

## Lesson 5: Open Banking and APIs

### Module 1: FinTech Fundamentals

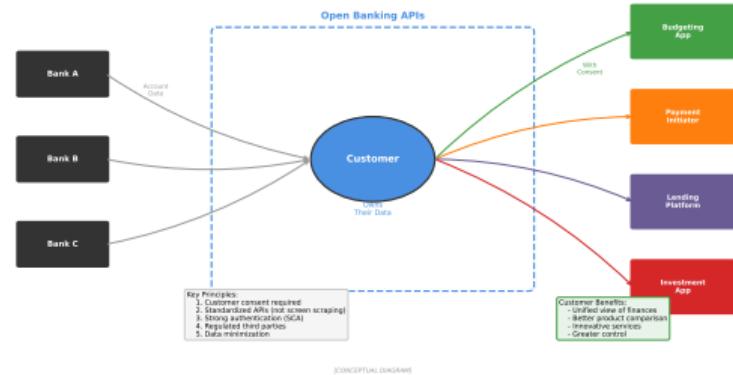
Digital Finance

# Open Banking Revolution

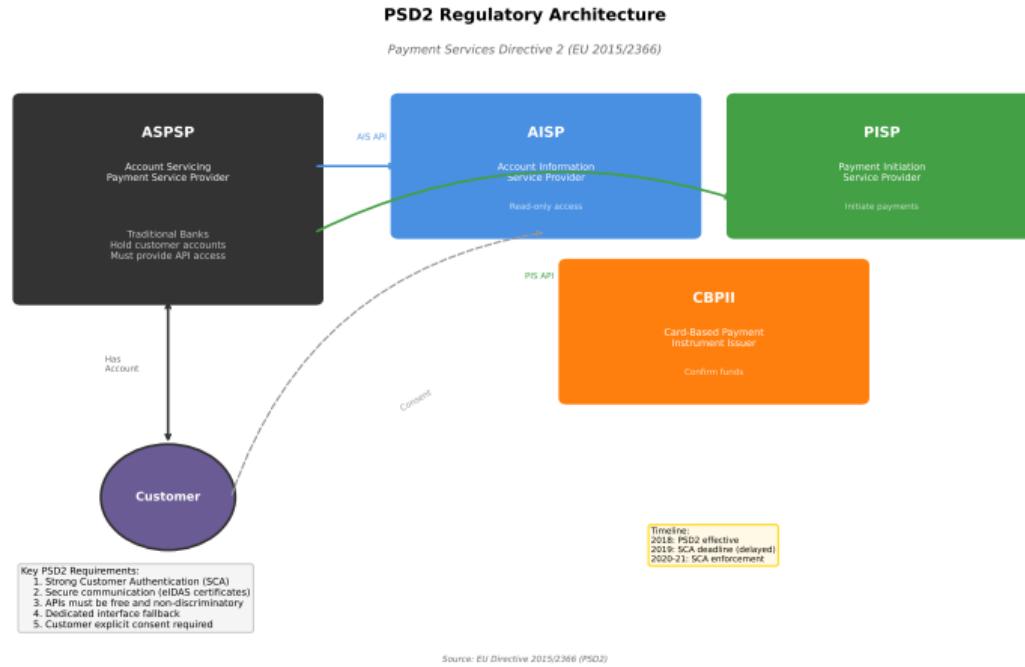
## Data Sharing Paradigm

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

## Open Banking: Customer-Centric Financial Data Sharing



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

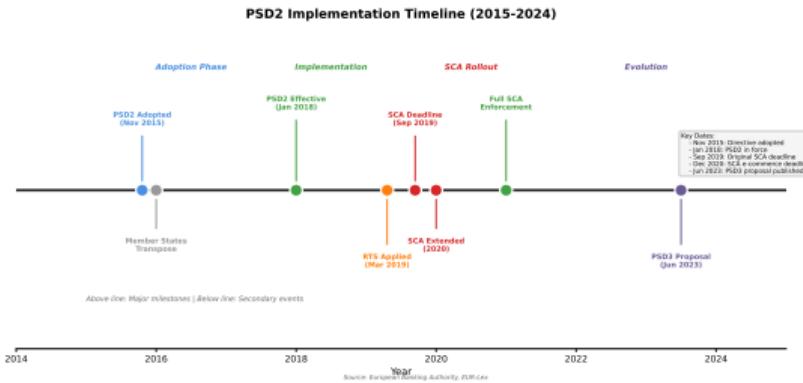


