



PSD2 with Oracle API Platform Cloud Service

From Regulatory Disruption to New Business Models
within the European Union

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The overall response of Europe's bankers to PSD2 is one of uncertainty: Although 68% of bankers fear that PSD2 will cause them to lose control of the client interface, many of them remain unsure how to respond to the new directive.

THE STRATEGIC IMPLICATIONS OF PSD2 FOR EUROPE'S BANKS, PWC

Introduction to PSD2

In 2007, the European Union issued the Payment Services Directive (PSD, or PSD1) as a guideline for regulating payment services and their providers doing business in the greater European Economic Area (European Union, Iceland, Norway and Liechtenstein). Intending to aid consumers in making easy, safe, cross-border payments, the directive covers all types of electronic and non-cash payments, such as credit transfers, direct debits, card payments, as well as mobile and online payments.

Under PSD1, payment services providers are required to

- » give adequate information to consumers
- » ensure fast and efficient service
- » compensate the consumer, if services are not provided correctly

The revised directive on Payment Services, or PSD2, was adopted in November 2015. PSD2 seeks to improve the existing EU rules for electronic payments, taking into account emerging and innovative payment services, such as internet and mobile payments. Member states were given until January 2018 to implement the directive into their national laws and regulations. PSD2 provides requirements to modernize and streamline the European banking system, provide better protection for consumers, and promote innovation within the financial services industry. It enhances consumers' rights in numerous areas, including reducing liability for non-authorized payments, introducing an unconditional ('no questions asked') refund right for direct debits; and prohibiting the surcharges (additional charges for the right to pay e.g. with a card) for payments in shops or online.

PSD2 includes provisions to

- » make it easier and safer to use internet payment services
- » better protect consumers against fraud, abuse, and payment problems
- » promote innovative mobile and internet payment services
- » strengthen consumer rights
- » strengthen the role of the European Banking Authority (EBA) to both coordinate supervisory authorities and draft technical standards

PSD2 allows a payment service user to have an overview of their financial situation on demand, have aggregated online information on payment accounts – like transaction data - held with other payment service providers, all within a secure environment and with strong customer authentication.

Understanding Service Providers

Consumers have come to increasingly rely on innovative new apps and services to send and receive money. The ease of paying a friend back, using a ride-sharing app, or even just transferring money from one bank to another means that a huge volume of customer information is being exchanged constantly. These entirely new types of services and the access to customer accounts that they require are regulated under PSD2 (effective January 2018), namely third party Payment Initiation Service Providers (PISPs) and third party Account Information Service Providers (AISPs), collectively referred to as Third Party Service Providers (TPSPs). TPSPs have created an opening in the EU payment market for companies offering consumer-oriented or business-oriented payment services. Until now, customers and banks have interacted in a straightforward and uniform manner, but TPSPs have introduced an entirely new paradigm.

Under PSD2, Payment Initiation Service Providers will be able to initiate payments on behalf of consumers. Payments can be on any channel, including in-person, online to an e-merchant or other user, or else directly from the payer's bank account via bank or online portal, like Paypal. FinTech is a burgeoning industry that applies innovative technology to improve financial activities; these types of activities are composed of one or more complementary financial services, often provided end-to-end via the internet. As a PISP, FinTech companies and merchants alike would both have the capacity to provide payment initiation services.

Account Information Service Providers are those that will be able to extract a customer's account data, including accessing transaction history and balances, or enable new services utilizing this data. Banks, FinTech companies, and non-traditional financial services companies would likely have capacity to provide such account information services. Popular examples of AISPs are Optimissa and Sumer's Smartbudget, AISPs to whom customers authorize financial account access in return for better insight into their spending, credit and budgeting behaviors, as well as tailored credit offers. Of course, the companies gain access to a trove of customer behavior and financial data, in return for the spectrum services that customers have the opportunity to take advantage.

Achieving PSD2 Compliance with APIs

PSD2 is a data and technology-driven directive that aims to drive increased competition, innovation and transparency across the European payments market, while also enhancing the security of internet payments and account access. Access to a customer's online account/payment services in a regulated and secure way ('access to account' rule) mandates banks or other account-holding payment service providers to facilitate secure access via application programming interfaces (APIs). In order to provide this access to accounts, banks must also allow for customer identity verification and authentication via APIs.

