

Agentic AI Driven eKYC and Automated Onboarding

A Unified Flow Integrating LLM Agents, Validation & Human Oversight

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Agenda

- ◆ Introduction and Context
- ◆ Solution Overview
- ◆ Screen shots

Context & Scope

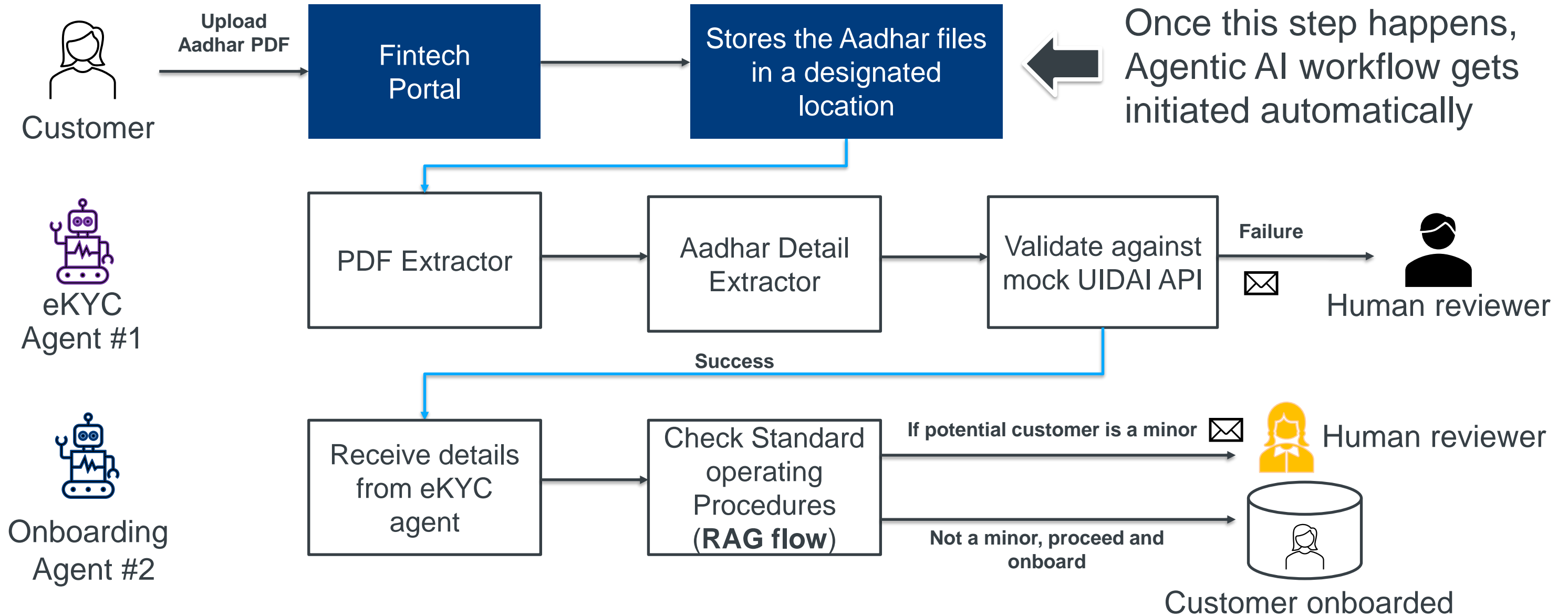


VMKIJ

VMKIJ Fintech (fictitious fintech) empowers instant loan disbursement through seamless customer onboarding, leveraging Agentic AI to deliver fast, secure, and effortless eKYC.

- ✓ **eKYC Agent:** Uses custom Python extractors to pull data from Aadhaar PDFs, then leverages **LangChain** agents and **OpenAI GPT-3.5 Turbo** to orchestrate tool calls, parse metadata, and validate against a mock UIDAI.
- ✓ **Onboarding Agent with RAG:** Uses **Retrieval-Augmented Generation** with LangChain and GPT-3.5 Turbo to dynamically fetch Standard Operating Procedures from **ChromaDB (vector store)** for compliant onboarding of the customer.
- ✓ **Human-in-the-Loop:** Flags edge cases like minors based on SOPs or eKYC failures for manual review, with **automated email alerts sent via Google SMTP**.
- ✓ **DynamoDB Integration:** Persists verified customer profiles instantly in **AWS DynamoDB**, enabling real-time downstream loan processing (**downstream loan processing - out of scope**).

