

Lesson 6: Digital Identity and Authentication

Module 1: FinTech Fundamentals

Digital Finance

Digital Identity Challenge

Identity Verification Problem

- 1.7B unbanked adults
- Lack of identity documents
- Fraud losses: \$5.8B (2023)
- Remote onboarding need

The Digital Identity Challenge

How do you prove who you are online?



- * Synthetic identities
- * Bots & automation
- * Deepfakes



- * Identity theft
- * Document fraud
- * Account takeover



- * Session hijacking
- * Credential sharing
- * Continuous auth

Identity Fraud Statistics (2023)		
- 54.9B lost to identity fraud globally	- 1.7B unbanked adults (45.5% POC)	- 15% of adults affected by ID theft
- 80% increase in synthetic ID fraud		

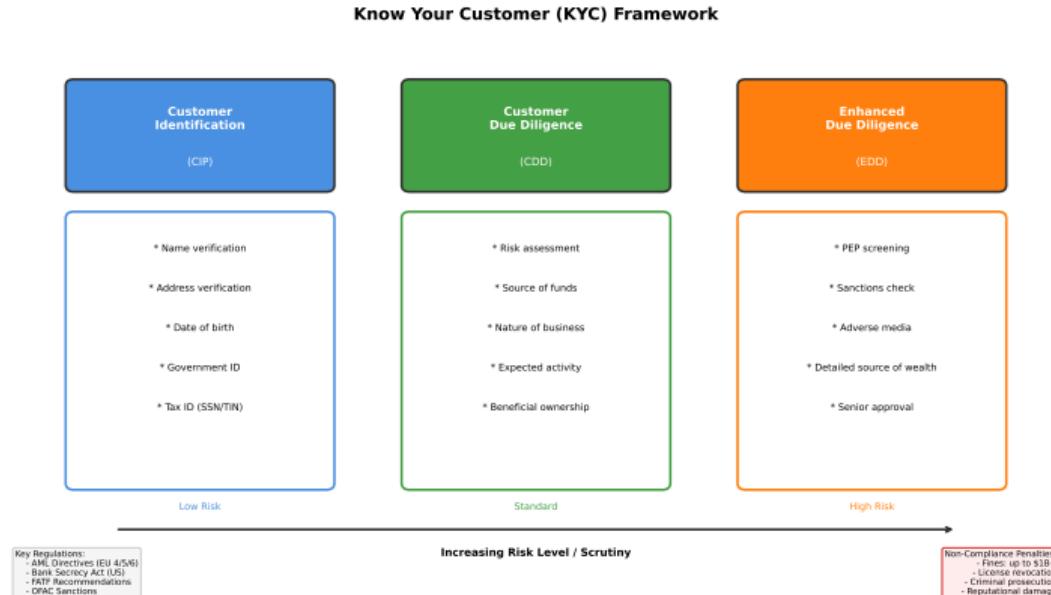
Stakeholders: Financial institutions | Governments | Consumers | Regulators

Digital Identity Solutions	
- Document verification (OCR, API)	- Biometric (Fingerprint, Face)
- Knowledge-based authentication	- Licensee detection
- Database cross-checks	- Behavioral analytics

Source: Javelin Strategy, FIC Consumer Sentinel Network (2023)

1.7 billion adults remain unbanked—identity verification is the primary barrier to financial inclusion.