APIs are the technical means that allow the banks to fulfill the specifications of the PSD2 regulation. By January 2018, PSD2 will require more than 5,000 financial institutions across Europe to provide open access to customer, transaction, and payment information via APIs. In this way, PSD2 is intended to reinforce the Single Euro Payments Area (SEPA) with a genuine single payments market. SEPA establishes a single set of tools and standards that make cross-border payments simple, therefore it is expected to drive a certain level of homogeneity to ease the transfer of information amongst banks and financial firms. APIs published by various banks simplify access and ease integration by developers and integrators in terms of APIs definition, nomenclature, access protocols and authentication, but to do this successfully, standardization must take place (and more importantly, be complied with).

Understanding APIs and API Management Platforms

HTTP is a distributed protocol, more aptly referred to as a request-response protocol. APIs brought about an improvement in how web services were accessed, including how requests were able to receive responses with less coupling, and with the ability of systems to deal with changes much more gracefully. A requester may enter a service with zero knowledge of the API because of standardization. It is possible to understand the API as 'a messenger' that takes a request, tells the system what is needed, and then returns the response back. An API is such a messenger running between applications, databases and devices. Consequently,

APIs clearly define exactly how a program will interact with the rest of the software world and therefore APIs are at the heart of effective mobile, cloud and web development. With the rise of the digital economy, more organizations are investing in digital transformation, resulting in an explosion in APIs. It is estimated that there are currently over 750,000 public APIs worldwide and there is complementary estimation that fewer than 10% of APIs are public. Additionally, there is approximation that each week there are around 100 new public APIs, and data traffic through APIs increases by 10% every month.

Broadly speaking, APIs provide three main benefits to businesses:

- » Customer satisfaction and engagement: businesses want to improve the service level interface with the customer as part of their key business goals;
- » Revenue growth: APIs make it possible to monetize existing data and service assets and create additional channels of revenue;
- » Partner contribution and ecosystem: distribution of content & assets through new channels and partners.

Full life cycle API management addresses the *planning, design, implementation, publication, operation, consumption, maintenance and retirement* of APIs. It includes a developers' portal to target, assist and govern the communities of developers who embed the APIs, as well as the runtime management and analytics.

API programs and initiatives don't necessarily need the full set of functionality from the start, but new functional requirements, such as security and identity management, emerge very rapidly, and indeed will need to be addressed very quickly. API management is generally uncomplicated in the first few months of usage when an organization's reliance on APIs and processes around them are in less involved stages, but the processes get more complex as the API program matures and the policies become more sophisticated.

Due to integration friction, it is generally preferable to choose an overall API management solution from a single vendor that provides full life cycle API management. Ideal features should include support for mobile app development as a minimum, with integration of IoT scenarios and protocols, B2B APIs and APIs consumed by rich web applications as another layer of requirement.

APIs in the Banking Sector

The much talked about API economy has become consolidated across a wide range sectors and verticals. Financial services are certainly among them. Banks that expect to comply with PSD2 regulations are turning to their vendors and asking for APIs. Those companies are looking not only for ways to serve their customers better, but also for insight into how they should compete in the API economy.

Here are some of examples of general API use cases in the banking sector:

- » **Mobile Integration** Customers using a mobile banking app powered by APIs provided by the bank can take advantage of mobile device functions: camera, voice recognition, GPS services, near field communication (NFC) and digital wallet. Users can easily take a picture of a check to deposit it, while the bank's APIs ensure it is applied to the correct account. GPS services communicate with bank APIs in the background to locate the nearest bank branch or ATM, and secure NFC allows consumers to pay for their groceries from their phone without ever pulling out their wallet.
- » **Account Access** Customers accessing APIs to receive basic and custom information: account types and details, loan rates, CD rates, mortgage rates, financial tools, routing numbers, and other services such as credit card offers, financial advice/retirement accounts, etc. To access APIs with additional security and see account balances, transfer funds, bill pay, e-statements, credit card payments, account alerts.
- » **Subscription Revenue** Banks extend API development to enable the creation of standing orders via APIs, direct debit mandates via APIs and the completion of product applications via APIs.
- » **Affiliate Marketing** Providing APIs to partners to sign up for services, access information about their accounts and provide services to their customers: branded credit cards or gift cards, rewards programs, and business services such as accounts receivable and accounts payable. APIs to obtain reports, cash flow analysis and real time information.
- » **Customer Targeting** APIs provide the ability to target specific bank customers by other industries. Bank to offer an API to local businesses to provide offers to customers in the vicinity of the bank's ATM locations - when an ATM recognizes a customer nearby, businesses in the area might pay to invoke an API to push an offer.

