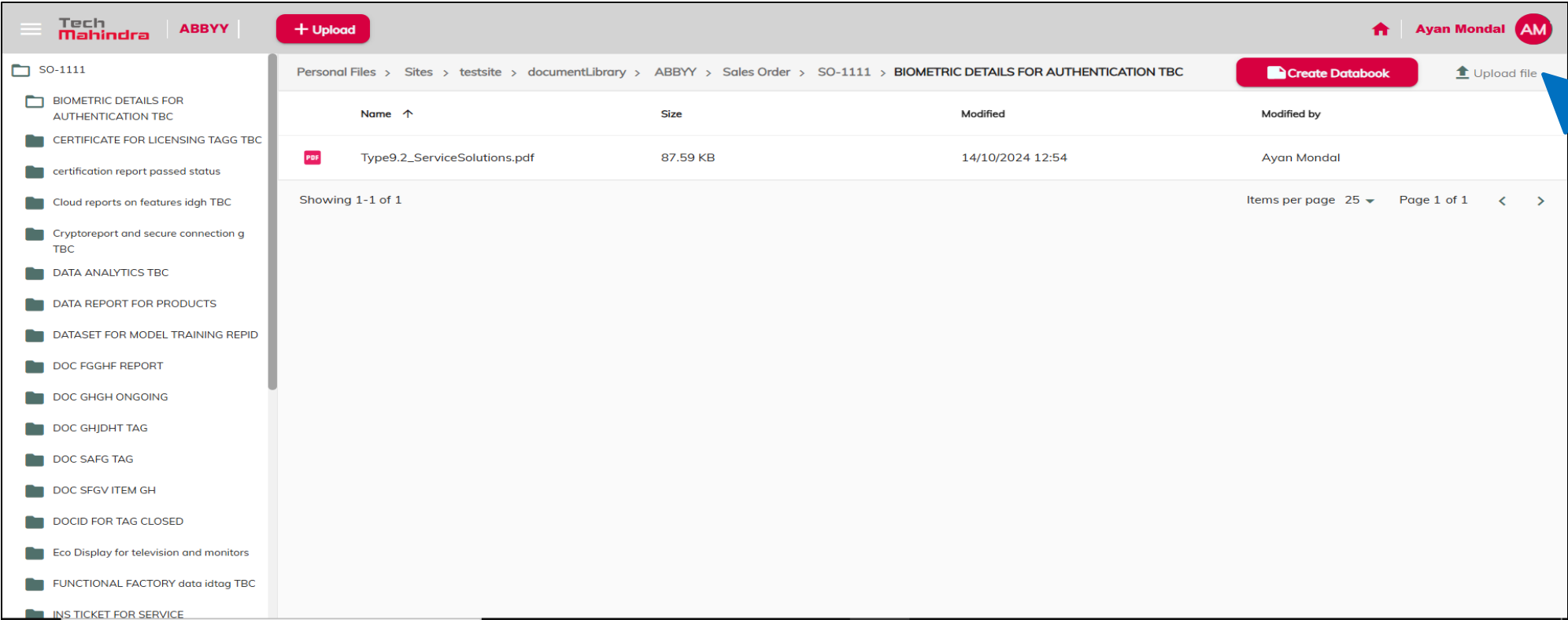
Upload file

Name	Size	Modified	Modified by
BIOMETRIC DETAILS FOR AUTHENTICATION TBC		14/10/2024 12:54	Ayan Mondal
CERTIFICATE FOR LICENSING TAGG TBC		14/10/2024 12:53	Ayan Mondal
certification report passed status		14/10/2024 12:53	Ayan Mondal
Cloud reports on features idgh TBC		14/10/2024 12:53	Ayan Mondal
Cryptoreport and secure connection g TBC		14/10/2024 12:53	Ayan Mondal
DATA ANALYTICS TBC		14/10/2024 12:53	Ayan Mondal
DATA REPORT FOR PRODUCTS		14/10/2024 12:53	Ayan Mondal
DATASET FOR MODEL TRAINING REPID		14/10/2024 12:53	Ayan Mondal
DOC FGGHF REPORT		14/10/2024 12:53	Ayan Mondal

