

Lesson 5: Open Banking and APIs

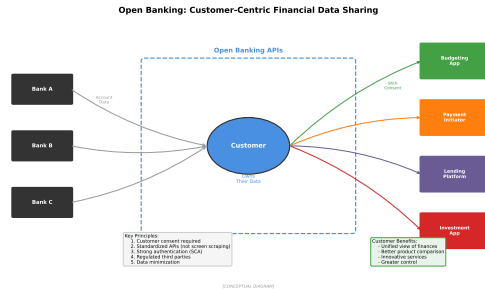
Module 1: FinTech Fundamentals

Digital Finance

Open Banking Revolution

Data Sharing Paradigm

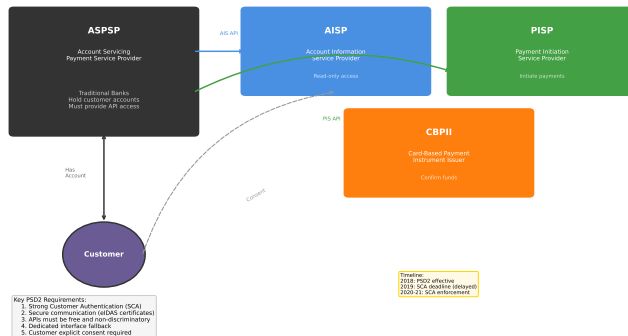
- Customer-permissioned access
- Standardized APIs
- Third-party innovation
- Regulatory mandate (EU, UK)



Open banking shifts data control from banks to customers—enabling competition and innovation.

PSD2 Regulatory Architecture

Payment Services Directive 2 (EU 2015/2366)



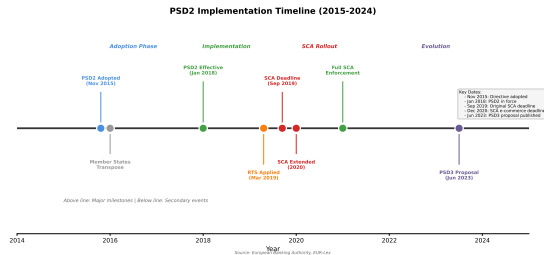
Source: EU Directive 2015/2366 (PSD2)

PSD2 mandates banks provide API access to licensed third parties with customer consent.

PSD2 Timeline

Implementation Phases

- 2015: Directive adoption
- 2018: SCA requirements
- 2019: RTS compliance
- 2021: Full enforcement

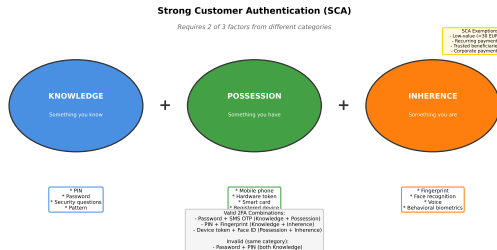


Full PSD2 enforcement took 6 years (2015-2021)—phased rollout reduced industry disruption.

Strong Customer Authentication (SCA)

Two-Factor Requirement

- Knowledge (password)
- Possession (mobile device)
- Inherence (biometric)
- Exemptions for low-risk

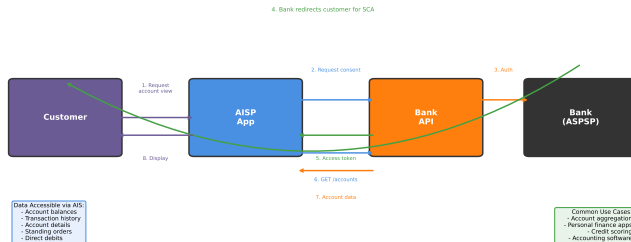


Source: PSD2 RTS on Strong Customer Authentication (EU 2018/0801)

SCA requires 2 of 3 factors—knowledge, possession, or inherence—for secure authentication.

Account Information Service (AIS) Flow

Read-only access to account data



[CONCEPTUAL FLOW DIAGRAM]

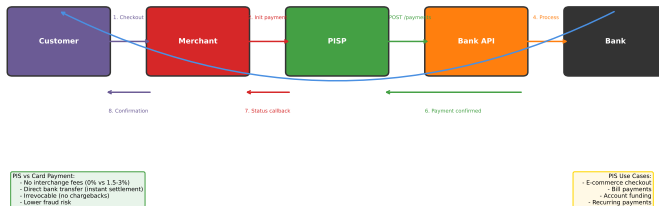
AIS enables read-only account aggregation—view balances from multiple banks in one app.

Payment Initiation Service (PIS)

Payment Initiation Service (PIS) Flow

Bank-to-bank transfer via open banking

5. Redirect customer for bank authentication (SCA)



[CONCEPTUAL FLOW DIAGRAM]

PIS enables direct bank-to-bank transfers—bypassing card networks entirely.