- » **Data as a Service** Banks have access to and financial information about a customer – which is valuable for companies from other industries. Banks collect data not just on customers, but also market movements. Companies providing access via APIs to such aggregated data assets can be valuable for go-to-market strategies in particular locations within the city where target customers live.
- » **New Revenue Streams** Banks gain opportunities to monetize these additional APIs as well as to collaborate with third parties to create new products and services based on these data sets and niche customer needs. An example of such a service is a customer opting in to sharing mortgage data and documentation with a home insurance provider.
- » **Sponsored Offers** Banks can benefit by offering loans to customers of other industries such as car promotions for preapproved car loans, educational institutions to those who receive student loans, and real estate offers for mortgage recipients. Retirement, vacation, college, and other high cost life events also provide opportunities for bank services. By providing APIs that open up secure access to players in adjacent industries, banks can integrate offerings into a consistent user interface through their customers' banking portal, and also have the opportunity to acquire new customers who were not directly considering a banking transaction.
- » **Code Reuse** Many APIs used internally and with partners can be also used as public APIs to drive additional business, for instance by making an API available for a comparison apps.
- » **API Analytics** Trends in social media can happen quickly. An API that is able to notice when a company name is mentioned provides an opportunity to take advantage of a positive situation, or simply the ability to head off future problems. For example, Twitter feeds can be cross-referenced with a bank name via APIs and internal analytics to determine if actions should be taken to rectify customer satisfaction issues. As general financial topics are on the top of social media interaction, APIs which track them can add value, react to news, and potentially swoop in to take advantage of a competitors' bad day.

PSD2 and Impacts on the banking sector

In common with retail banking as a whole, the payments industry is experiencing rapid and widespread changes. Specifically:

- (i) Evolving customer demands as more and more transactions take place on mobile devices, demanding real-time, personalized and seamless payment experiences
- (ii) Advances in technology, including immediate payment infrastructures, blockchain, authentication and the 'Internet of Things' (IoT), are creating new ways to pay and to take advantage of a digitalized end-to-end value chain
- (iii) New competition is emerging, in the form of FinTech companies, as well as traditional financial services providers supplying new digitally-enabled services or forming unconventional partnerships in an expanding payments ecosystem

PSD2 mandates open access for payment providers such as money remitters, retailers, phone companies and other unconventional entrants who may want to get into the payment services game.

It is expected that Payment Initiation Service Providers will erode online credit and debit card transaction volume, as more people handle transactions without ever pulling out a card. For in-store transactions, analysts estimate that PISPs will acquire a significant percentage of volumes from debit cards, as well as a minor percentage from credit cards. It is entirely possible that mobile wallet providers, including the likes of Apple Pay, may consider a transition to a PISP model. These developments will further reduce the volume of card-based transactions within Europe.

In advance of PSD2's capping of interchange fees, card-based transactions have continued to generate more revenue for retail banks than interbank credit transfers. PSD2 proposes a simplified payment value chain in which the card network can be fully disintermediated. In such a transaction, payment is initiated by the PISP directly from the customer's bank account using an API call to the originating bank. In this scenario, all interchange fees and acquirer fees currently received by the banks – both issuing and acquiring - could be fully disbanded, as could all fees received by the processor and card networks.

In addition to the dramatic decrease in payment revenue, banks are also set to see their interest-based revenue streams impacted by a loss of "customer ownership." The new banking paradigm will allow customers to get their financial services from the "right fit" vendor, meaning they will be less likely to feel an allegiance or lock-in with one bank. The decoupling of bank-customer

interactions by FinTech or progressive traditional financial services companies will mean that traditional banking transactions become further commoditized and barriers to entering a relationship with a new bank or provider become lower than ever before.

With the opening-up of access to payment initiation services via APIs, banks are at risk of losing their direct relationship with the customer, becoming a utility-type service used by new third party providers. Likewise, access to customer account data creates a scenario whereby customers fulfill their basic banking needs - such as viewing transaction histories, account balances and initiating payments - all from a third party online portal with no meaningful engagement with, or even visibility of, the bank's brand. In addition to removing the opportunity for banks to cross-sell and engage their customers, this also represents a loss of customer insight and data for banks.

PSD2 and Banks as Aggregators

Account-data aggregators aiming to pull account information from multiple banks into a single, easy-to-use app, should be a harbinger for banks, unless banks seize the opportunity to themselves become customer data aggregators.

By offering Payment Initiation Provider and Account Information Provider services, a bank could significantly improve its ability to sell customer insights due to the increased availability of customer data and touch points. Operating a regulated AISP would allow a bank to create a convenient one-stop banking portal for multi-banked customers to view account and transaction details. This service, combined with a financial management tool to automatically categorize transactions and enable budgeting, goal-setting and data visualization, is a compelling customer proposition, particularly for multi-banked businesses and corporations.