Solution Overview

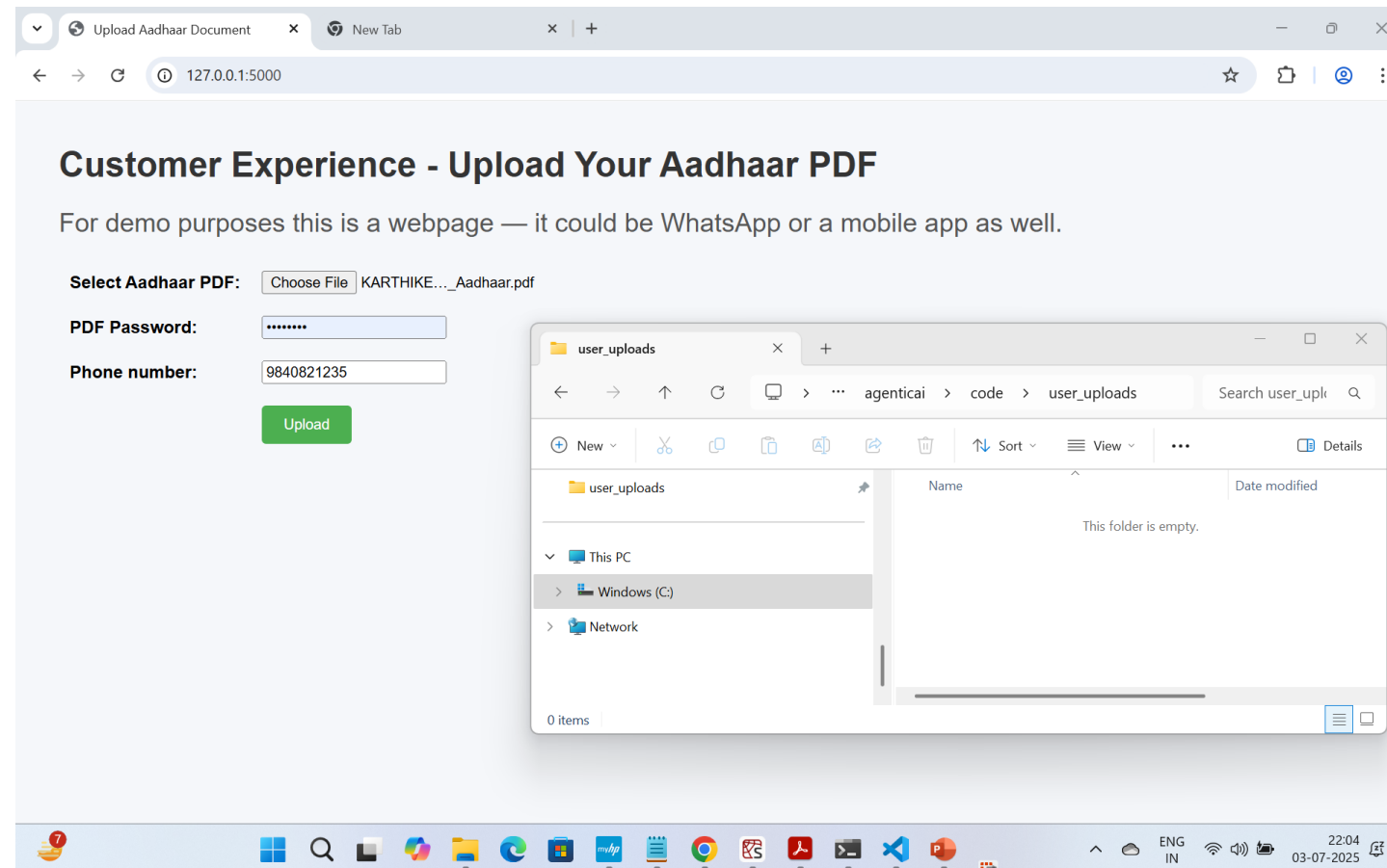


Customer Experience

UI portal to accept the Aadhar PDF for eKYC processing and further onboarding

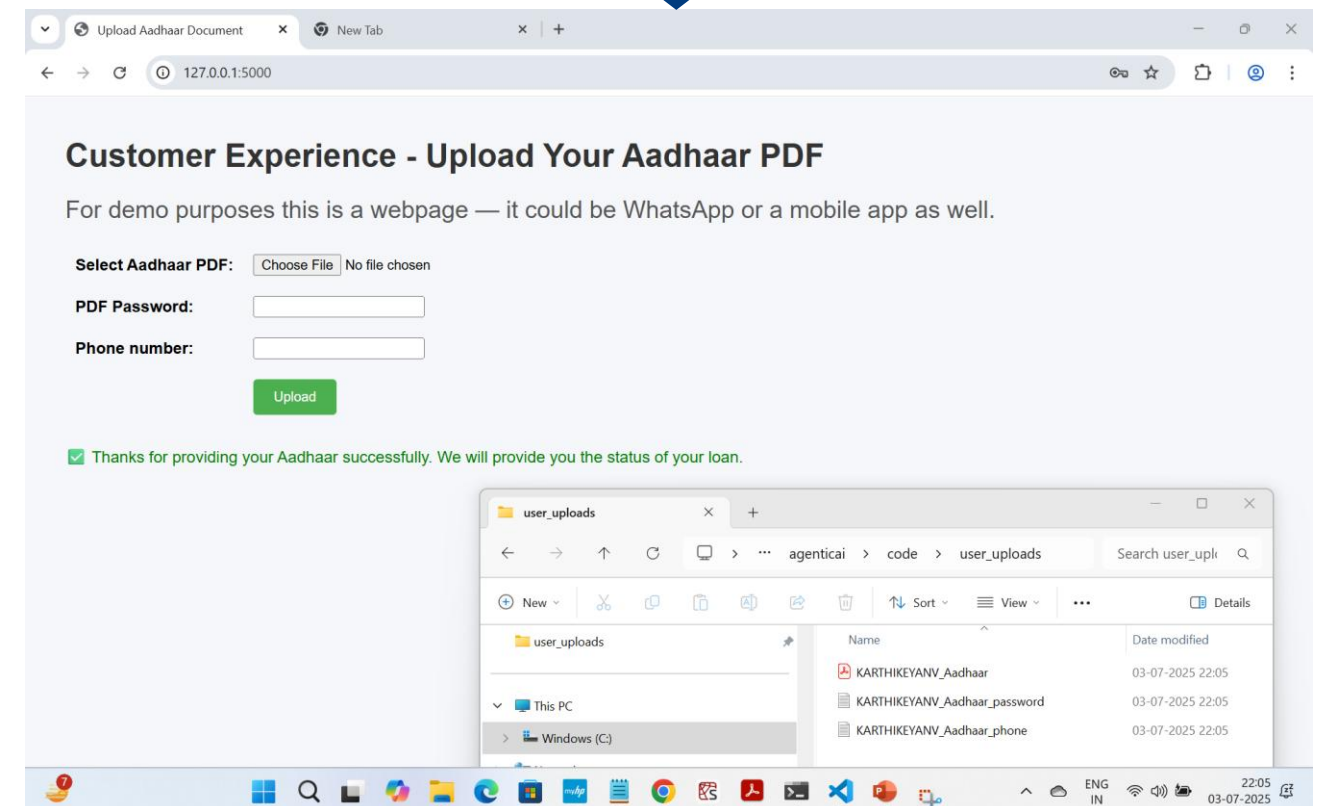
Customer – Uploads Aadhar for eKYC

UX is built to showcase the customer journey. In real world scenarios, the customer