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# AI-Powered KYC

## End-to-End Verification Architecture for Cross-Border FinTech




Identity verification • Fraud prevention • Compliance automation

Brajkishor Pandey | Head of Engineering | FinTech, Payments & Cross-Border Remittance Expert

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# Why Modern KYC Matters

## KYC is not just an ID upload.
## It is a risk, compliance and trust engine.

1



**Faster onboarding**

– verify customers in seconds

2



**Fraud prevention**

– stop fake IDs, impersonation and account abuse

3



**Regulatory compliance**

– meet AML and jurisdiction-specific rules

4



**Lower manual review**

– automate repetitive checks

5



**Better user experience**

– reduce friction for genuine customers

6



**Audit readiness**

– keep evidence, timestamps and decision trails



**Modern KYC balances speed, security and compliance.**

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# End-to-End KYC Flow

1. Country Selection
2. Email & Mobile OTP
3. Profile Details
4. Government ID Upload
5. Image Quality Check
6. OCR Data Extraction
7. Document Authenticity Check
8. Live Selfie Capture
9. Liveness Detection
10. Face Match
11. Government / Trusted Source Verification
12. AML & Sanctions Screening
13. Risk Scoring
14. Approve / Review / Reject
15. Audit Trail Storage

Country rules determine accepted documents and checks.

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# Reference Architecture

## CLIENT LAYER

Web App

Mobile App

Admin Review Portal

## ACCESS LAYER

API Gateway

Auth Service

## CORE KYC SERVICES

Country Rules Engine

OCR Service

Document Verification Service

Face Match Service

AML Screening Service

Risk Engine

Decision Engine

## DATA & SUPPORT LAYER

Encrypted Object Storage

KYC Database

Audit Log Store

Notification Service

Queue / Event Bus

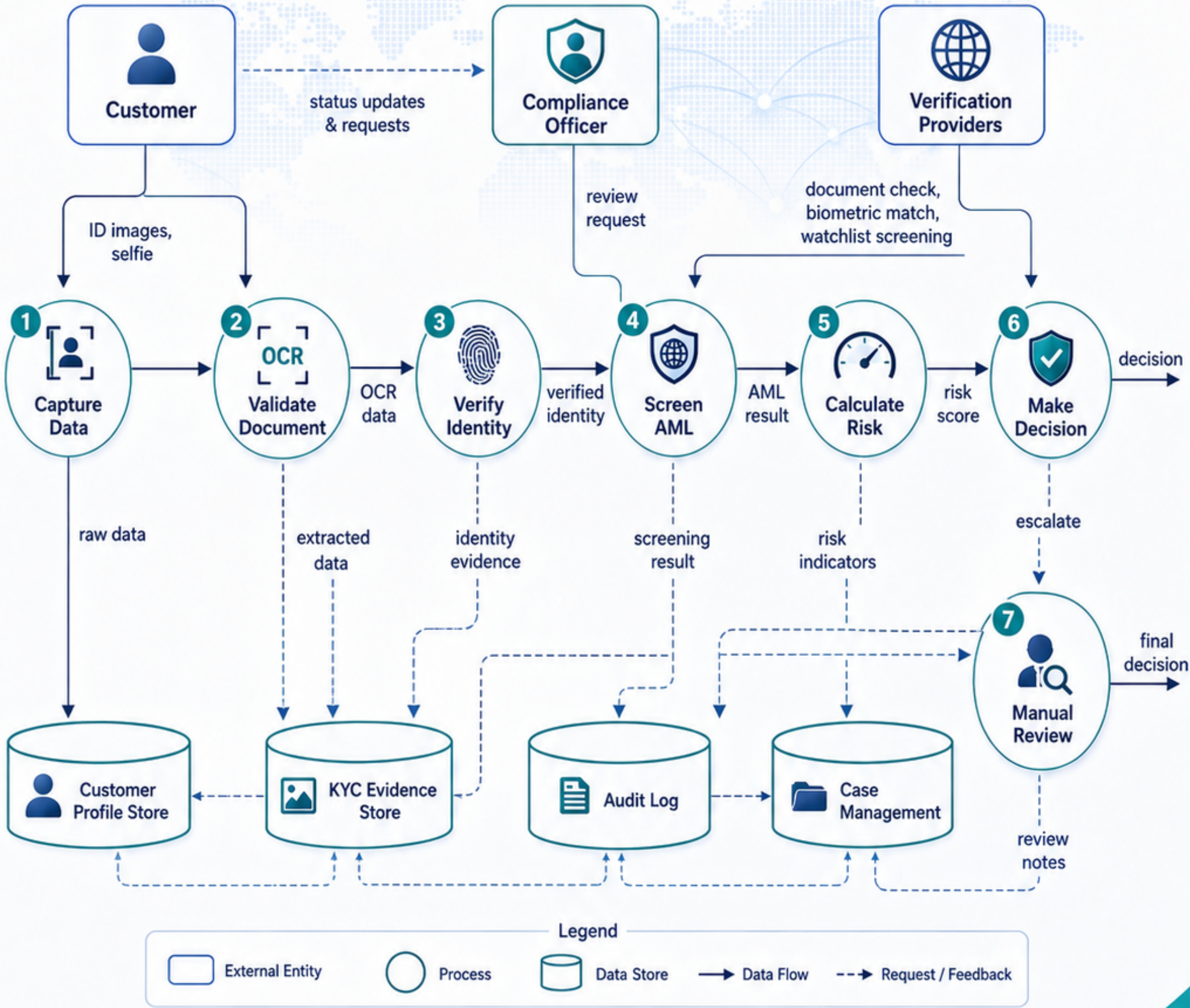
Modular services reduce vendor lock-in and support country-specific logic.

