

Payment Service Directives
& Software Development:

A GLANCE INTO THE EVOLUTION OF FINANCIAL SERVICES



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A HISTORICAL OVERVIEW OF THE FINANCIAL WORLD

“Longevity in the business is about being able to reinvent yourself or invent the future”.

Satya Nadella

The banking system evolved gradually over more than 4.000 years. Starting from loans, deposits, and bearer notes in 2.000BC, banks experienced a gradual expansion to banknotes and credit letters after the 7th century AD. The “Modern Bank” concept appeared during the industrial revolution, changing the landscape of finance.

In the 20th century, developments in telecommunication and advances in computer science enabled banks to diversify their approaches. This led to a dramatic increase in the size and geographic reach of the financial institutions. The launch of the first handheld calculator and the first ATM from the Barclays bank marked this transition.

This impressive evolution was shaken by the crisis that hit banks at their core in the 21st century. Banks reacted quickly with the digital stock exchange, the SWIFT system for bank telecommunication protocol and the bank mainframe computers, among others, setting the stage for the open banking transition. In a market with record levels of unemployment, startups emerged and shifted the mindset towards more Agile and accessible financial services. Backed by the smartphone’s explosive growth in popularity, Fintech could now easily penetrate the market ripe with opportunities.

To make this possible, a new wave of regulations was necessary. One such regulation and arguably the most important is the Payments Services Directive (also known as PSD1), together with its lately revised Payment Services Directive 2 (PSD2) and accelerated (Access-to-the-Account - XS2A) second version. With the PSD2 approved in 2016 in the European Union, the revolutionary concepts of Open

banking and Fintech start-ups emerged, creating a shareable information source between banks, as owners of client account data, and Third-Party Providers (TPPs). Thus, the FinTech ecosystem emerged and with it new opportunities to disrupt the way people manage their finances.

From a historical perspective, it took the world 40 centuries to shape traditional banking and less than 2 decades for the FinTech revolution to completely disrupt that.



THE IMPACT OF PSD2 ON THE FINANCIAL INDUSTRY

More than a decade ago, the Lisbon Treaty became effective, introducing the need to regulate payment services and providers throughout the European Union (EU) and European Economic Area (EEA) member states. To simulate competition on the European continent, improve the quality of financial services and protect consumers, the PSD1 regulation was shaped.

In the years following the introduction of PSD1, the financial ecosystem started to change dramatically. Groundbreaking financial innovations emerged, coupled with technology advancements in e-commerce, mobile payments, and application program interfaces (APIs). It became clear that the regulations needed revising to adapt to the new market players. Thus, PSD2 was drafted after just 8 years.

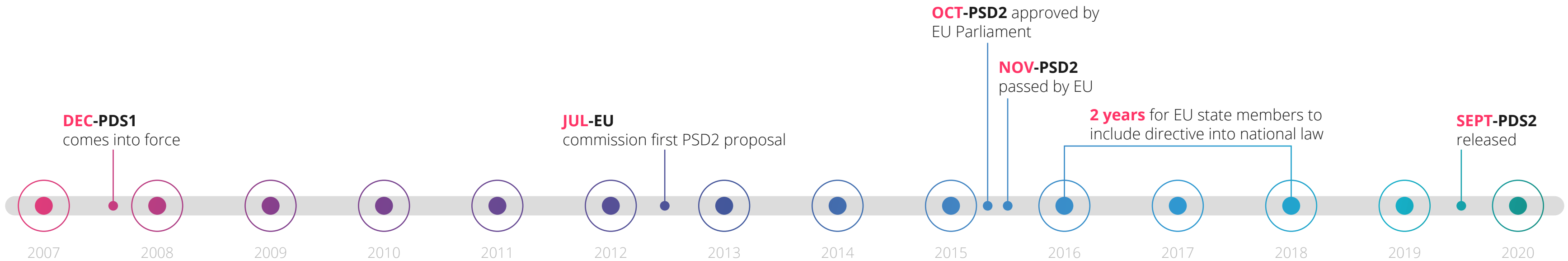
PSD2 aims to create one integrated market for all payment services by standardizing the regulations. The revised directive established transparency and fair competition, broke down entry barriers for new payment services and provided increased security for customers.