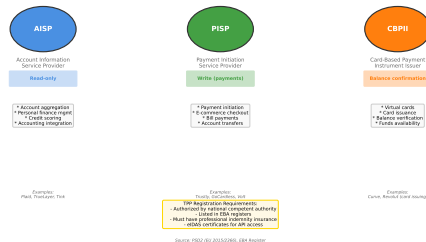
Third-Party Providers (TPPs)

Provider Types

- AISP: Account aggregation
- PISP: Payment initiation
- CBPII: Card balance checks
- Regulatory authorization

Third Party Provider (TPP) Categories

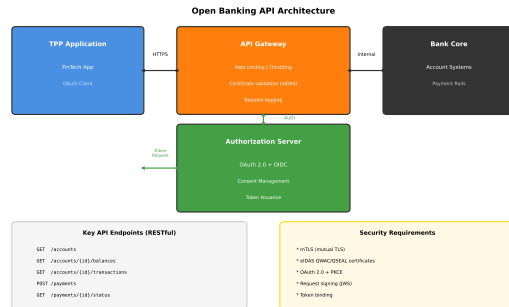
Note: A single provider can register for multiple TPP categories



TPPs must obtain regulatory authorization—AISPs for data, PISPs for payments, CBPIIs for balance checks.

Technical Protocols

- RESTful architecture
- OAuth 2.0 authorization
- OpenAPI specification
- JSON data format

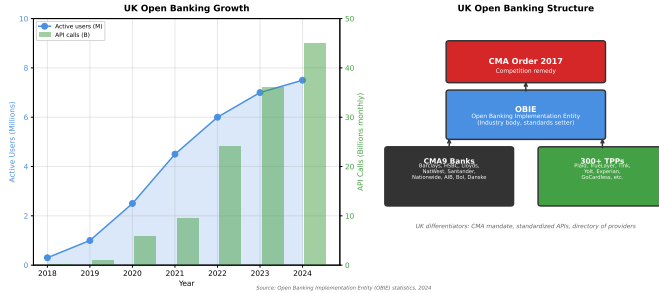


Source: Open Banking API specifications (Bole Group, UK ODD, STET)

RESTful APIs with OAuth 2.0 authorization are the standard—JSON format enables easy integration.

UK Open Banking Implementation

UK Open Banking: World-Leading Implementation



UK leads global adoption with 8M+ users—CMA9 mandate required 9 largest banks to open APIs.

Open Banking Use Cases

Consumer Applications

- Multi-bank aggregation
- Automated budgeting
- Alternative credit scoring
- Instant payments

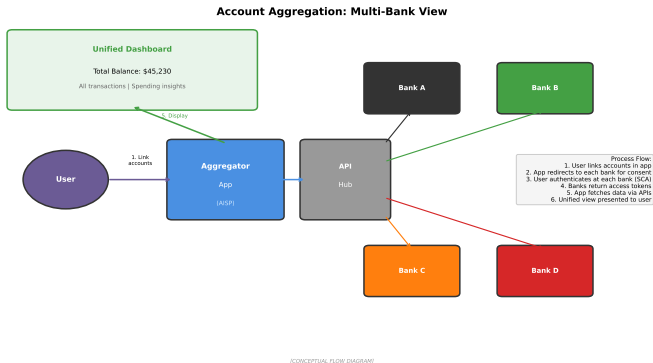
Open Banking Use Cases



UK Open Banking Adoption (OBSA)
- 7.5M+ active users
- 11M+ payments monthly
- 80+ regulated providers
Source: OBSA

Account aggregation and automated budgeting are the killer apps—alternative credit scoring expands lending.

Account Aggregation Example

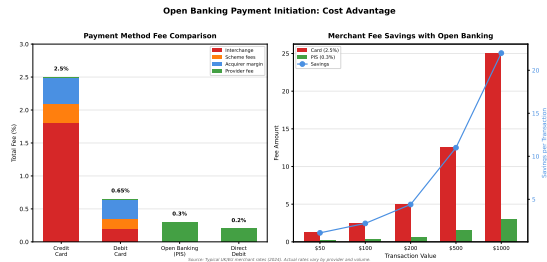


Users link accounts once via OAuth—apps then receive ongoing access without storing credentials.

Payment Initiation Benefits

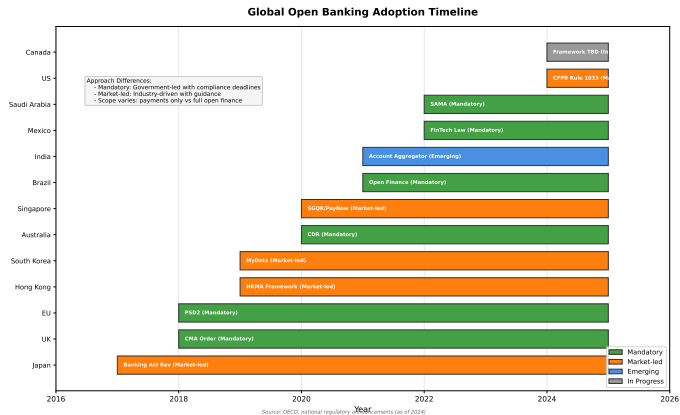
vs Card Payments

- Lower fees (0.1% vs 1.5%)
- Faster settlement
- No chargebacks
- Direct bank transfer



PIS fees are 10-15x lower than card fees (0.1% vs 1.5%)—no chargebacks is a merchant advantage.