can upload their Aadhar PDF via WhatsApp or a mobile app and get the results whether the loan can be sanctioned or not



Customer uploading the Aadhar PDF for getting loan in a portal provided by FinTech

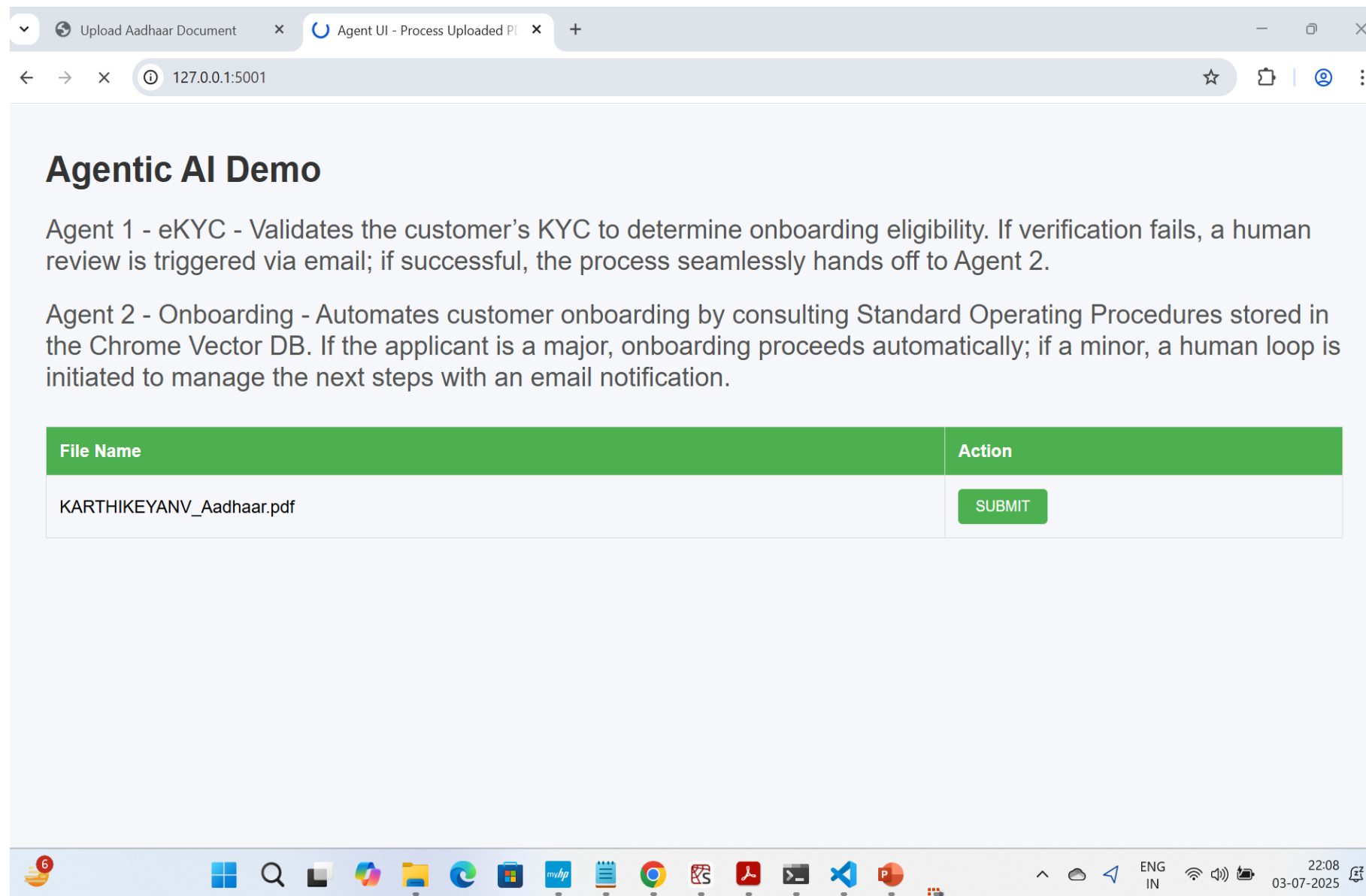
Confirmation message to Customer and actual files are stored in the server