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# KYC Data Flow Diagram (DFD)




Sensitive data should be encrypted at rest and in transit.

SECURE BY DESIGN · PRIVACY PROTECTED · REGULATORY COMPLIANT · GLOBAL READY

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# Decision & Risk Engine

Document score

Face match score

Liveness score

AML / PEP result

Country risk

Device & IP signals

Duplicate account check

Transaction intent / velocity

**Risk Engine**

## Decision

**Low risk**
Score ≤ 30

**Medium risk**
Score 31–70

**High risk**
Score > 70

**Auto Approve**
Low risk

**Manual Review**
Medium risk

**Reject**
High risk

Rules and ML can work together for faster, explainable decisions.

ACCURATE RISK SCORING

EXPLAINABLE DECISIONS

FASTER ONBOARDING

REDUCED RISK EXPOSURE

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# Automated Reconciliation & Audit

## Eliminate Gaps. Detect Exceptions. Ensure Audit Readiness.

KYC platform records

Provider callbacks

AML screening responses

Government source checks

Manual review actions

Final customer status

### Reconciliation Engine

Compares records across all sources in real time to detect exceptions and data inconsistencies.

- Auto-match records
- Escalate exceptions
- Preserve full evidence trail

### Exceptions Detected

- Missing callback
- Status mismatch
- Duplicate verification
- Unlinked evidence
- Fee / provider mismatch
- Retry pending

### Case Queue

Prioritized exceptions for analyst review and resolution.

### Ops Dashboard

Real-time reconciliation health, trends and exception metrics.

### Audit Report

Complete, immutable evidence trail for compliance audits.

COMPLETE RECONCILIATION

DATA CONSISTENCY GUARANTEED

AUDIT-READY BY DESIGN

TRANSPARENT & TRACEABLE

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# Exception Cases & Manual Review

## Handling edge cases with precision and care

### Common Exception Scenarios

1. **Blurred or cropped ID**
   - Request resubmission
2. **Expired document**
   - Reject
3. **OCR extraction failure**
   - Retry with fallback provider
4. **Face mismatch**
   - Escalate to analyst
5. **Liveness failed**
   - Request resubmission
6. **AML / sanctions hit**
   - Escalate to analyst

### Manual Review Workflow

Exception detected → Case created → Evidence attached → Analyst review → Final decision

> Manual review should be reserved for exceptions, not the default path.

- CONSISTENT DECISIONS
- EXPERT OVERSIGHT
- AUDITABLE OUTCOMES
- FASTER RESOLUTION

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# Development & Deployment Diagram

## FRONTEND

Web

Mobile

## BACKEND SERVICES

Gateway

KYC Services

Risk Engine

## INTEGRATIONS

OCR Provider

AML Provider

Identity Providers

## INFRASTRUCTURE

Container Platform

CI/CD Pipeline

Secrets Manager

Monitoring & Logs

Message Queue

Database

Object Storage

Code Repository

CI/CD Pipeline

Build • Test • Scan
Security • Deploy

Staging Environment

Integrated Testing
UAT • Security

Production Environment

Highly Available
Scalable • Secure

Observability, secrets management and environment isolation are critical for regulated systems.

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# Implementation Roadmap

## From Foundation to Global Scale

### Phase 1 – Core onboarding

- Country rules
- ID upload
- OCR
- Selfie

### Phase 2 – Verification intelligence

- Document AI
- Liveness
- Face match
- AML

### Phase 3 – Operational control

- Risk engine
- Manual review
- Audit trail
- Automated reconciliation

### Phase 4 – Scale & optimization

- Multi-provider fallback
- Analytics
- Dashboards
- ML tuning
- Global expansion

**A strong KYC platform is secure, explainable, modular and ready for scale.**

Open to discussing KYC architecture, reconciliation and fintech implementation.

Let's build trust at scale.

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