

Lesson 5: Open Banking and APIs

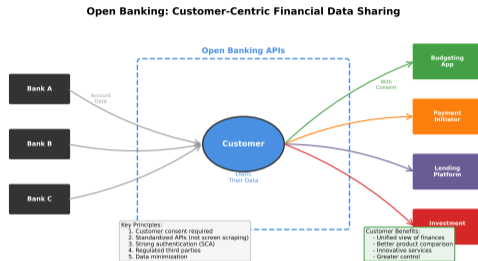
Module 1: FinTech Fundamentals

Digital Finance

Open Banking Revolution

Data Sharing Paradigm

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

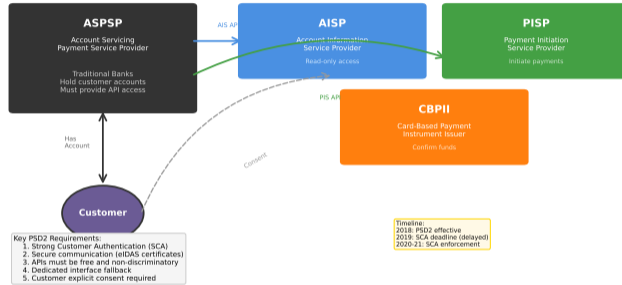


Source: openbanking.org.uk, eur-lex.europa.eu (PSD2)

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

PSD2 Regulatory Architecture

Payment Services Directive 2 (EU 2015/2366)

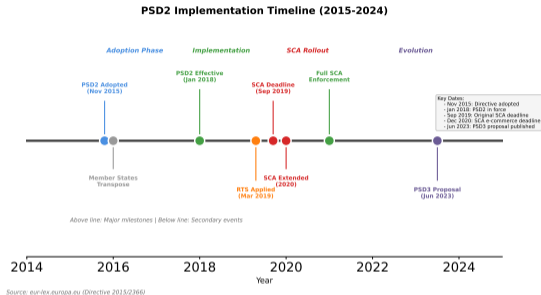


Source: eur-lex.europa.eu (EU Directive 2015/2366)

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

Implementation Phases

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

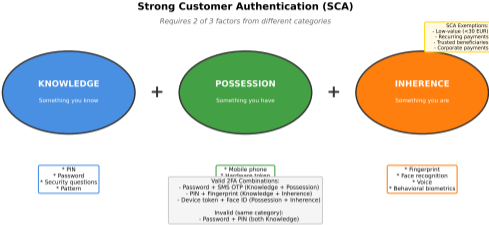


Full PSD2 enforcement took 6 years (2015-2021)—phased rollout reduced industry disruption. [Source: Industry reports 2024]

Strong Customer Authentication (SCA)

Two-Factor Requirement

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



Source: eur-lex.europa.eu (EU Delegated Regulation 2018/389 - PSD2 RTS)

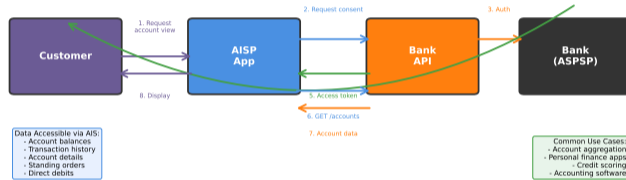
SCA requires 2 of 3 factors—knowledge, possession, or inherence—for secure authentication.

Account Information Service (AIS)

Account Information Service (AIS) Flow

Read-only access to account data

4. Bank redirects customer for SCA



Source: eur-lex.europa.eu (PSD2 Article 67), berlin-group.org (NextGenPSD2)

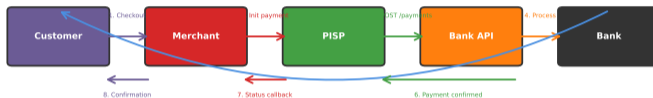
AIS enables read-only account aggregation—view balances from multiple banks in one app.

Payment Initiation Service (PIS)

Payment Initiation Service (PIS) Flow

Bank-to-bank transfer via open banking

5. Redirect customer for bank authentication (SCA)



PIS vs Card Payment:

- No interchange fees (0% vs 1.5-3%)
- Direct bank transfer (instant settlement)
- Irrevocable (no chargebacks)
- Lower fraud risk

PIS Use Cases:

- E-commerce checkout
- Bill payments
- Account funding
- Recurring payments

Source: eur-lex.europa.eu (PSD2 Article 66), berlin-group.org (NextGenPSD2)

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

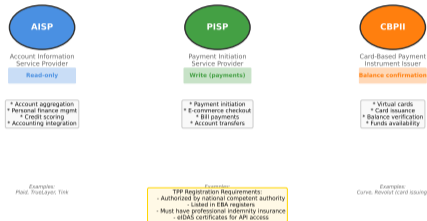
Third-Party Providers (TPPs)