Account Servicing Payment Services Providers (ASPSPs) such as banks, payment services providers or electronic money institutions, among others, are now compelled by PSD2 to provide TPPs access to their customer's data through either dedicated interfaces or on-line opened services (through APIs). At the same time, the ASPSPs remain responsible for protecting their clients' data, meeting the General Data Protection Regulation (GDPR),

the Common Secure Communication (CSC) of transactions standard, and the Strong Customer Authentication (SCA) requirements.

With all the burden placed on ASPSPs shoulders, TPPs emerged in the financial sector, having a green light to offer Payment Initiation Services (PIS) and Account Information Services (AIS). At this point, TPPs were granted direct access to client data from Financial Institutions (FIs).

PSD2 ruled out the monopoly of the cards network (maintained by MasterCard and Visa), along with the associated transactions tax surcharges. In turn, consumers can now use TPP applications to directly initiate payments. New opportunities also emerged for the companies that used to own the payments landscape. These companies started to reinvent their business model, maintain market share through investments and acquisitions of the new payment providers or other market disruption initiatives. PSD2 offered a fresh perspective, making room for innovation. Similarly, classic financial institutions (FIs) were forced to take the leap towards digitized solutions at an accelerated speed.



Advantages brought by PSD2

- Facilitates innovation by allowing new players to emerge; a new market was shaped, making room for TTPs relying on AIS/PIS opened APIs, as well as for RegTech, providing FIs with regulatory monitoring, reporting and compliance.
- Eliminates constraints rooted in inflexible infrastructures, thus providing flexibility to tailor solutions for an enhanced customer experience.
- FIs can expand their services portfolios and customer touchpoints through fully digital and cost-effective products, partnerships, and brand associations with FinTech disruptors.
- End customers benefited the most: simplified and swift payments, integrated accounts overview, enhanced security, and availability of a variety of new services and products.

Challenges brought by PSD2

- Existing FIs struggled to create and open APIs for sharing customer data; in turn, TTPs are faced with the challenge of integrating their solutions with multiple banks, as there are no explicit rules on how FIs should create and expose their APIs to the world.
- Payment initiations increased security risks for FIs, forcing them to invest in improving payment monitoring and existing security infrastructures, beyond their existing Know Your Customer (KYC) and Anti-Money Laundering (AML) solutions.
- FIs had to implement and enforce SCA for all transactions, also posing a challenge to reassess/revamp the complete risk moderation process.

Even if PSD2 was enforced at EU and EEA levels, other countries like Canada, US, Turkey, Australia, and Japan, among others, started to implement similar regulations. For example, China has its own National Payment Gateway (NPG), a framework similar to Open Banking, initiated by Jack Ma, Founder of Alipay.

In such a disrupted landscape, the opportunities outweigh the challenges for both FIs and fintech. New products and reinvented processes brought by challengers forced FIs to re-design their solutions to survive and grow their market share. PSD2 triggered the accelerated digitalization of banking distribution channels. FIs had to aggregate services to make them more flexible, reflect upon their Business-to-Consumer model, and rethink the back-office functions, among others.

This is not an easy feat on a functional business ecosystem, mainly because the customer's trust is always at stake.

Many people saw Fintech as a threat to traditional FIs, but the result, as profiled today, already proves that both banks and clients benefit from Fintech's fresh ideas. In a market without competition, there is no evolution. PSD2 opened the path for innovation and collaboration.

“The difficulty lies not so much in developing new ideas as in escaping from old ones”.

JM Keynes



FINANCIAL SOFTWARE DEVELOPMENT

Sample Projects Developed by Fortech that empower the Financial Industry and beyond

Starting from the “Fintech Big-Bang” of the post financial crisis in 2008 and the enforcement of the PSD directives, software development for financial services increased significantly. Fortech was well prepared to take on new and complex projects, contributing to innovation and fast delivery for our clients.

Among the most relevant projects we have implemented by leveraging the new financial industry landscape, we can distinguish several solutions for banks, payment providers, risk management, and insurance companies. Moreover, we have applied our know-how cross-industry, in projects from sectors like Automotive and Healthcare.