In operating as an AISP, banks stand to benefit not only from increased customer interactions and an enhanced online banking proposition, but also from the opportunity to monetize additional features such as integration with accounting/ERP systems and cash flow management driven by predictive analytics.

The availability of additional customer data from third party financial institutions would also provide the bank with new customer insight, assuming that the customer consents to the use of the data. This insight could fuel highly relevant and targeted cross-selling to the customer, potentially identifying a customer's need before the customer becomes aware of it themselves.

For retail customers, Account Information Service Providers' insights could be monetized through the identification and prediction of customer needs for both financial and non-financial services. This might include the identification of a flight purchase prompting the bank to offer the customer a holiday loan or credit card product, as well as services such as travel advice, savings plans, or partner referrals. Alternative need indicators could involve the identification of excess funds in a customer's accounts at the end of each month, prompting the customer to open a new savings or investment product.

Corporate customers could benefit from basic analytical tools to predict future cash flow trends such as a potential shortfall at a future date, for which the bank could offer short-term financing or an automated cash management service.

Banks could also partner with technology companies to develop an accounting package for SMBs which fully integrates with online banking services such as direct debit mandate management, payroll file origination and e-Invoicing.

In operating as a Payment Initiation Service Provider, a bank would have the opportunity to capture an additional slice of transaction revenue while also providing opportunities for customer loyalty schemes and cross-selling. In addition, customers are more likely to feel secure in utilizing the payment initiation services of a bank they know and trust rather than those of a new market entrant. Customer usage of these PISPs may be encouraged through the provision of discounts or other loyalty schemes at the point of sale.

Beyond the monetization of APIs and customer insight, investment in open APIs could present opportunities for more integrated partnerships between banks and third party companies both within and outside of the financial services industry. Such partnerships could manifest themselves in two ways:

- (i) consolidation of services - new products/services owned by third parties but offered via the bank's online portal;

- (ii) consolidation of data - customer data stored on third party systems but presented on the bank's online portal, subject to obtaining necessary consents and authorizations.

An open API infrastructure and the consolidation of customer data from multiple third party sources transforms the online banking portal into a platform reflecting the customer's everyday needs and transactions. By establishing itself at the center of this ecosystem of both financial and non-financial services, the bank can play a pivotal part of a customer's daily life, acting as:

- (i) advice provider -providing specific buying suggestions, based on deep customer knowledge and purchasing algorithms
- (ii) value aggregator - assembling components (financial and non-financial, own and third parties') to create an integrated solution for 'real world' customer needs
- (iii) access facilitator - supporting the customer in 'every day and everywhere' buying processes;

PSD2, APIs and Banking's Moment of Strategic Decision

For banks, the keys to success will be to gain a full understanding of the disruptive threats they face, and to adapt to this changing landscape by evolving their business models to leverage APIs as an enabler of new products and services.

"One of the huge opportunities that is right on the doorstep is bringing the strengths of FinTech startup companies and getting them working with banks - institutions which have been very closed in their thinking. That's not going to happen overnight because it requires a mindset change."

ALAN LOCKHART

HEAD OF OPEN BANKING AND FINTECH SOLUTIONS

ROYAL BANK OF SCOTLAND

PSD2 presents significant opportunities to grow new revenue streams, capture customer ownership and progress toward an extended ecosystem centered on the 'everyday bank'. The imperative for banks is to leverage API integration and their existing customer relationships in order to develop a customer value ecosystem centered on their own banking portals.

PSD2 mandates the opening of only certain bank APIs, restricted to payment account transaction and balance data, credit transfer initiation and account identity verification. Access via APIs to additional customer data in relation to non-payment accounts, customer demographics, identity documentation and direct debit mandates is entirely optional. This means banks have a choice as to whether they extend their API development beyond the minimum requirements and enable a customer to have increased functionality outside what PSD2 requires.

Alongside the threats to the status quo, PSD2 will create exciting new opportunities that may allow banks to recapture some of the projected lost payments revenue. The potential upside for banks will vary depending on which of the four primary strategic options they choose to pursue, between compliance with PSD2 or further facilitation and monetization of API access.

How to Start

Banks should aim for multi-sided platform cycle. Opening their core systems via APIs and enabling developers to build new and interesting experiences and this way set up a business market for third parties, giving them ways to differentiate or monetize. As a result this should rapidly expand the user base into a variety of niches banks might otherwise not have acquired.