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

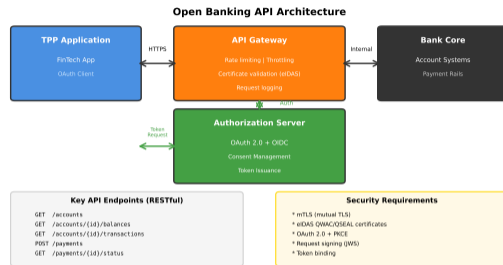


Source: eur-tax.europa.eu, eba.europa.eu (PSD2 TPPs)

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

Technical Protocols

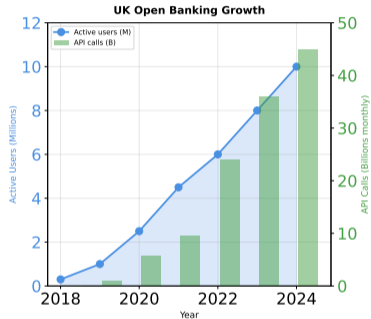
- RESTful architecture
- OAuth 2.0 authorization
- OpenAPI specification
- JSON data format



Source: berlin-group.org/openbankinguk.github.io (Open Banking APIs)

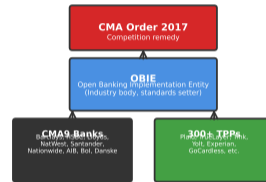
RESTful APIs with OAuth 2.0 authorization are the standard—JSON format enables easy integration.

UK Open Banking: World-Leading Implementation



Source: openbanking.org.uk/insights (Impact Report 2024)

UK Open Banking Structure



UK: 14% digital customers use OB (7x higher than EU)

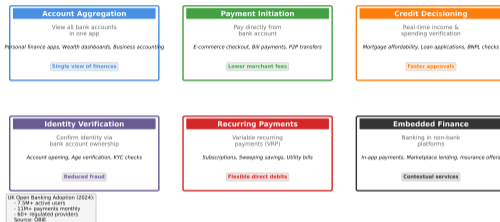
UK leads global adoption with 8M+ users—CMA9 mandate required 9 largest banks to open APIs.

Open Banking Use Cases

Consumer Applications

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

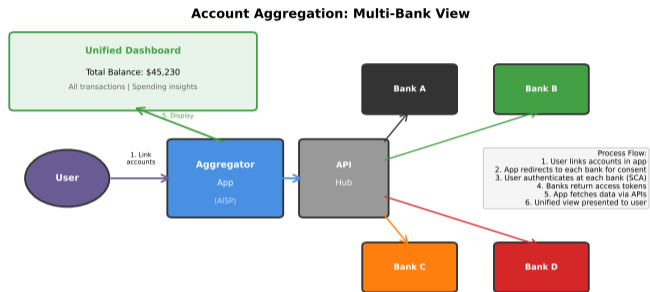
Open Banking Use Cases



Source: openbanking.org.uk (OBI Impact Report)

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

Account Aggregation Example



Source: eur-lex.europa.eu, berlin-group.org (PSD2 AISP)

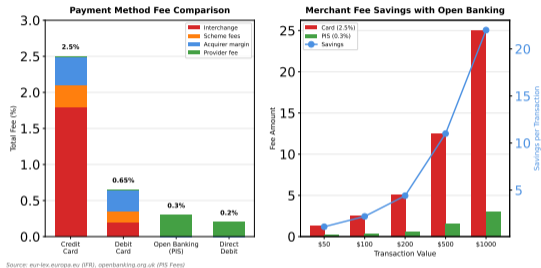
Users link accounts once via OAuth—apps then receive ongoing access without storing credentials.

Payment Initiation Benefits

vs Card Payments

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

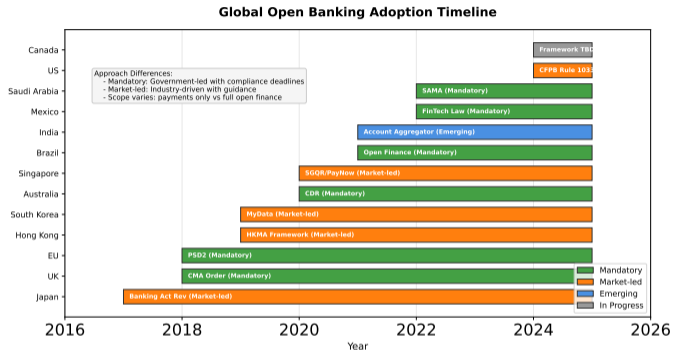
Open Banking Payment Initiation: Cost Advantage



Source: eur-lex.europa.eu (IFR), openbanking.org.uk (PIS Fees)