KYC Regulatory Requirements

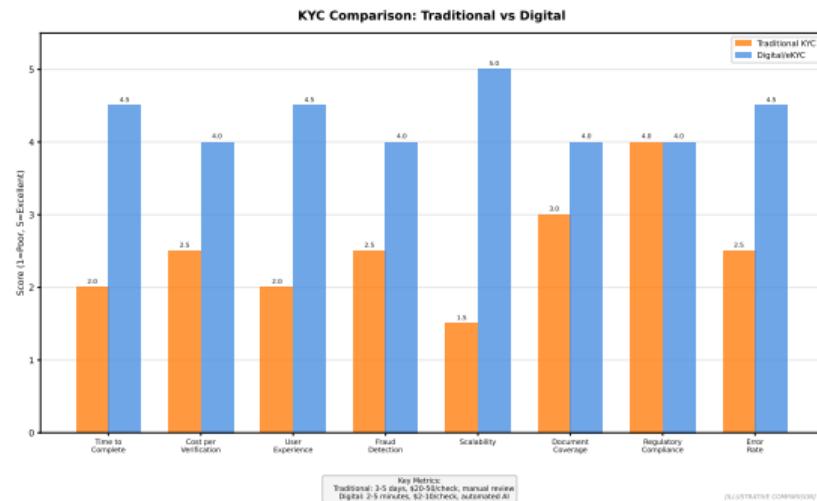


KYC is legally mandated for all financial institutions—FATF, AMLD, and BSA set global standards.

Traditional vs Digital KYC

Process Comparison

- Traditional: 7-14 days
- Digital: 5-10 minutes
- Cost: \$60 vs \$5
- Drop-off: 40% vs 15%

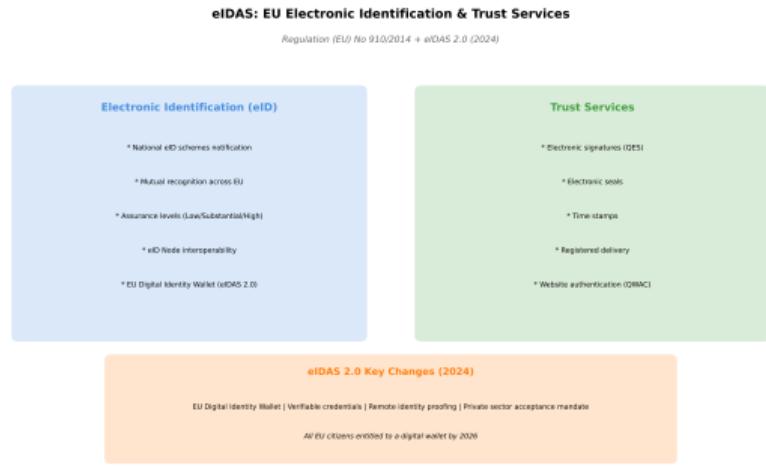


Digital KYC reduces verification time from 7-14 days to 5-10 minutes—at 90% lower cost.

eIDAS Framework

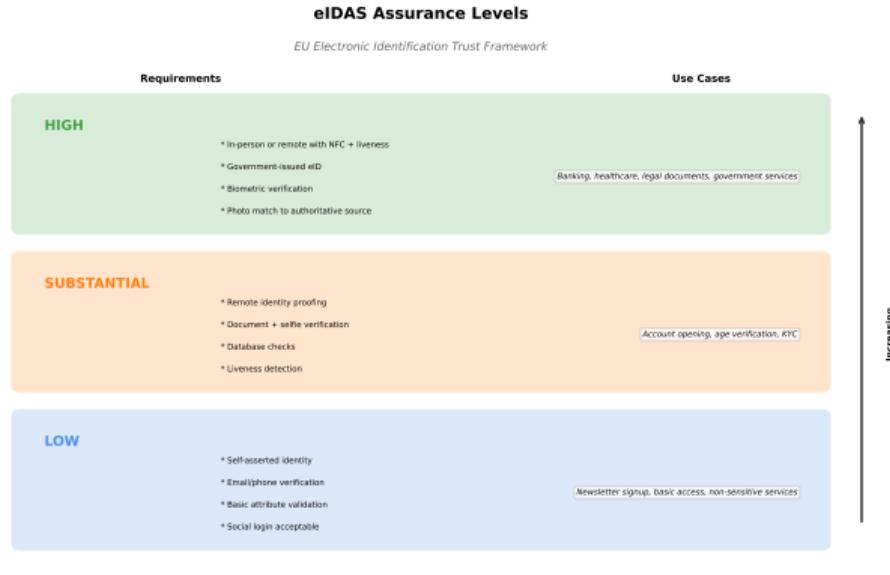
EU Digital Identity

- Electronic ID recognition
- Trust services regulation
- Cross-border validity
- Three assurance levels



eIDAS enables cross-border electronic identity recognition across all 27 EU member states.

