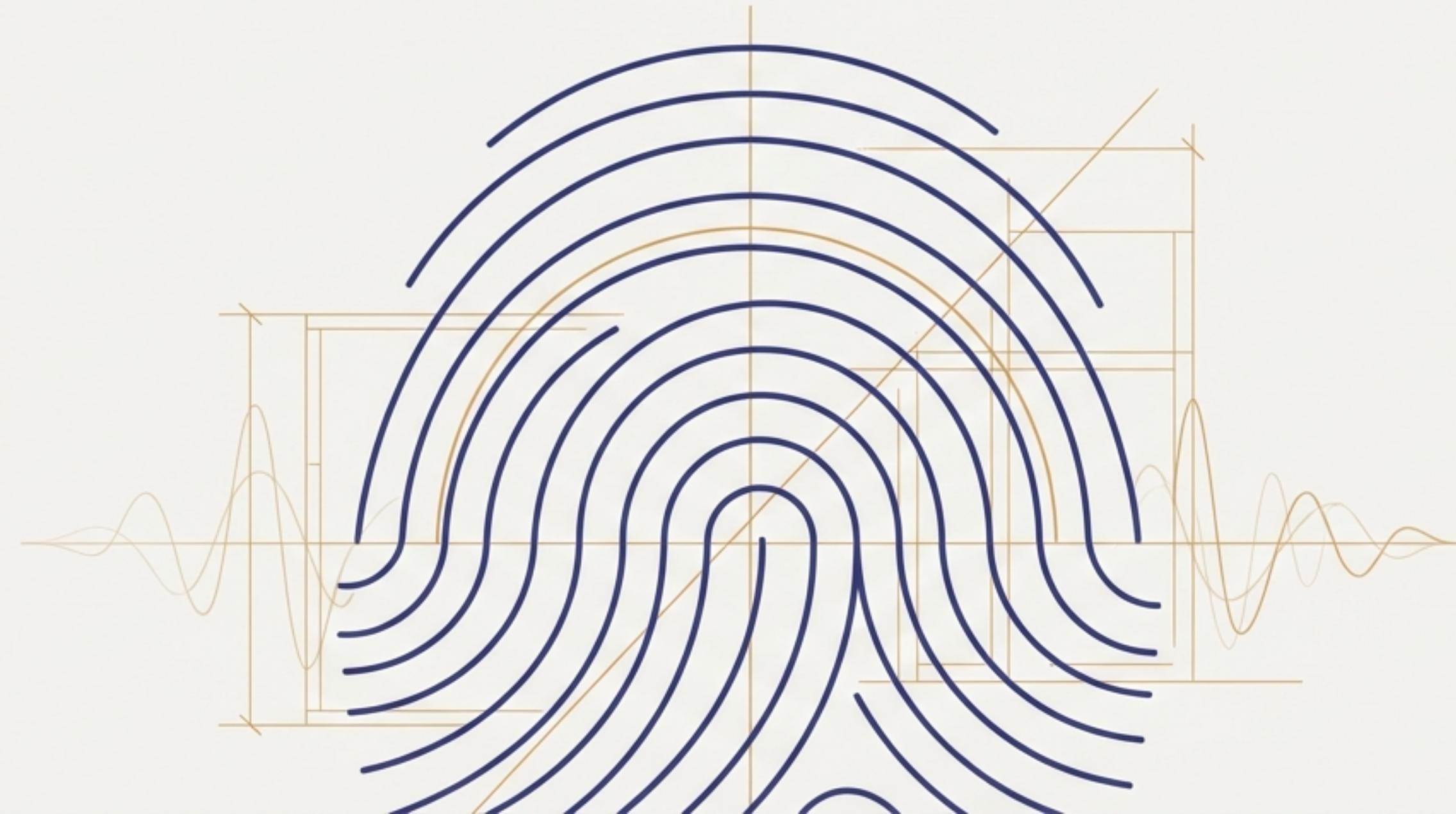


Universal AI Assistant: A New Paradigm for Citizen-Government Interaction

An intelligent, multi-modal system to automate government form filling.
Developed for the Intel Unnati Industrial Training Program.