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

Global Open Banking Adoption



Source: oecd.org, fca.org.uk, consumerfinance.gov (Open Banking)

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

Swiss vs EU Approach:

- No mandatory PSD2-equivalent
- Market-driven standardization
- Swiss Bankers Association (SBA) guidelines
- Focus on Open Finance (broader than banking)

Swiss Open Finance Initiative:

- Voluntary API standards
- Cross-sector data sharing
- Insurance, pensions, investments
- Federal Council strategy (2022)

Key Differences:

- **Pro:** Flexibility, innovation-friendly
- **Pro:** Broader scope (Open Finance)
- **Con:** Slower adoption without mandate
- **Con:** Less standardization

Swiss FinTech Leaders:

- Avaloq, Temenos (banking software)
- Numbrs, Neon (neobanks)
- bLink (SIX Open Banking platform)

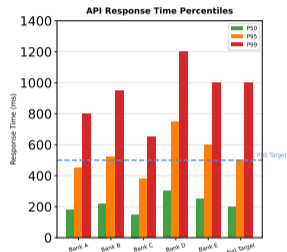
Switzerland takes a market-driven Open Finance approach vs EU's mandatory PSD2—broader scope but slower adoption. Source: Swiss Federal Council Digital Finance Strategy (2022)

API Performance Metrics

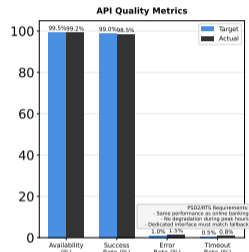
UK Success Rates (2023)

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

Open Banking API Performance Standards



Source: PSD2 RTS Art.32, UK OBI² (API Performance)

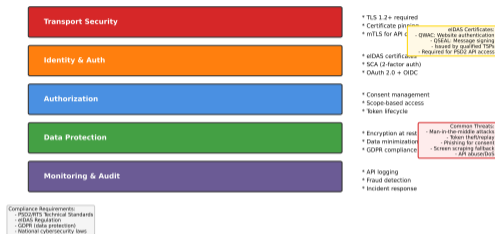


UK open banking APIs achieve 99.5% uptime with 1.2s average response—12M monthly API calls. [Source: Federal Reserve, ECB 2024]

Risk Mitigation

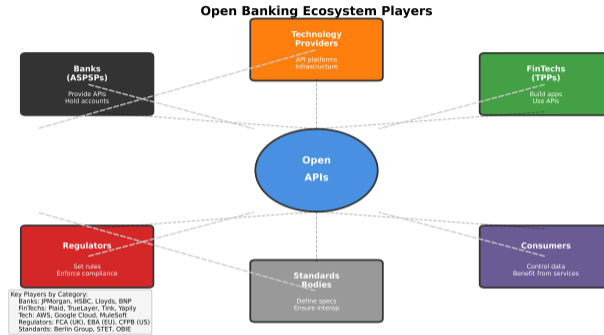
- API credential theft
- Man-in-the-middle attacks
- Excessive data access
- Fraud monitoring systems

Open Banking Security Framework



Source: [eba.europa.eu](https://eba.europa.eu/digital-strategy-ec.europa.eu), digital-strategy.ec.europa.eu (PSD2 RTS, eIDAS)

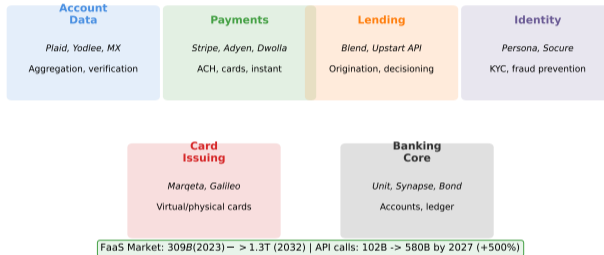
API credential theft and man-in-the-middle attacks are primary risks—fraud monitoring is essential.



Source: openbanking.org.uk, eba.europa.eu (PSD2 Framework)

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

The Financial Services API Economy



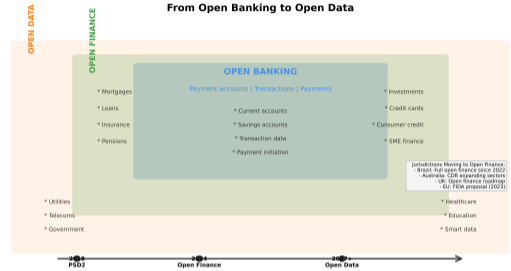
Source: globenewswire.com (FaaS Market 2024), Statista, Contrary Research

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



Source: finance.ec.europa.eu/psd2, [accc.gov.au/CDR](https://www.accc.gov.au/CDR), [bcb.gov.br](https://www.bcb.gov.br)

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.