Case 1 - Customer onboarded seamlessly

No UIDAI failures, passed all SOPs, successfully inserted into database

Agentic Flow : Case 1 – Full Happy Path



The screenshot shows a web browser window with two tabs: 'Upload Aadhaar Document' and 'Agent UI - Process Uploaded P...'. The address bar shows '127.0.0.1:5001'. The page content includes a heading 'Agentic AI Demo' and two paragraphs describing the agents. Below the text is a table with two columns: 'File Name' and 'Action'. The table contains one row with the file name 'KARTHIKEYANV_Aadhaar.pdf' and a 'SUBMIT' button in the action column.

Agentic AI Demo

Agent 1 - eKYC - Validates the customer's KYC to determine onboarding eligibility. If verification fails, a human review is triggered via email; if successful, the process seamlessly hands off to Agent 2.

Agent 2 - Onboarding - Automates customer onboarding by consulting Standard Operating Procedures stored in the Chrome Vector DB. If the applicant is a major, onboarding proceeds automatically; if a minor, a human loop is initiated to manage the next steps with an email notification.

File Name	Action
KARTHIKEYANV_Aadhaar.pdf	<button>SUBMIT</button>

- This page is for demo purposes only.
- Once the files are received in the server, the agent will kick off in real world scenarios.
- But to demo the agentic workflow, I am triggering the eKYC process manually.
- This is a **happy path scenario** where the customer is successfully validated against UIDAI and passes the SOP to get onboarded.

Agentic Flow : Case 1 – Full Happy Path

The screenshot shows the AWS Management Console for DynamoDB. The left sidebar contains navigation links for DynamoDB, DAX, and CloudShell. The main content area shows the 'customermaster' table selected. A 'Select attribute projection' dropdown is set to 'All attributes'. Below it, a 'Filters - optional' section is visible. A green status bar indicates 'Completed' with 'Items returned: 1', 'Items scanned: 1', 'Efficiency: 100%', and 'RCUs consumed: 2'. The table view shows 'Table: customermaster - Items returned (0)' with a 'No items' message. The bottom of the console shows the footer with copyright information and a Windows taskbar at the very bottom.



Customer database initially empty

Agentic Flow : Case 1 – Full Happy Path

Agent is running now !!!!

127.0.0.1:5001/submit

Agent Execution Result

=== 📁 eKYC Agent (UI Trigger) ===

📄 PDF Path: C:\Karthik\agenticai\code\user_uploads\KARTHIKEYANV_Aadhaar.