eIDAS Assurance Levels

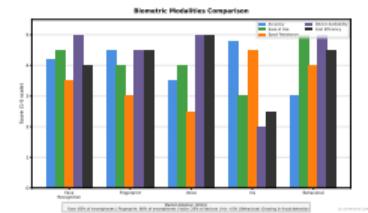


Three assurance levels (Low/Substantial/High)—High requires in-person or equivalent verification.

Biometric Authentication

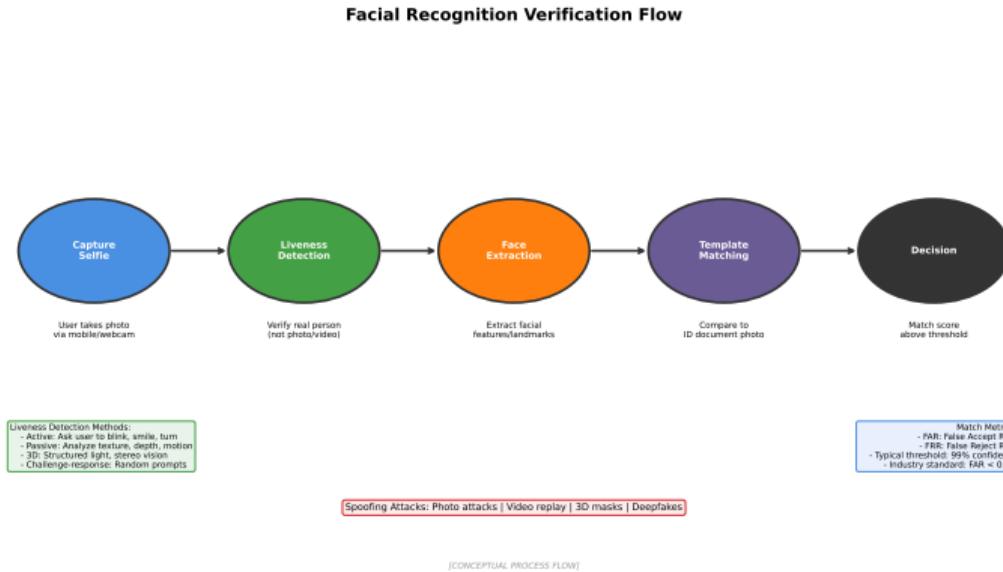
Modalities

- Fingerprint: 99.8% accuracy
- Face recognition: 99.5%
- Iris scan: 99.99%
- Voice: 95% accuracy



Iris scanning achieves 99.99% accuracy—face recognition (99.5%) is preferred for mobile UX.

Facial Recognition Flow

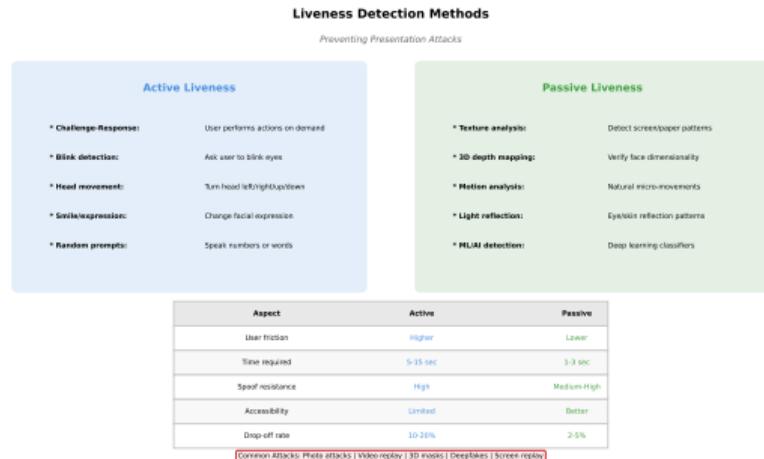


Face capture to match takes 2-3 seconds—AI extracts 128+ facial landmarks for comparison.