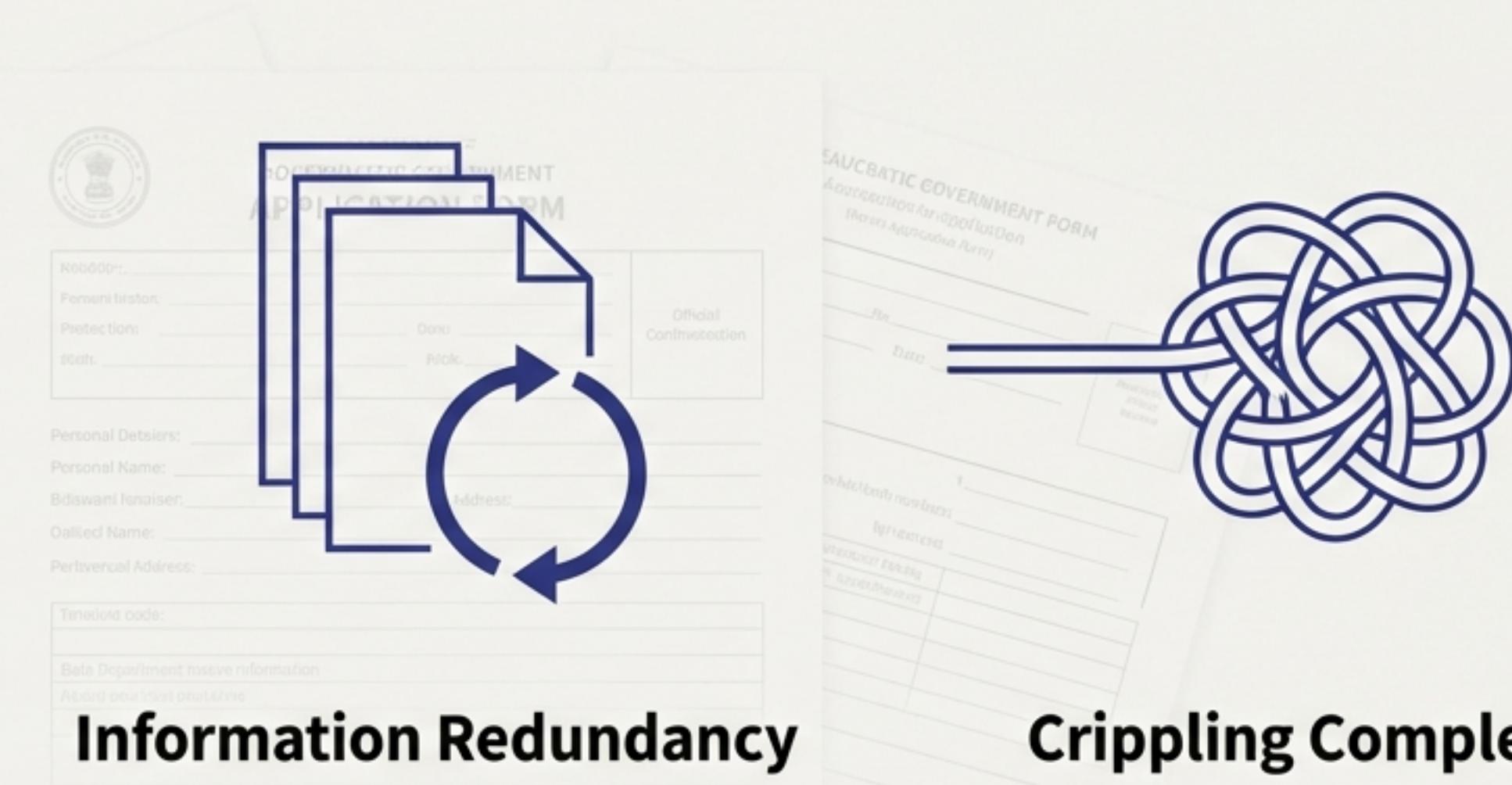


The Bureaucratic Wall: How Government Portals Exclude Millions



Language Barriers

Forms are often restricted to English or Hindi, creating an immediate barrier for a significant portion of the population.