**PSD2 mandates banks provide API access to licensed third parties with customer consent.**

# 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

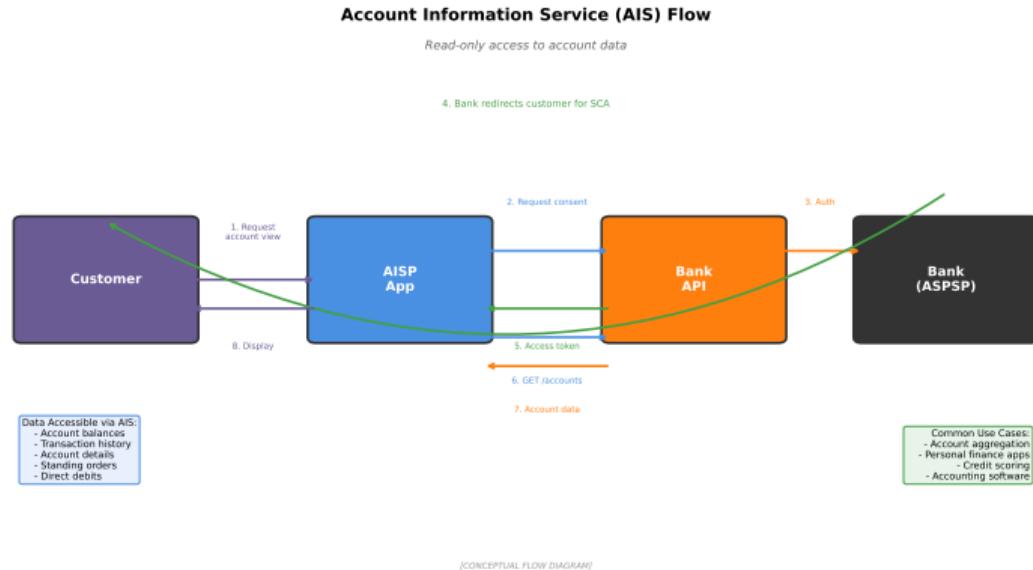
- Knowledge (password)
- Possession (mobile device)
- Inherence (biometric)
- Exemptions for low-risk



Source: PSD2 RTS on Strong Customer Authentication (EU 2018/309)

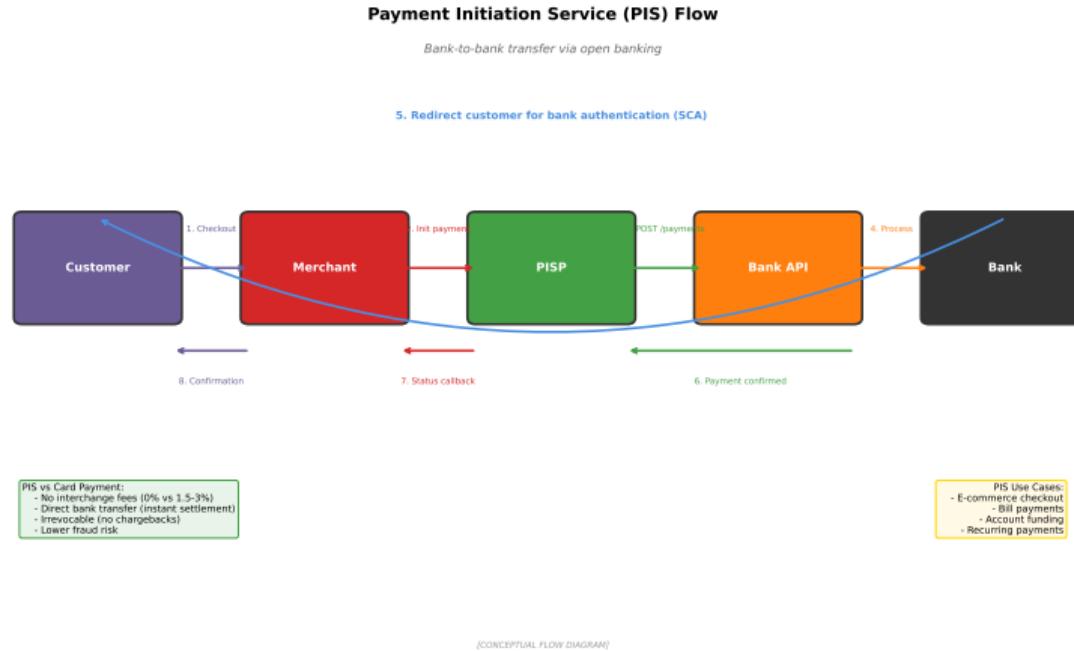
**SCA requires 2 of 3 factors—knowledge, possession, or inherence—for secure authentication.**