Liveness Detection

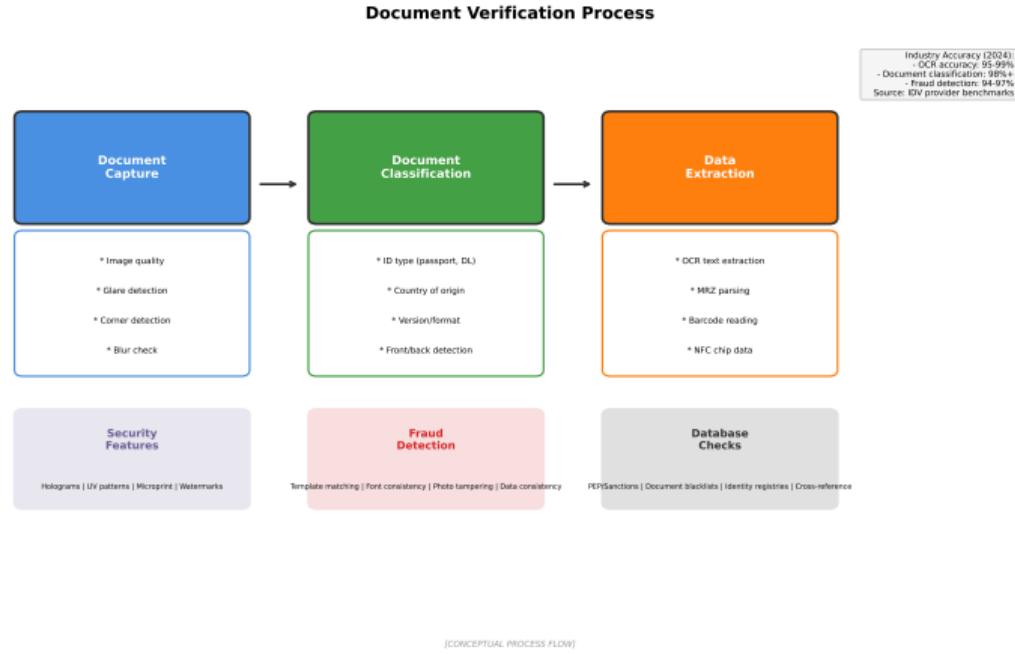
Anti-Spoofing

- Active: User actions
- Passive: Texture analysis
- 3D depth sensing
- Challenge-response



Liveness detection prevents photo/video spoofing—3D depth sensing defeats deepfake attacks.

Document Verification Technology



AI detects document tampering by analyzing holograms, microprinting, and UV security features.

OCR and NFC Chip Reading

Automated Extraction

- Optical character recognition
- Machine-readable zone (MRZ)
- NFC chip data (ePassports)
- Security features check

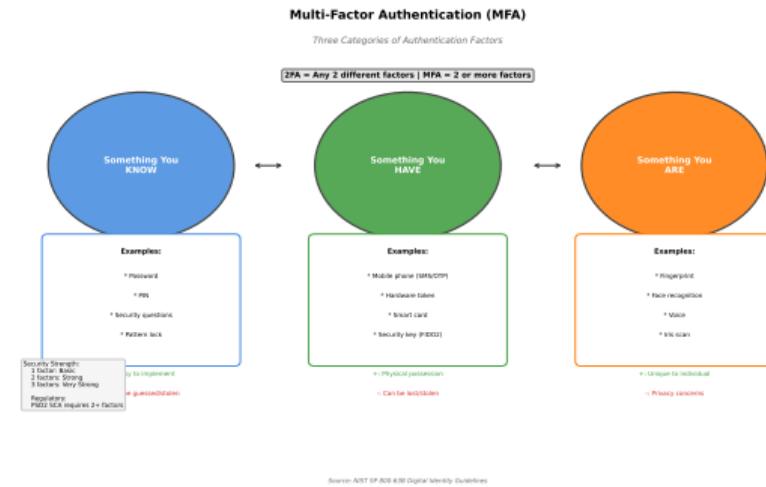


NFC chip reading provides cryptographic proof—data signed by issuing authority cannot be forged.