🔑 Password: (provided)

📞 Phone: 9840821235

=== ✅ Mock UIDAI Validator Result ===

```
{"status": "SUCCESS", "message": "Valid Aadhaar", "name": "V Karthikeyan"}
```

=== ✅ Running Onboarding Agent ===

=== Final Dispatcher Result: INSERTED ===

← Back to Files

C:\windows\system32\cmd.exe

Action Input: V Karthikeyan, 15/03/1978, 7369 6026 7850
Observation: Name: V Karthikeyan
DOB: 15/03/1978
Aadhaar: 7369 6026 7850
Thought: I have extracted the required fields. Now I need to pass them to the validator.
Action: Mock UIDAI Validator
Action Input: Name: V Karthikeyan, DOB: 15/03/1978, Aadhaar: 7369 6026 7850
Observation: {"status": "SUCCESS", "message": "Valid Aadhaar", "name": "V Karthikeyan"}
Thought: I have successfully validated the extracted Aadhaar details against the mock validator.
Final Answer: {"status": "SUCCESS", "message": "Valid Aadhaar", "name": "V Karthikeyan"}
> Finished chain.
=== ✅ Onboarding Agent ===
Name: V Karthikeyan
DOB: 15/03/1978
Aadhaar: 7369 6026 7850
Calculated Age: 47
⚠️ SOP match not found.
✅ Major – auto insert.
=== Dispatcher received: INSERT_REQUIRED|name:V Karthikeyan,dob:15/03/1978,aadhaar:7369 6026 7850
✅ Inserted into DynamoDB for Aadhaar 7369 6026 7850
127.0.0.1 - - [03/Jul/2025 22:16:46] "POST /submit HTTP/1.1" 200 -

Agentic Flow : Case 1 – Full Happy Path

Customer onboarded successfully into the database

The screenshot displays the AWS DynamoDB console interface. The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/dynamodbv2/home?region=us-east-1#item-explorer?maximize=true&table=customermaster`. The console header includes the AWS logo, a search bar, and navigation icons. The left sidebar lists various DynamoDB features: Dashboard, Tables, Explore items (selected), PartiQL editor, Backups, Exports to S3, Imports from S3, Integrations, Reserved capacity, and Settings. The main content area is titled 'customermaster' and includes an 'Autopreview' toggle and a 'View table details' button. The 'Scan or query items' section shows 'Scan' selected, with 'Table - customermaster' chosen for the table and 'All attributes' for the attribute projection. A green status bar indicates the scan is 'Completed' with 1 item returned, 100% efficiency, and 2 RCUs consumed. Below this, a table titled 'Table: customermaster - Items returned (1)' shows the scan results. The table has columns for AadhaarNumber (String), Age, DOB, Name, and Status. The single item returned is V Karthikeyan, ONBOARDED.

	AadhaarNumber (String)	Age	DOB	Name	Status
<input type="checkbox"/>	[REDACTED]	[REDACTED]	[REDACTED]	V Karthikeyan	ONBOARDED

Case 2 – eKYC Failure

Failure when validated against UIDAI mock API

Agentic Flow : Case 2 – Failure in eKYC

Upload Aadhaar Docume x Agent UI - Process Uploa x Items | Amazon Dynamo x Inbox (12,943) - karthikey x Inbox (428) - jaidev.karth x +

127.0.0.1:5001

Agentic AI Demo

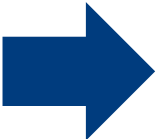
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Agent 2 - Onboarding - Automates customer onboarding by consulting Standard Operating Procedures stored in the Chrome Vector DB. If the applicant is a major, onboarding proceeds automatically; if a minor, a human loop is initiated to manage the next steps with an email notification.

File Name	Action
GMANICKAM_Aadhar.pdf	SUBMIT
KARTHIKEYANV_Aadhaar.pdf	SUBMIT

6

ENG IN 22:27 03-07-2025



- **FAILURE scenario** where the customer is NOT successfully validated against UIDAI mock API
- Email is triggered to a human agent for further action

- GMANICKAM_Aadhar.pdf
- KARTHIKEYANV_Aadhaar.pdf
- FAILURE SCENARIO
- FULL HAPPY PATH (Already in screenshots)

Agentic Flow : Case 2 – Failure in eKYC

The screenshot displays a web application interface with a browser window showing the URL `127.0.0.1:5001/submit`. The page title is "Agent Execution Result".

The main content area shows the execution details for an "eKYC Agent (UI Trigger)". It lists the PDF path, password, and phone number. Below this, it shows the "Mock UIDAI Validator Result" as a failure with the message "No record found" for the name "Manickam G".

A red circle highlights the message: "Failure email sent for failure."

At the bottom, there is a "Back to Files" button.