Information Redundancy

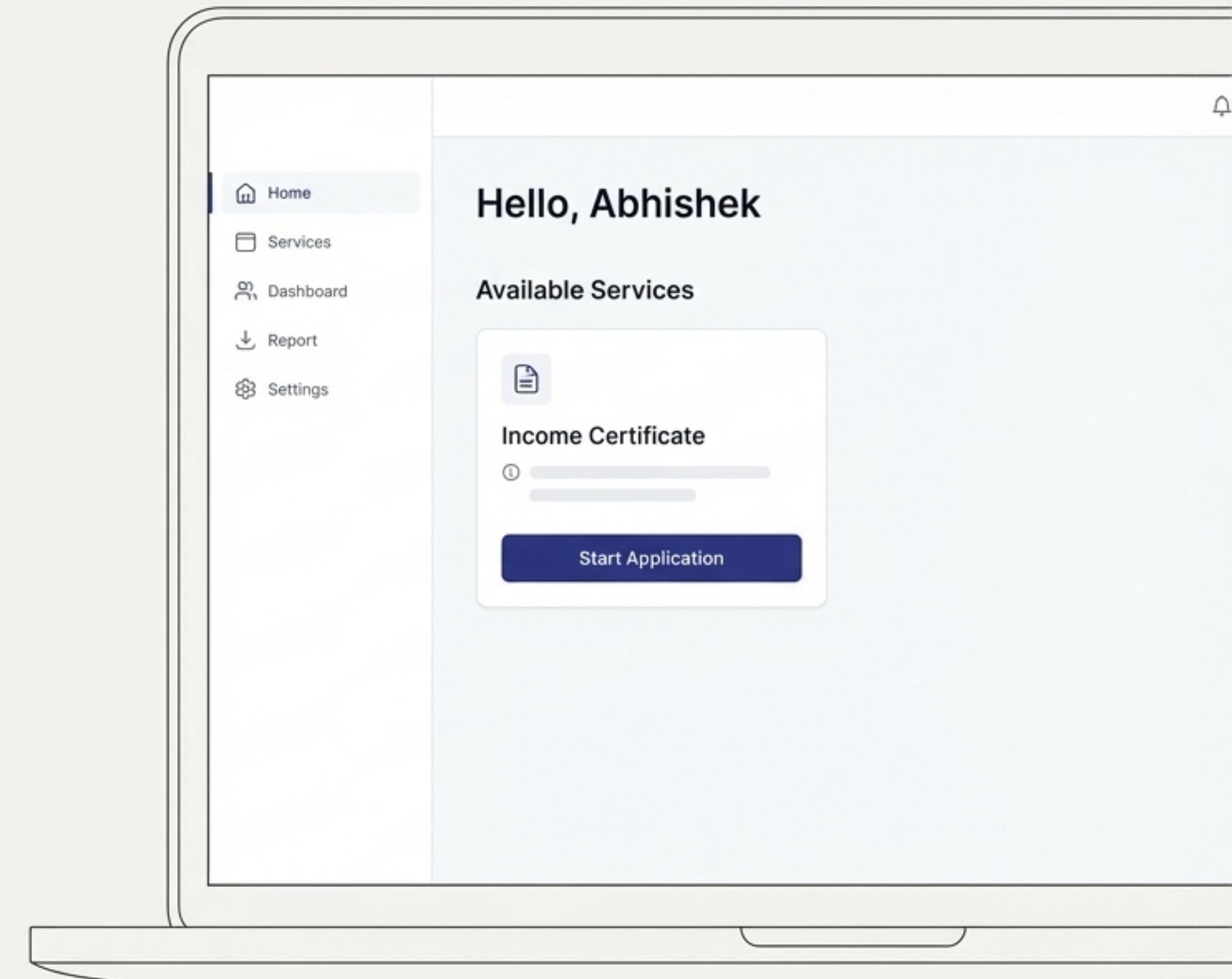
Citizens are forced to repeatedly enter the same core data (Name, Address, DOB) for every new application, leading to fatigue and errors.

Crippling Complexity

The intricate nature of forms and the fear of making a mistake creates significant anxiety, forcing many to rely on costly paid intermediaries.

Your Personal Digital Assistant for Government Services

Our solution is a comprehensive Full-Stack Web Application that acts as an intelligent intermediary, transforming the complex process of form filling into a simple conversation.



An Effortless, Multi-Modal Experience

1.

Provide Your Data



Simply upload existing documents (Aadhaar, PAN Card) or speak naturally. For example: "My name is Abhishek and I live in Kanpur."