Multi-Factor Authentication (MFA)

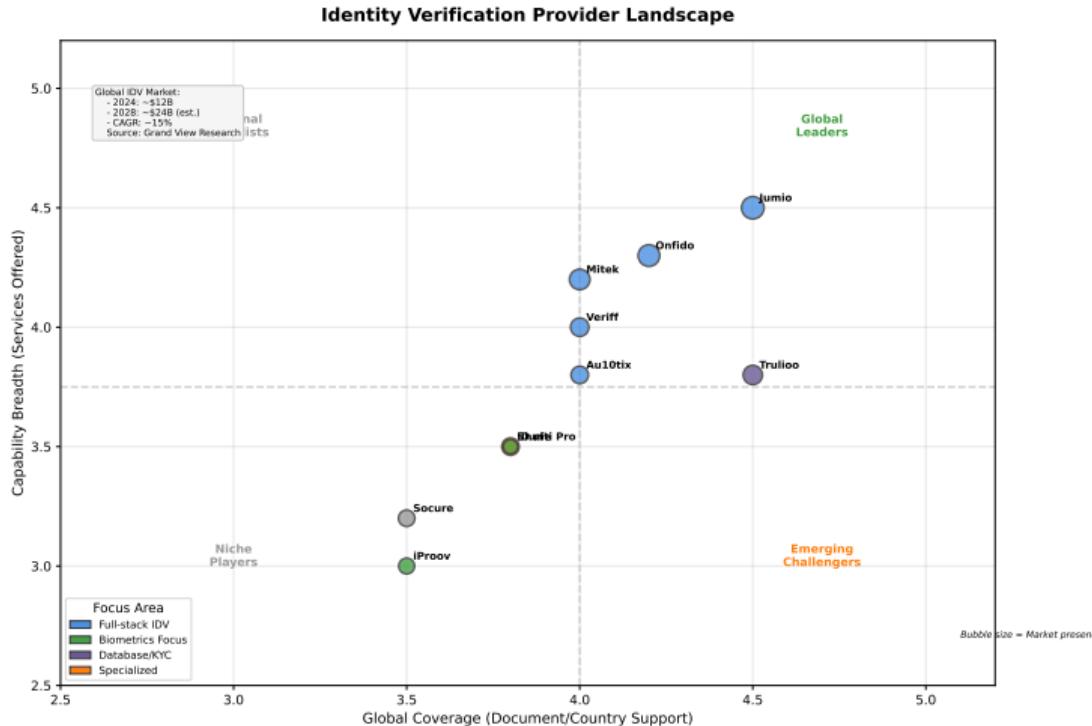
Authentication Factors

- Knowledge: Password/PIN
- Possession: OTP token
- Inherence: Biometric
- Reduces fraud 99.9%



MFA combining 2+ factors reduces account takeover fraud by 99.9%—now standard for banking.