Overlaid on the right side is a terminal window showing the command prompt output. It displays the extracted fields (Mobile, VID, Details, Aadhaar no., Name, DOB, Gender) and the observation from the Mock UIDAI Validator. The final output shows the status as "FAILURE" and the message "No record found". A red arrow points to the line "Email sent successfully to jaidev.karthikeyan@gmail.com".

```
Mobile: 9840945470
VID : 9157 9685 0122 6173
Details as on: 14/12/2024
Aadhaar no. issued: 23/02/2014
Manickam G
DOB: 24/07/1943
FEMALE
Observation: Name: Manickam G
C
DOB: 24/07/1943
Aadhaar: 622091391457
Thought: I have extracted the necessary fields from the text block. Now I
idator.

Action: Mock UIDAI Validator
Action Input: Name: Manickam G, DOB: 24/07/1943, Aadhaar: 622091391457
Observation: {"status": "FAILURE", "message": "No record found", "name": "
622091391457"}
Thought: The final JSON output from the Mock UIDAI Validator is {"status":
": "Manickam G", "dob": "24/07/1943", "aadhaar": "622091391457"}.

Final Answer: {"status": "FAILURE", "message": "No record found", "name":
"622091391457"}

> Finished chain.
✓ Email sent successfully to jaidev.karthikeyan@gmail.com
127.0.0.1 - - [03/Jul/2025 22:30:53] "POST /submit HTTP/1.1" 200 -
```

Email is sent to a human agent to take further action

Agentic Flow : Case 2 – Failure in eKYC

mail.google.com/mail/u/1/#inbox/FMfcgzQbfxlCprfpmgBqGHVZGPISwLCV

Search mail

Active

Compose

Inbox 428

Starred

Snoozed

Important

Sent

Drafts 18

Categories

Social 1

Updates 422

Forums 1

Promotions 209

More

Labels

Personal

Travel

Youtube

Upgrade

eKYC Validation Failure for Manickam G

karthikeyan.venkataraman@gmail.com

10:30 PM (1 minute ago)

Dear Operator,

The eKYC validation for the following customer has FAILED:

Name: Manickam G
Aadhaar: [REDACTED]
Reason: No record found
Phone: 9840945470

Please review manually.

Regards,
eKYC Agent System

Reply Forward

6 deleted messages in this conversation. [View messages](#) or [delete forever](#).

**Actual email
received by the
human agent to take
further action**

Case 3 – eKYC Successful; SOP criteria **not** met

eKYC was successful but the Customer is a minor for which further action has to be taken by a human agent based on available procedures

Agentic Flow : Case 3 – eKYC success; Intervention needed per SOP

← → ↺ ⓘ 127.0.0.1:5001 ☆ 📁 | 🗺️ ⋮

Agentic AI Demo

Agent 1 - eKYC - Validates the customer's KYC to determine onboarding eligibility. If verification fails, a human review is triggered via email; if successful, the process seamlessly hands off to Agent 2.

Agent 2 - Onboarding - Automates customer onboarding by consulting Standard Operating Procedures stored in the Chrome Vector DB. If the applicant is a major, onboarding proceeds automatically; if a minor, a human loop is initiated to manage the next steps with an email notification.

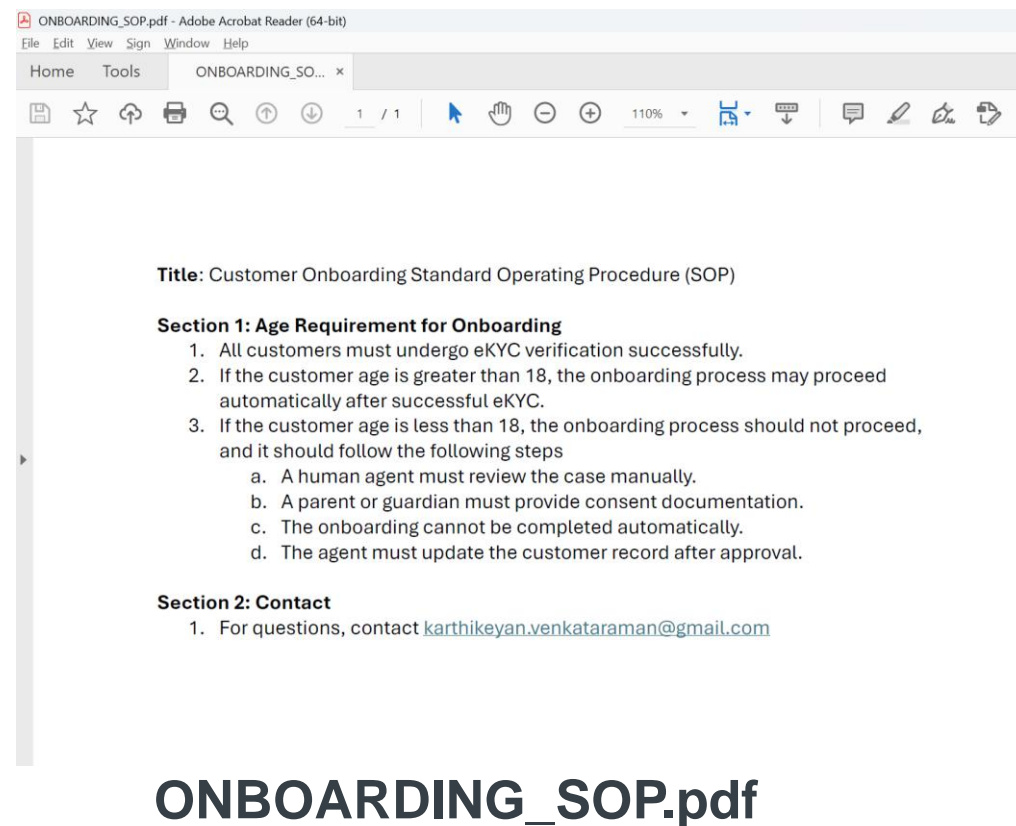
File Name	Action
GMANICKAM_Aadhar.pdf	<div>SUBMIT</div>
JAIDEVK_Aadhar.pdf	<div>SUBMIT</div>
KARTHIKEYANV_Aadhaar.pdf	<div>SUBMIT</div>