# Account Information Service (AIS)



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

# Payment Initiation Service (PIS)



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

# Third-Party Providers (TPPs)

## Provider Types

- AISPs: Account aggregation
- PISPs: Payment initiation
- CBPII: Card balance checks
- Regulatory authorization

## Third Party Provider (TPP) Categories

Note: A single provider can register for multiple TPP categories



- \* Account aggregation
- \* Periodic account report
- \* Credit scores
- \* Accounting integration



- \* Payment initiation
- \* Pre-authorization check
- \* Bill payments
- \* Account transfers



- \* Virtual cards
- \* Card issuance
- \* Balance checking
- \* Funds availability

Example:  
Plaid, Transferwise, Tink

Example:  
TransferWise, and  
TPP Regulation Requirements:

- Authorized by national competent authority
- Listed in EBA register
- Must have appropriate security insurance
- eIDAS certificates for API access

Example:  
Caveat, Revolut (card issuing)

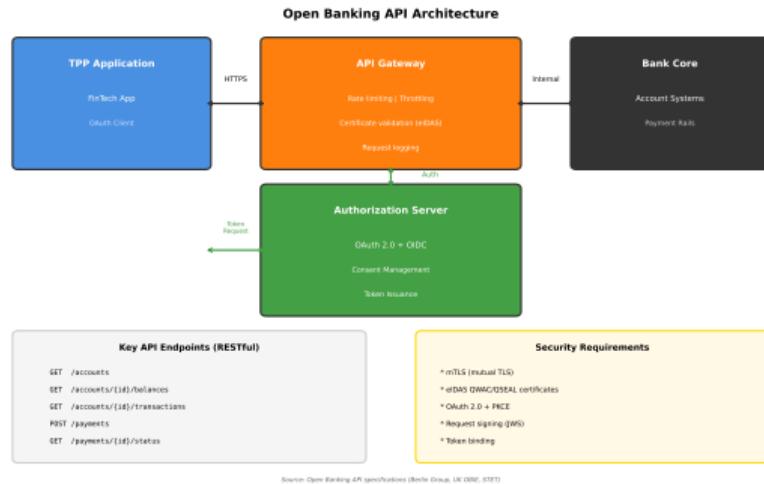
Source: PSD2 (EU 2015/236), EBA Register

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

# API Standards

## Technical Protocols

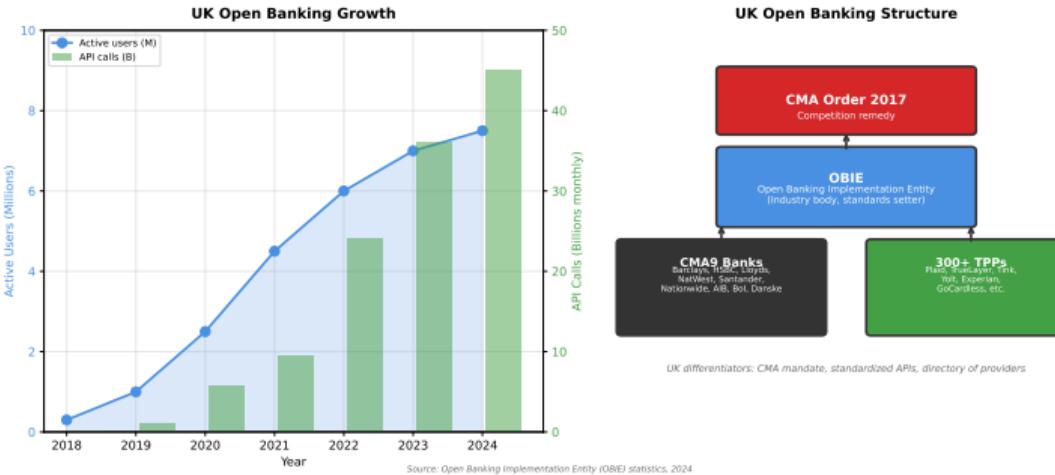
- RESTful architecture
- OAuth 2.0 authorization
- OpenAPI specification
- JSON data format