Identity Verification Providers

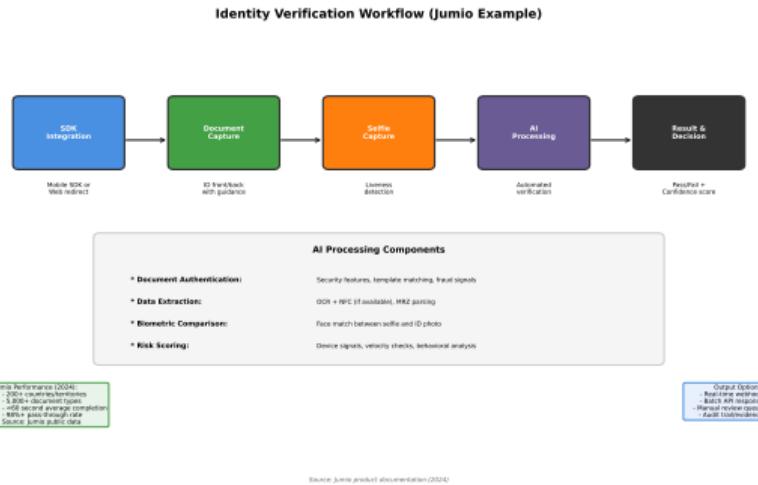


Jumio, Onfido, and Trulioo lead the \$15B IDV market—consolidation accelerating via M&A.

Jumio Case Study

AI-Powered KYC

- 1B+ verifications
- 5 minute verification
- 95% automation rate
- 200+ countries

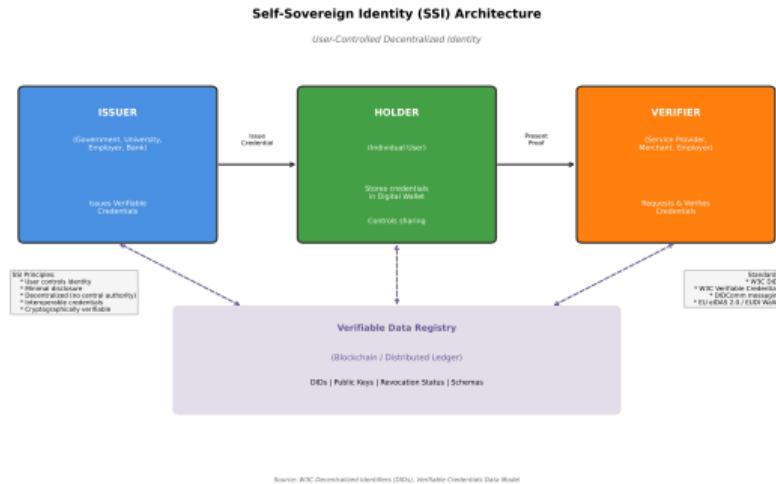


Jumio processed 1B+ verifications—95% automation rate with 5-minute average completion.

Self-Sovereign Identity (SSI)

Decentralized Model

- User controls credentials
- Blockchain-based
- Verifiable credentials
- Privacy-preserving

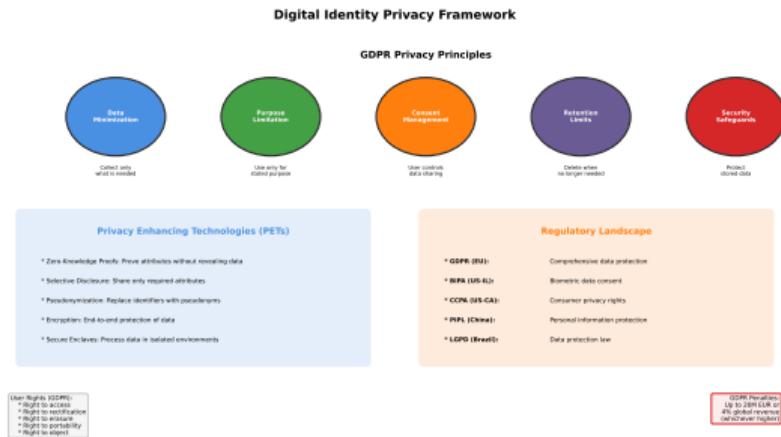


SSI gives users control over their credentials—verify age without revealing birthdate.