- This is a **PARTIAL failure scenario** where the customer is successfully validated against UIDAI
- The customer is a minor. Per SOP stored in Chroma database, there has to be a human intervention to onboard successfully

- GMANICKAM_Aadhar.pdf
 - JAIDEVK_Aadhar.pdf
 - KARTHIKEYANV_Aadhaar.pdf
- FAILURE SCENARIO
 - PARTIAL FAILURE SCENARIO
 - FULL HAPPY PATH (Already in screenshots)

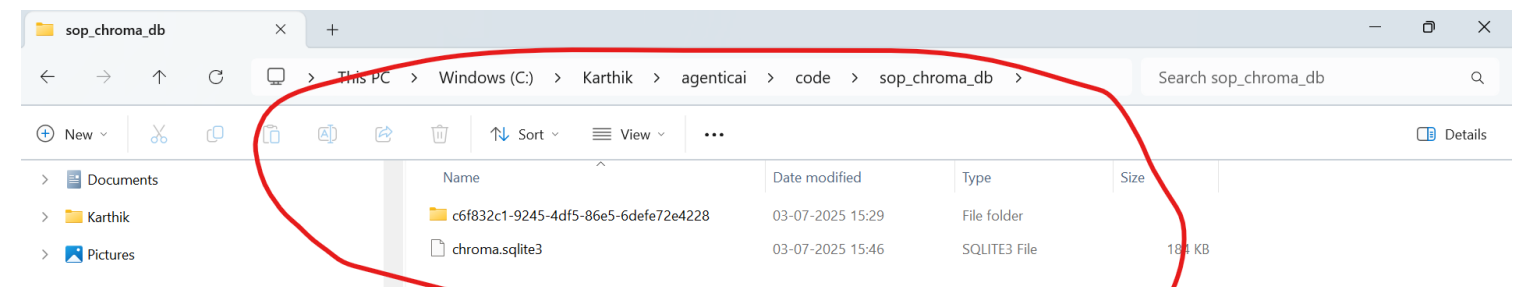
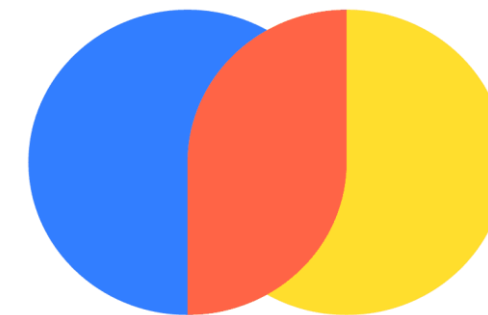
Agentic Flow : Case 3 – eKYC success; Intervention needed per SOP

- This scenario is to demonstrate the RAG capability.
- Internal SOPs are not available as part of the LLMs.
- Internal documents are external to LLMs. In order to utilize the power of LLMs we use RAG to retrieve such internal documents.
- For this use case, SOP is inserted in a ChromaDB (vector database like Pinecone)



PYTHON CODE

ChromaDB



Agentic Flow : Case 3 – eKYC success; Intervention needed per SOP

← → ↻ ⓘ 127.0.0.1:5001/submit

Agent Execution Result

=== 📁 eKYC Agent (UI Trigger) ===

📄 PDF Path: C:\Karthik\agentica\code\user_uploads\JAIDEVK_Aa

🔑 Password: (provided)