2.

Review & Confirm

Name:	Abhishek Dixit	
Address:	Kanpur	

The assistant presents a filled form card for your review. You can easily edit any field, ensuring you always remain in control.

3.

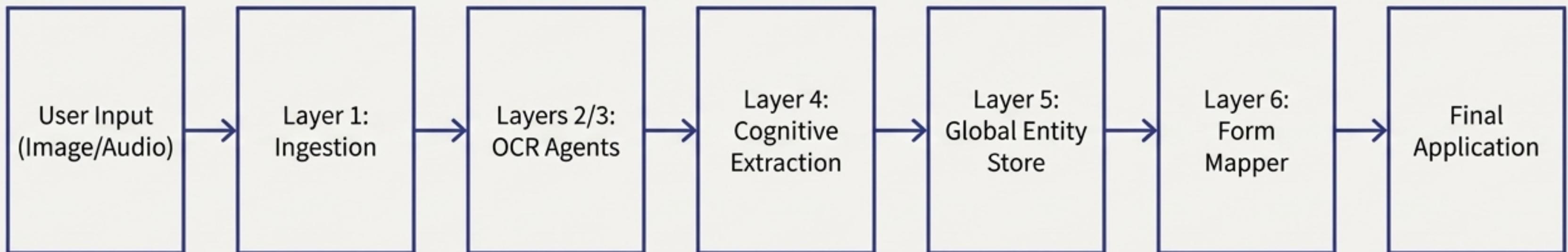
Submit with Confidence



Once confirmed, the data is ready for final submission.

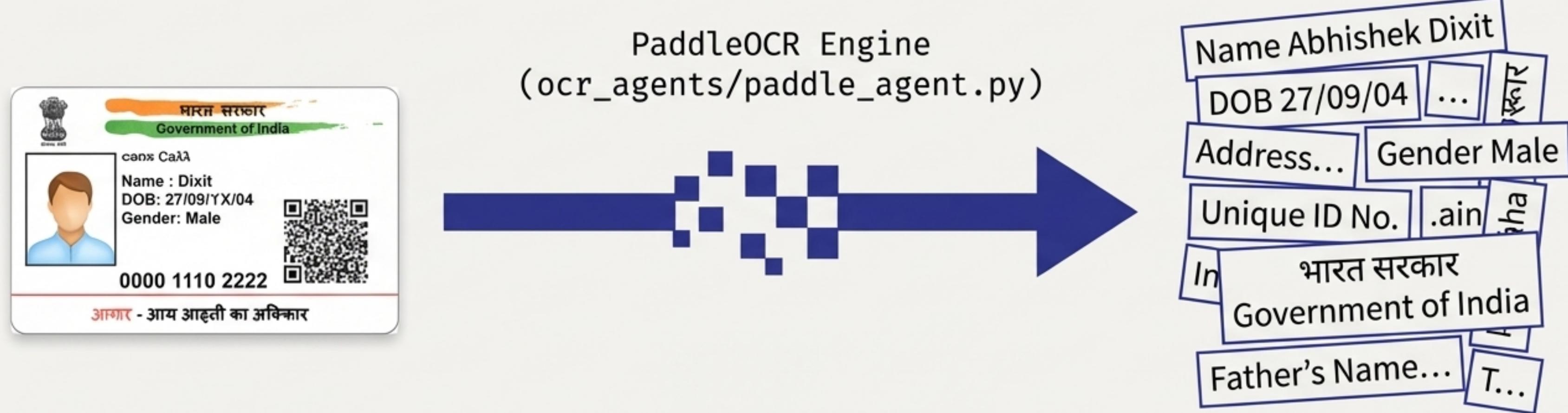
The Intelligent Core: A Six-Layer Processing Architecture

The backend, powered by FastAPI, deconstructs the form-filling process into a series of specialised layers. This ensures robustness, scalability, and precision.