Privacy Concerns

Data Protection

- GDPR compliance
- Biometric template storage
- Data minimization
- Right to erasure

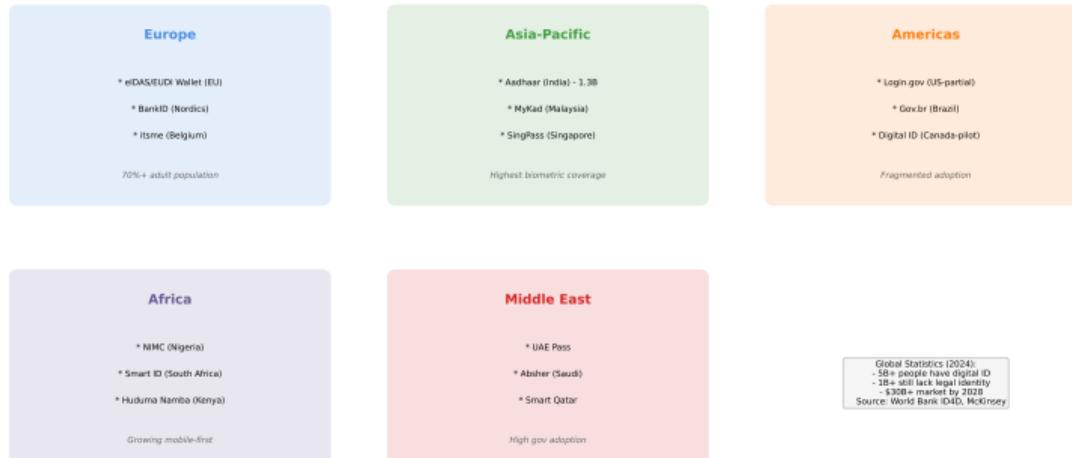


GDPR requires data minimization and right to erasure—biometric templates are sensitive personal data.

Global Identity Programs

Global Digital Identity Landscape

National Digital ID Systems by Region (2024)



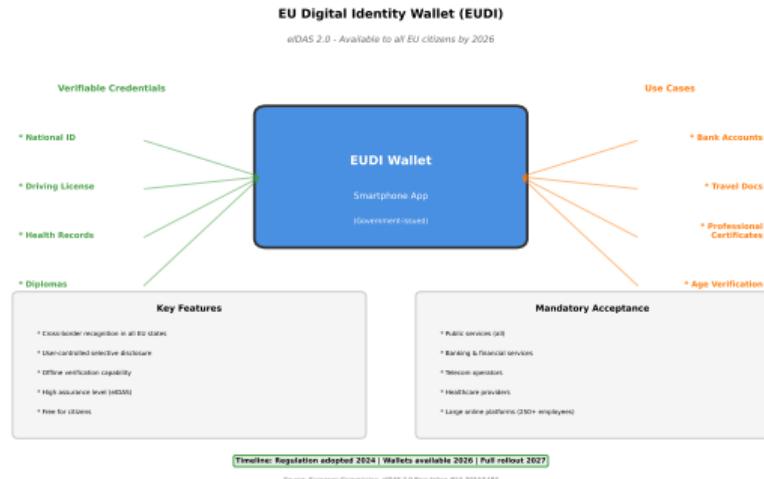
Source: World Bank, ID4D Global Dataset 2024, Regional government sources

India's Aadhaar (1.4B), Estonia's e-ID, and Singapore's Singpass lead global digital ID adoption.

Future: Digital Wallets

EU Digital Identity Wallet

- eIDAS 2.0 mandate
- 2026 rollout target
- Universal EU acceptance
- Private sector integration



EU Digital Identity Wallet mandated by 2026—every EU citizen will have government-issued mobile ID.

Key Takeaways

- **KYC:** Digital verification reduces cost 90% and time 95%
- **eIDAS:** EU framework for cross-border identity
- **Biometrics:** Face + liveness detection standard approach
- **MFA:** Multi-factor prevents 99.9% of fraud
- **Future:** Self-sovereign identity and digital wallets

Digital identity is the foundation of financial inclusion—secure verification enables trusted services.