# MRB Flow

## Step 5

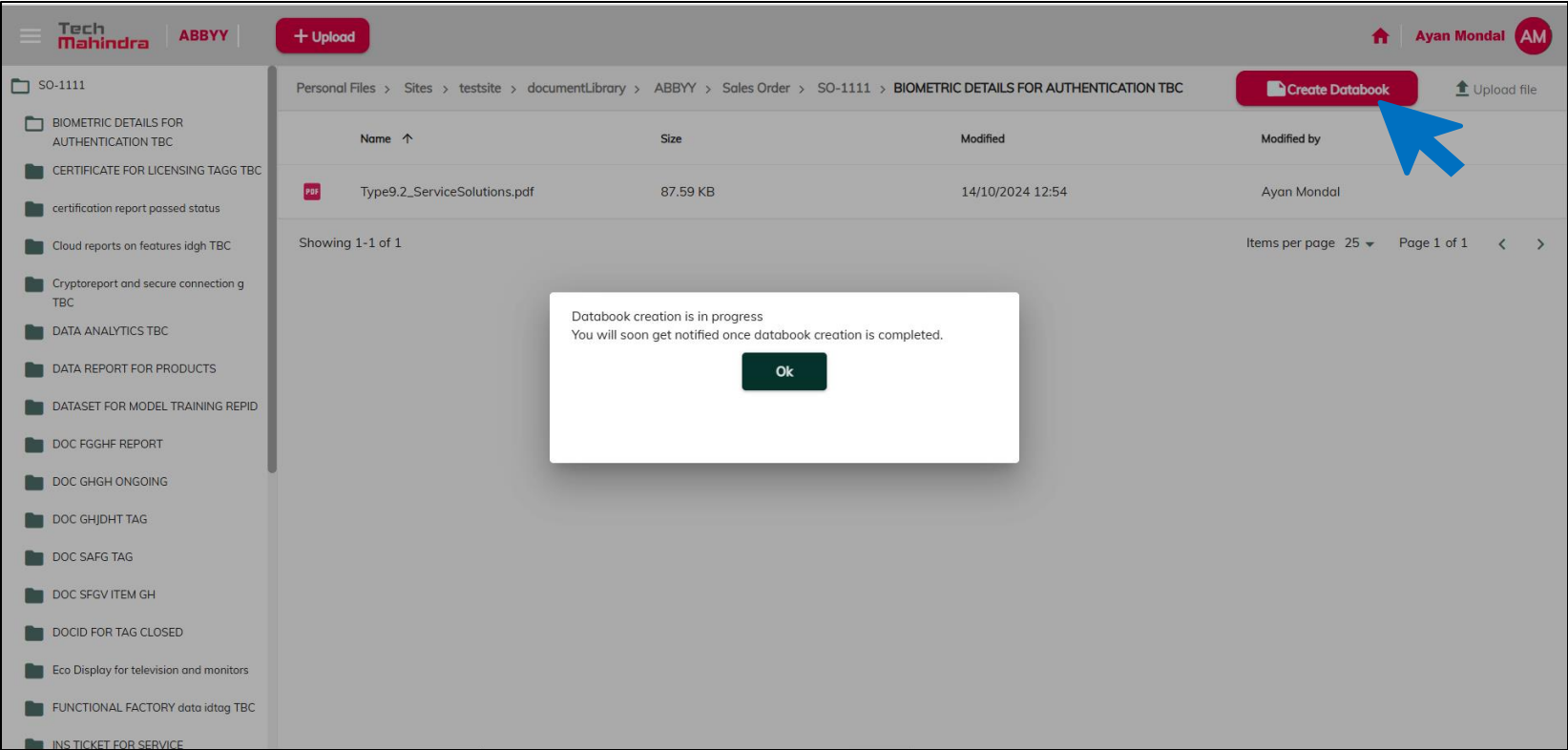
**Upload Documents to Folders:** Various manufacturing team members uploads the documents by clicking on “Upload File” button to the corresponding folders required for Databook generation.



# MRB Flow

## Step 6

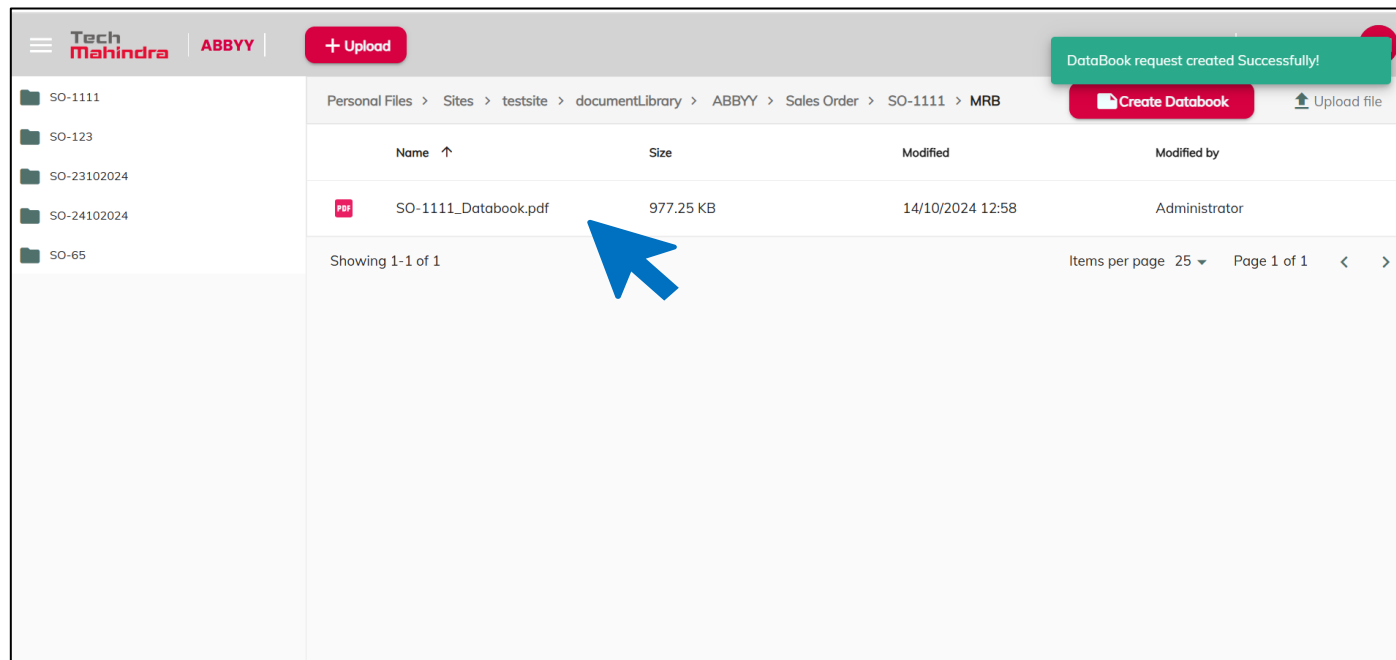
**Create Databook:** The DC initiates Databook generation for the SO by clicking on “**Create Databook**” button. repository services gathers the document and folder details and assembles the individual document into single MRB.