📞 Phone: 9840821235

=== ✅ Mock UIDAI Validator Result ===

{"status": "SUCCESS", "message": "Valid Aadhaar", "name": "K Jaidev"}

=== ✅ Running Onboarding Agent ===

=== Final Dispatcher Result: HUMAN_LOOP_TRIGGERED ===

← Back to Files

C:\windows\system32\cmd.exe

```
Signature Not Verified
Observation: Name: K Jaidev
DOB: [REDACTED]
Aadhaar: [REDACTED]
Thought: I have extracted the Name, DOB, and Aadhaar number
Action: Mock UIDAI Validator
Action Input: Name: K Jaidev, DOB: [REDACTED], Aadhaar: [REDACTED]
Observation: {"status": "SUCCESS", "message": "Valid Aadhaar", "name": "K Jaidev"}
Thought: I have successfully validated the extracted Aadhaar number
Final Answer: {"status": "SUCCESS", "message": "Valid Aadhaar", "name": "K Jaidev"}

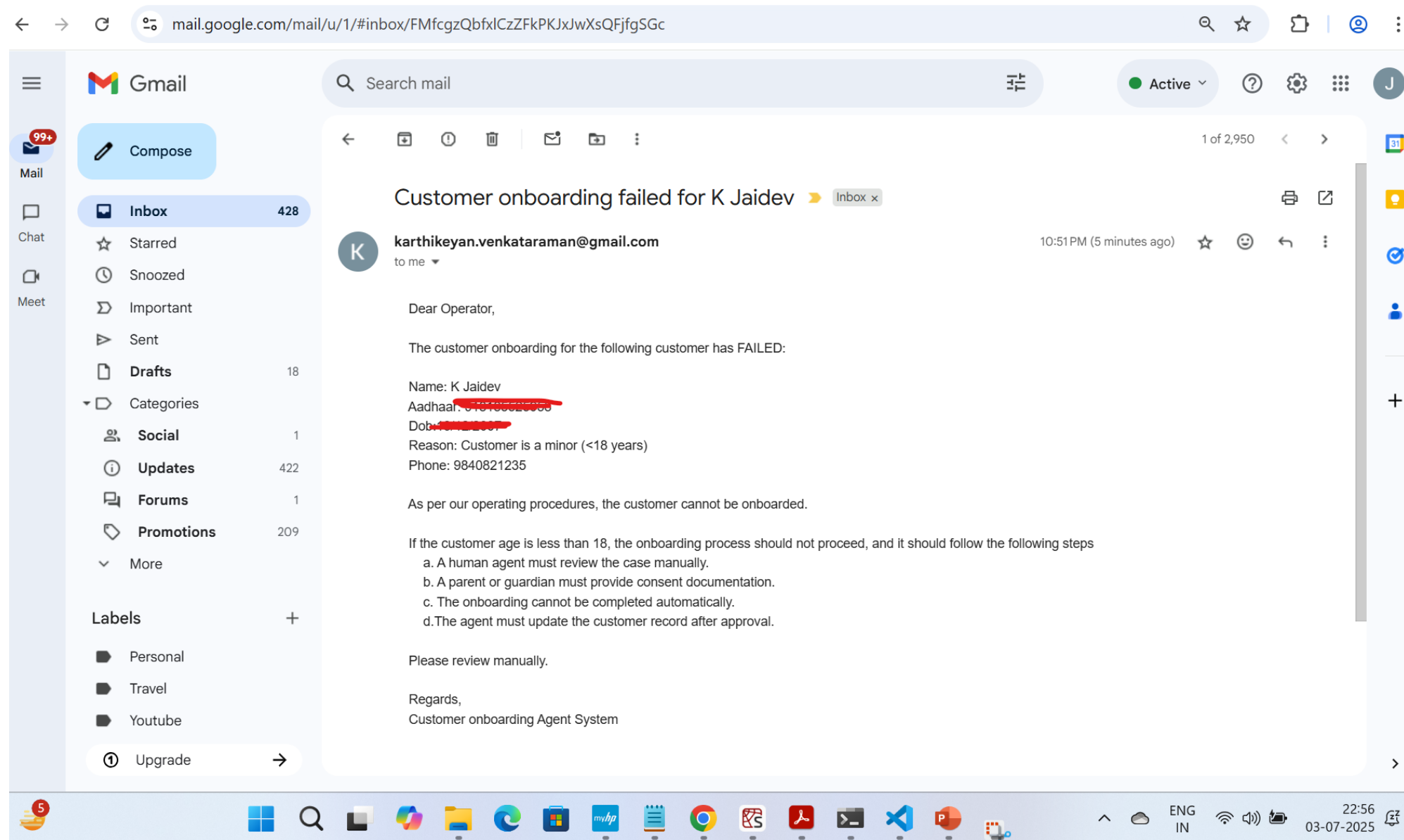
> Finished chain.

=== ✅ Onboarding Agent ===

Name: K Jaidev
DOB: [REDACTED]
Aadhaar: [REDACTED]
Calculated Age: 17
⚠️ SOP match not found.
▶ Decision: MINOR – needs human loop.
=== Dispatcher received: HUMAN_LOOP_REQUIRED|name:K Jaidev
▶ Human loop triggered for: K Jaidev (Age: 17)
✅ Email sent successfully to jaidev.karthikeyan@gmail.com
127.0.0.1 - - [03/Jul/2025 22:51:15] "POST /submit HTTP/1.1"
```

human loop

Agentic Flow : Case 3 – eKYC success; Intervention needed per SOP



**Actual email
received by the
human agent to take
further action**