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



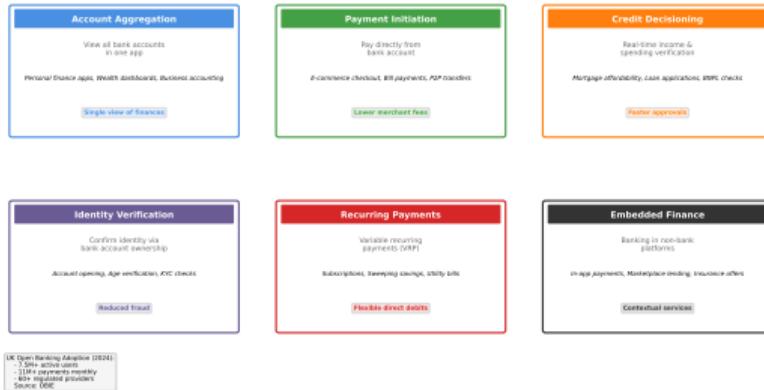
UK leads global adoption with 8M+ users—CMA9 mandate required 9 largest banks to open APIs.

# Open Banking Use Cases

## Consumer Applications

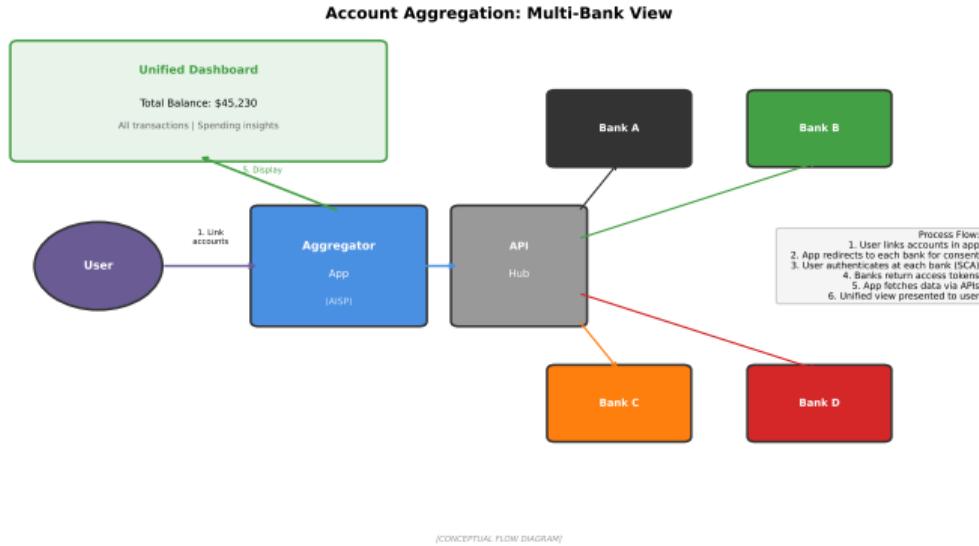
- Multi-bank aggregation
- Automated budgeting
- Alternative credit scoring
- Instant payments