Layers 1-3: From Pixels to Text

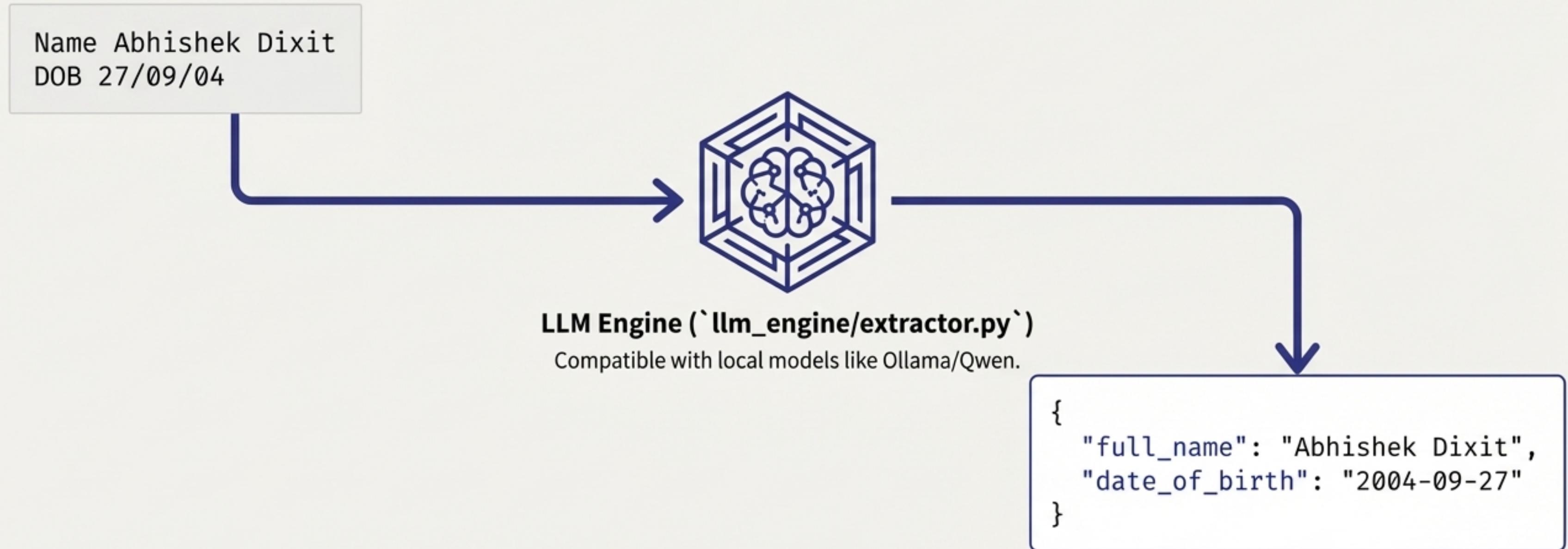
The journey begins with ingestion and powerful Optical Character Recognition (OCR).



The Ingestion layer (api/main.py) accepts and validates inputs. The OCR Agents then scan the visual data, converting pixels into meaningful text blocks.

Layer 4: From Raw Text to Structured Meaning

The Cognitive Extraction layer uses a Large Language Model to interpret and standardise the data.



This layer transforms messy, unstructured text into a clean, standardised JSON format, preparing it for intelligent storage and mapping.