The process of building a banking API platform model might go according to the following steps:

- » Development teams should securely expose their data and functionality through APIs that have externalizable and self-service potential from the start.

- » IT leadership should start identifying most valuable systems and prioritizing building APIs particularly for these systems.
- » Business leaders should be involved in the productization of APIs – the treatment of APIs as product with distinct lifecycles and revenue streams - from the beginning.
- » API product owners need to be assigned to start exposing the most interesting functionalities to partners. The APIs can be invitation-only, but the process of productizing such APIs and taking them to market with partners can be hugely educational for the bank.

Thus, teams need to be reorganized, and a different funding model for such projects should be established.

Oracle API Platform Cloud Service: Practical Application

API Platform Cloud Service provides a practical solution for PSD2 de facto standards for APIs required from a bank. It simplifies and accelerates the process of delivering open banking and PSD2 compliance by enabling speedy and secure delivery of banking APIs. APIPCS increases the level of comfort that businesses gain in having their applications and data outside the security of their on-premises firewalls.

APIPCS offers full life cycle API management: planning, design, implementation, publication, operation, consumption, maintenance and retirement of APIs. It includes a developers' portal to target, assist and govern the communities of developers who embed the APIs, as well as runtime management and analytics, all built on top of a mature gateway used by telecommunication companies for a decade. The gateways themselves have a number of advantages. A true hybrid, Oracle API gateways can be hosted either on-premises or in the cloud. As the gateways communicate with the management portal, this establishes a very elegant security solution. Gateways automatically pull down all new policies, and in the case of APIPCS, most policies work with existing versions of the gateway. Since gateways are compatible, upgrades are minimal and transparently completed. The deployment of gateways is extremely fast, as they are done directly from the cloud, without need to export a zip or manually deploy gateways. There is no need for the end customer to perform data backups, no need for upgrades to get new policies, no need to configure clusters. The result is a reduced operational cost of operating API Platform. APIPCS gives control over which users have the right to deploy gateways, what exactly is deployed on which GW, with full audit history of all action. 360° visibility in a single dashboard makes both management of teams of API developers and administration of a full library of APIs effortless.

The Oracle API Platform Cloud Service provides key features of API platform:

- » **Building APIs** - Creating an API on top of a service that, for example, accesses data formerly locked inside monolithic applications. The platform facilitates rapid API construction with run-ready policies for controlling usage of APIs.
- » **Securing APIs** - Assigning industry-standard securities to APIs with no coding, just selection of established security protocols. Seamless integration with existing enterprise identity management systems make authentication simple.
- » **Deploying APIs** - Once the APIs are created, they're deployed to an API gateway for usage with one-click. Gateways can run in the Oracle Cloud or on-premises, close to back-end services;
- » **Publishing APIs** - Documentation can be auto-generated while the API is being developed;
- » **Consuming APIs** - Centralized location for finding and learning about available APIs. Simple approach to register applications so they can utilize APIs;
- » **Monitoring APIs** - Instant visibility into operational metrics on usage and API business key performance indicators.

In the API design & preparation phase, one of the core value propositions of the API Platform comes through in users' ability to collaborate faster across teams, the establishment of a style guide that results in increased consistency across the enterprise, and an overall improvement in the developer experience. Using APIPCS, it is possible to design and prototype an API without writing a single line of code, iterate quickly on an API design change, and to start work on an API client before the API server is even implemented. The use of the Oracle Apiary mock server results in getting very fast feedback from API consumers and stakeholders, resulting in a market ready product much sooner and preventing costly rework that may affect not only users but systems downstream. Implementation testing compare the actual API against its design, so monitoring the contract and any implementation changes is much easier. Version control and collaboration are an integral part of the API development process,

circumventing potential challenges before they arise. Since APIPCS automatically tests changes, when disagreements or conflicts between the contract and implementation appear, they are quickly discovered and resolved.

The API Platform Cloud Service is easy to use, intuitive, and will change the way your team operates. Oracle Apiary's design-first approach allows businesses to lay down a solid, thoughtful API foundation, include stakeholders, and establish a common set of expectations before even attempting implementation. The modern user experience of the API Platform includes a lightweight architecture in the cloud, yet operates as a true hybrid, as gateways (GWs) deploy either in the cloud or on-prem. The value is really in the fast, reliable experience of the API developer, the app developer, and the customer. The API Platform operates all complex parts of API management in Oracle Cloud, making it easy for your business to take the next step in its Digital Transformation.



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