# MRB Flow

## Step 7

**Databook Generation:** Once the Databook is generated, it is uploaded to the SO specific MRB folder. User will be notified on the screen once Databook generation is completed.



Microsoft Edge  
PDF Document

# Generated Databook

The Automated MRB Databook generation process will incorporate bookmarking capabilities, streamlining user experience and facilitate reference.

The screenshot displays the Adobe Acrobat interface for a PDF document titled 'SO-1111\_Databook.pdf'. The main content area shows a 'Table of Contents' with sections 1 through 9. A sidebar on the right lists the same sections. Below the table of contents, the document header identifies the company as Mahindra Global Solutions Pvt. Ltd. and provides contact information. A table of purchase order details is also visible, including the purchase order number, customer name, and issue date. At the bottom, a detailed table lists various service metrics and their corresponding page numbers.

SEC./SUB Sec.	DESCRIPTION	PAGER
1	Customer Satisfaction ratings	1
2	Response time to customer inquiries	2
3	Service delivery accuracy	3
4	Number of services requests handled per day	4
4.1	Service uptime percentage	6
4.2	Average resolution time for service issues	7
4.3	Customer retention rate	9
4.4	Net Promoter Score (NPS)	10
5	Service level Agreement (SLA)	11
6	Employee turnover rate	13
7	Training hours per week per employee	15
7.1	Cost per Service request	16
7.2	Service Contract renewal rate	17
8	Average Customer wait time	19
8.1	First contact resolution rate	20
8.2	Service outage duration	22
8.3	Customer churn rate	24

The screenshot displays the Adobe Acrobat interface for a PDF document titled 'SO-1111\_Databook.pdf'. The main content area shows a 'SECTION 1.4 DOCUMENT LIST'. A sidebar on the right lists the same sections. Below the document list, the document header identifies the company as Mahindra Global Solutions Pvt. Ltd. and provides contact information. A table of purchase order details is also visible, including the purchase order number, customer name, and issue date. At the bottom, a detailed table lists various service metrics and their corresponding page numbers.

SEC./SUB Sec.	DESCRIPTION	PAGER
1	Customer Satisfaction ratings	1
2	Response time to customer inquiries	2
3	Service delivery accuracy	3
4	Number of services requests handled per day	4
4.1	Service uptime percentage	6
4.2	Average resolution time for service issues	7
4.3	Customer retention rate	9
4.4	Net Promoter Score (NPS)	10
5	Service level Agreement (SLA)	11
6	Employee turnover rate	13
7	Training hours per week per employee	15
7.1	Cost per Service request	16
7.2	Service Contract renewal rate	17
8	Average Customer wait time	19
8.1	First contact resolution rate	20
8.2	Service outage duration	22
8.3	Customer churn rate	24

# Benefits

## Effort and Cost Benefits

1. No need to manually convert customer provided index page(s) to an intermediate format and then to manually add the customer provided coversheet to the generated MRB. Thirty minutes to an hour of manual effort is saved on average per coversheet received
2. Manual verification of the folder structure created is no longer necessary as intuitive process alerts when there is any need of a manual review
3. Abbyy Vantage is a SaaS product with low PPU license fees. No need to provision hardware/servers etc.

## Feature Benefits

1. No need to use oversimplified template as complex templates can also be configured to be processed
2. Very quick processing time, <20s on average
3. Confidence score is returned for each element. If confidence score is high, then no manual review is necessary. If it is low, then support team can validate the particular element flagged.



# Thank You

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