Layer 5: The Global Entity Store – The System's Brain

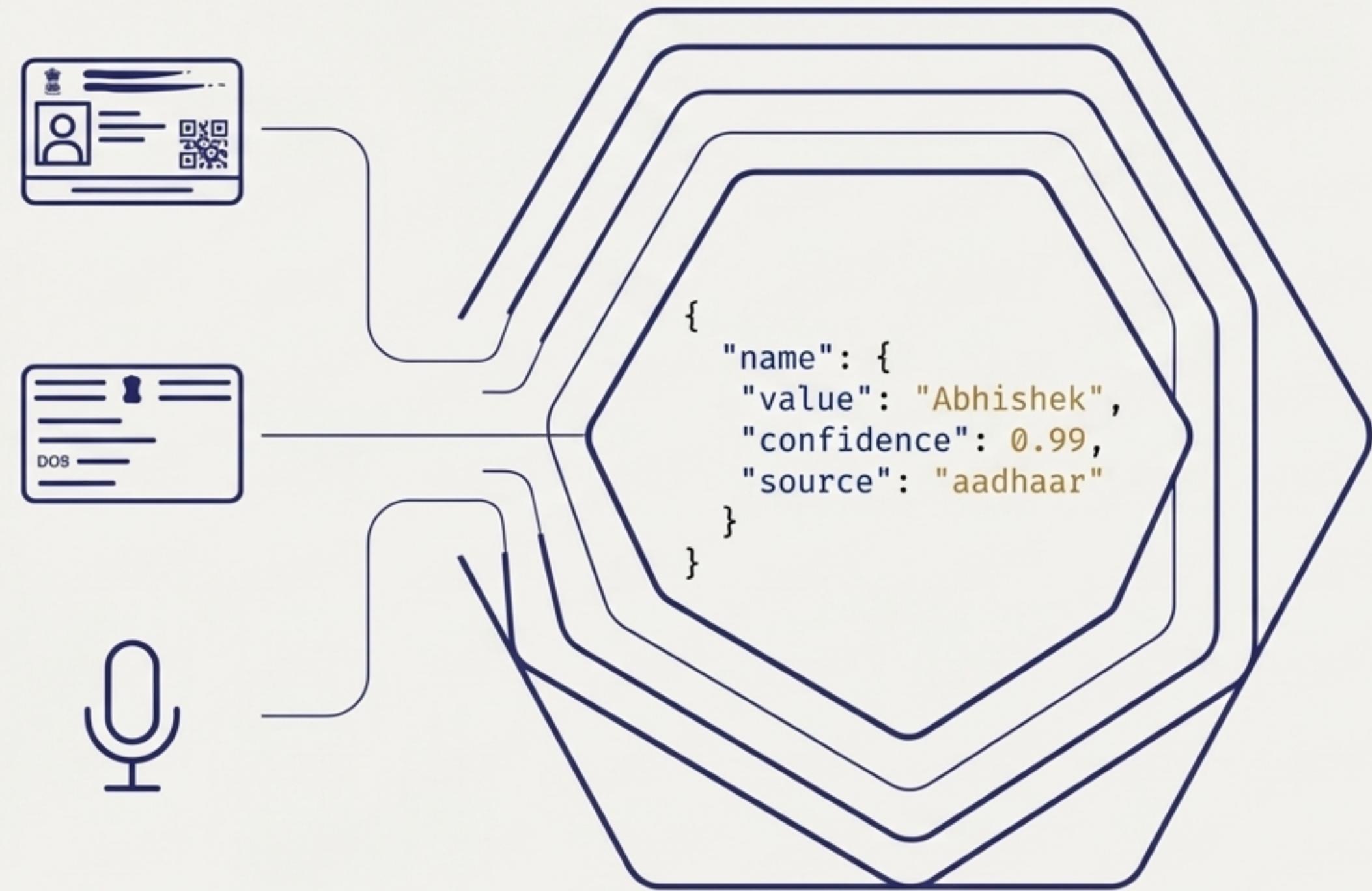
This session-based memory creates a unified 'Master Profile' for the user by intelligently merging data and evaluating its quality.

Merging

Combines partial information from multiple documents (e.g., Date of Birth from a PAN Card and Address from an Aadhaar Card).

Confidence Scoring

It doesn't just store data; it evaluates trust. Each piece of data is stored with a confidence score and its source.



Intelligent Conflict Resolution in Action

The Entity Store intelligently preserves the highest quality data when new, lower-confidence information is introduced.

Input 1 (High Confidence)



Aadhaar Card

Name: "Abhishek Dixit"



Entity Store State

```
{  
  "name": {  
    "value": "Abhishek Dixit",  
    "confidence": 0.99,  
    "source": "aadhaar"  
  }  
}
```

Input 2 (Low Confidence)



Microphone

User mumbles "My name is
Abhi... and I earn 5 lakhs
per year."



Entity Store State (Updated)