## Open Banking Use Cases



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

# Account Aggregation Example

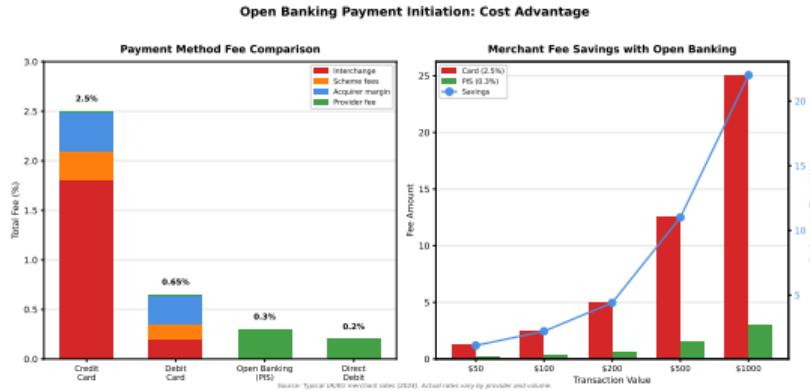


Users link accounts once via OAuth—apps then receive ongoing access without storing credentials.

# Payment Initiation Benefits

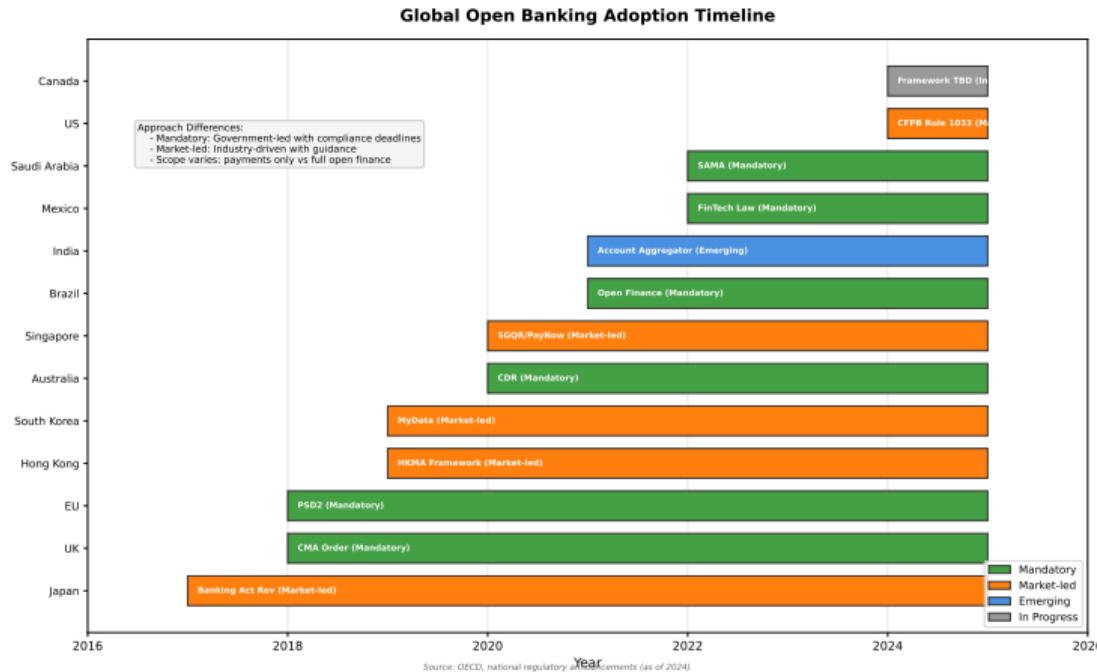
## vs Card Payments

- 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

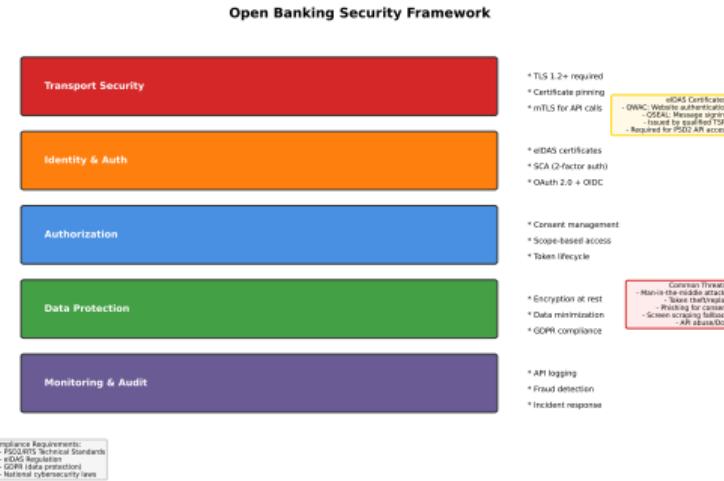


UK open banking APIs achieve 99.5% uptime with 1.2s average response—12M monthly API calls.