Global Open Banking Adoption



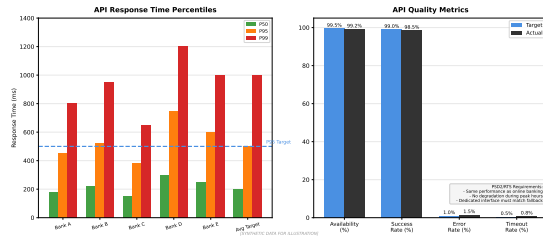
EU/UK lead with mandatory frameworks—Brazil, Australia, and Singapore follow with national standards.

API Performance Metrics

UK Success Rates (2023)

- API uptime: 99.5%
- Response time: 1.2s avg
- 12M monthly API calls
- 8M active users

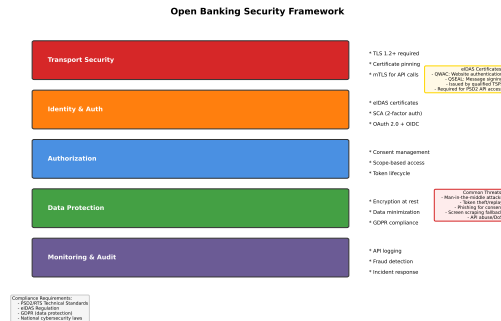
Open Banking API Performance Standards



UK open banking APIs achieve 99.5% uptime with 1.2s average response—12M monthly API calls.

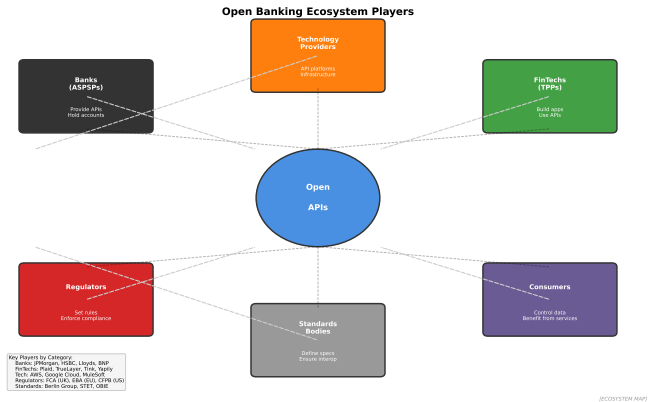
Risk Mitigation

- API credential theft
- Man-in-the-middle attacks
- Excessive data access
- Fraud monitoring systems



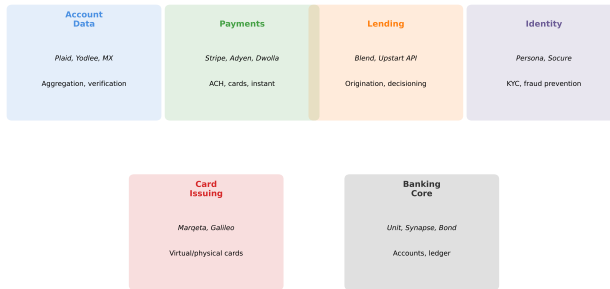
Source: PSD2 RTS, EBA Guidelines on ICT and Security Risk Management

API credential theft and man-in-the-middle attacks are primary risks—fraud monitoring is essential.



Banks become platforms, not gatekeepers—revenue shifts from fees to API monetization and partnerships.

The Financial Services API Economy



API Economy: Build financial products in weeks not years | USD 50B+ API fintech market by 2027

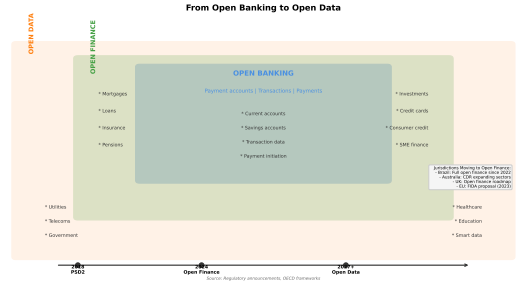
Source: RapidAPI, Plaid, industry reports (2024)

API economy enables modular financial services—fintech builds on banking infrastructure APIs.

Future: Open Finance

Beyond Banking

- Pension data sharing
- Insurance APIs
- Investment platforms
- Mortgage comparison



Open finance extends APIs to pensions, insurance, and investments—full financial data portability ahead.

Key Takeaways

- **PSD2:** EU regulatory mandate for bank API access
- **Services:** AIS (aggregation) and PIS (payment initiation)
- **SCA:** Two-factor authentication requirement
- **Benefits:** Lower fees, faster payments, innovation
- **Future:** Expanding to open finance ecosystem

Open banking enables customer-controlled data sharing—transforming banks from gatekeepers to platforms.