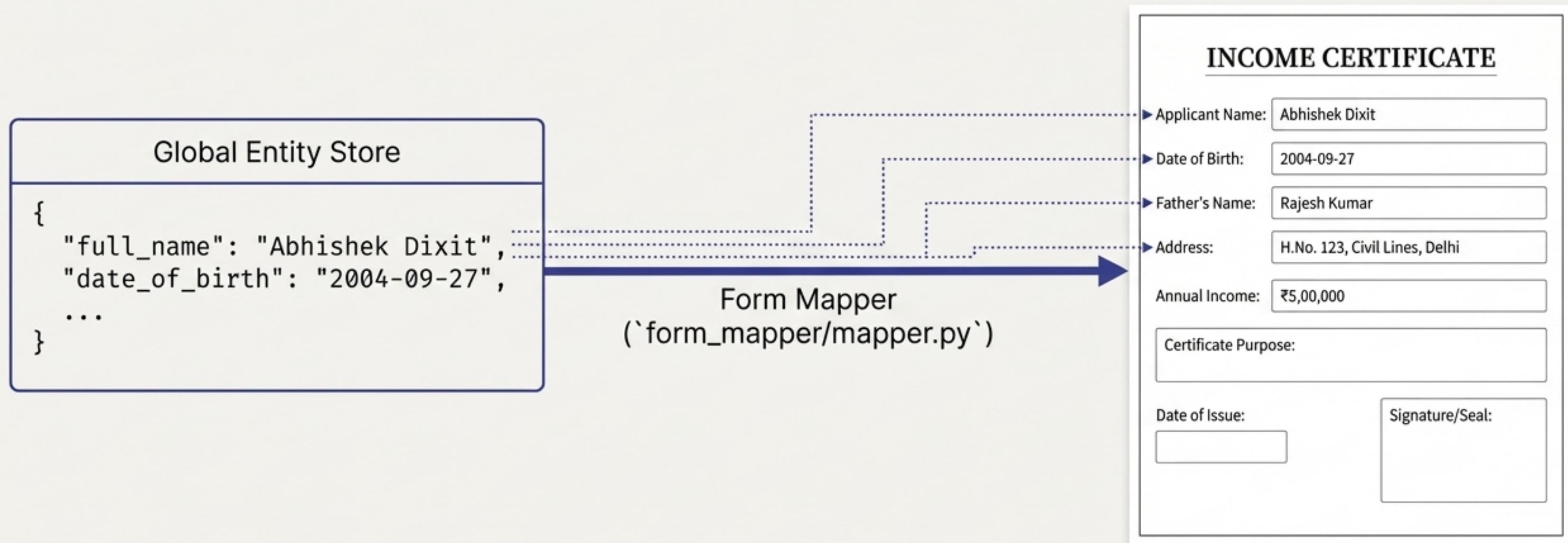
```
{  
  "name": {  
    "value": "Abhishek Dixit",  
    "confidence": 0.99,  
    "source": "aadhaar"  
  },  
  "income": {  
    "value": 500000,  
    "confidence": 0.85,  
    "source": "voice_input"  
  }  
}
```

High-confidence
"name" preserved.

New "income" added
with lower confidence.

Layer 6: The Universal Form Mapper – Final Assembly

The system loads a specific form schema and maps the unified data from the Entity Store to the required fields.



This final layer connects the central user profile to the unique requirements of any government application.

Our Core Innovations



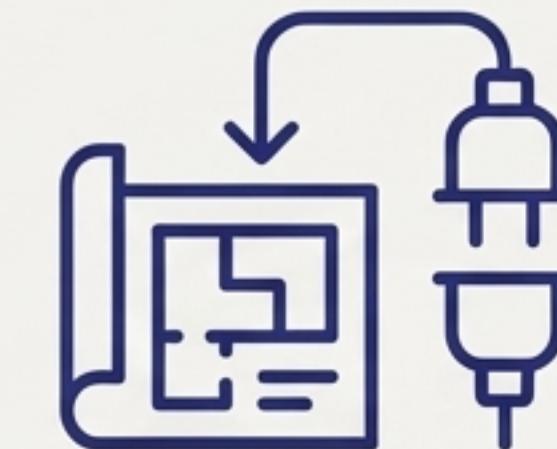
Privacy-First Architecture

Rigorous data handling and privacy filters are built into the architecture to ensure sensitive citizen data never leaks.



Edge Capability

Designed to run with local LLMs (e.g., Ollama), making the system viable for system viable for remote government offices with limited or no internet connectivity.



Universal Mapper

The architecture can support any new government form government form simply by adding a new JSON configuration file, requiring no code changes.

Beyond One Form: A System for Universal Access

The Universal AI Assistant is more than a tool for a single application; it is a foundational platform designed to revolutionise how citizens interact with government. Its extensible architecture is built to remove friction from every public service, creating a more inclusive and efficient future for all.