# Security Challenges

## Risk Mitigation

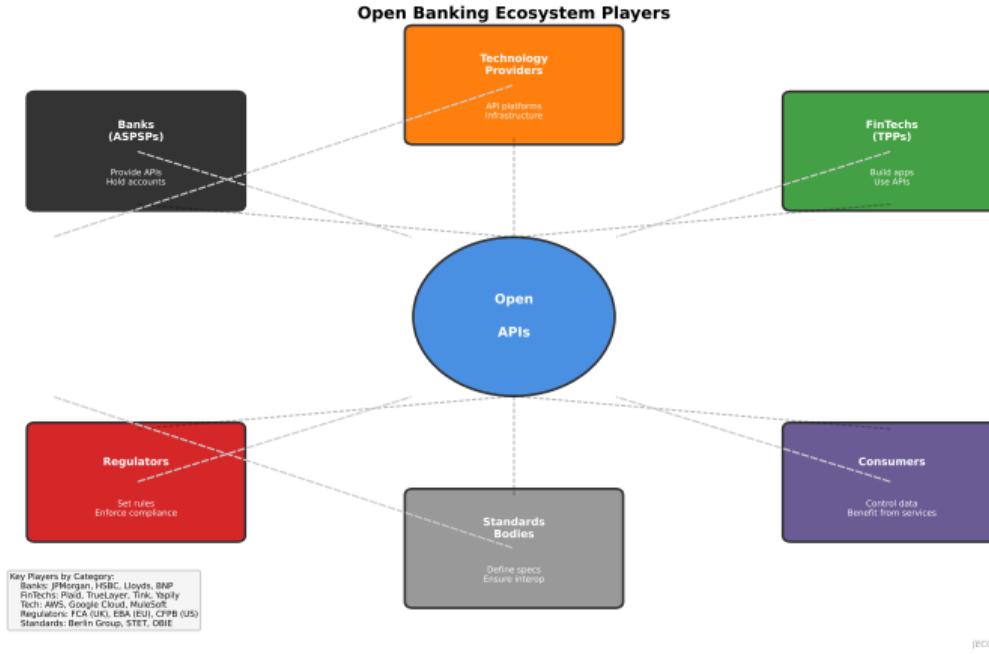
- API credential theft
- Man-in-the-middle attacks
- Excessive data access
- Fraud monitoring systems



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.**

# Business Model Impact

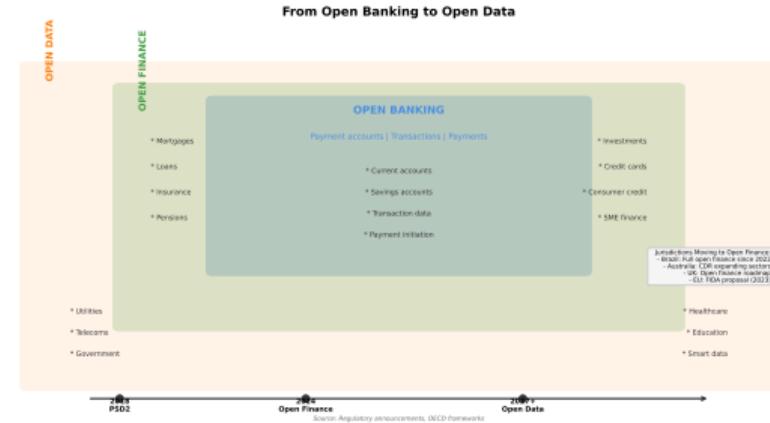


**Banks become platforms, not gatekeepers—revenue shifts from fees to API monetization and partnerships.**

# 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

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