Open Banking – A Completely New Market Opened

PSD2 forced banks and FIs to open APIs. Without an imposed standard, each API integration by Fintech and interconnected providers pose a challenge. For example, a Fintech startup has limited resources to integrate APIs – and for each one, there is a different process behind. Moreover, security is crucial in each integration. Thus, connecting a solution to several banks and FIs can be very costly and ineffective if performed by each company individually.

As collaboration is key in this new and highly regulated market, innovative solutions are emerging to facilitate the landscape.

In this segment, Fortech applies its financial software development expertise to empower one of its clients in developing an open banking API platform. The solution integrates open banking APIs and provides clients with an easy and secure way to access account information from financial institutions and initiate payments. At the same time, it provides financial companies with a consistent and easy to use toolkit and enables them to build modern and regulatory compliant financial applications.

With Open Banking crossing borders and shaping new financial services solutions, one must wonder how the ecosystem will change in the following years.

Are you ready for Open Finance?



Physical Banking Processes Going Digital

Digitalization not only triggered several regulations but also brought opportunities to improve the way people manage their finances. With the emergence of challenger banks and the shift in customer's behavior, old banking processes are becoming obsolete. Thus, reshaping classic processes into truly digital banking solutions is imperative.

At Fortech, we work closely with our clients in banking to help leverage technology for digitalization and innovation. One of the projects we are developing is a banking application designed to digitize, facilitate, and automate the lending process and reduce the physical time spent by customers at local branches.

The app also evaluates customers based on risk criteria, cuts the time spent applying for a loan to a matter of minutes and wastes no paper in the process. APIs from multiple regulatory agencies and other internal bank API's of the client are integrated into the solution to ensure the lending process is compliant with all EU regulations and its workflow is automated across the banking systems.

According to 11: FS, digital banking is only 1% finished. As an enabler of digital financial services, we are confident to say that the remaining 99% possibilities are endless.

Disrupting Trading Solutions and Payment Gateways

In this highly regulated market, with technology advancements shaping the solutions of tomorrow, financial software development experienced a rapid growth, even beyond banking services.

For example, in the trading industry, Fortech integrated payment gateways into core applications, enabling its clients to provide solutions for performing transactions from classic currencies into multiple crypto currencies (such as Bitcoin or Ripple). In the new virtual system, token-issuers, broker-dealers, and operators of alternative trading systems benefited the most.

Another example is the development of an open platform for fixed income trading. The solution can be integrated with custom and third-party modules and support multiple fixed income instruments (such as Euro Government, Corporate and Floater Bonds, Sovereign, Supranational and Agency Bonds, Inflation Linked and Callable Bonds, Emerging markets and High Yield Bonds, Municipals, Governmental and Pfandbriefe Bonds). Among the features we implemented for the platform: an improved model of assets pricing, market monitoring, quoting, live and indicative prices, market making, trading (for both dealer to dealer and dealer to client markets), portfolio hedging, position keeping, risk monitoring using various risk models and native connectivity towards the main Fixed Income Markets.



Leveraging Artificial Intelligence in Innovation

The benefits of Artificial Intelligence (AI) in financial software are endless. From predicting outcomes and market trends that facilitate risk management to developing chat bots and other solutions that automate repetitive processes, using AI in finance is key to innovation.

By applying AI technologies to process large volumes of ambiguous data, Fortech implemented a web-based, cloud-hosted solution for advanced risk investment modeling. It connects data, people, and processes to provide asset managers with risk analysis and scenario simulations across a broad universe of assets. Addressing both high-end users (such as public pensions, endowments, investment advisory firms or insurance companies among others) and non-institutional investors, the risk management platform compiles a comprehensive overview of portfolio vulnerabilities and return indicators, empowering asset managers to control their portfolios based on data.

At Fortech, we have a dedicated internal AI community that constantly explores how to leverage AI for different use cases. One of their recent projects is the development of a chatbot. You can read a more technical-oriented article on how to develop a chatbot [here](#).



FOOD FOR THOUGHT

PSD3 – Between necessity and natural evolution

Rumors of PSD3 started emerging even before PSD2 came into effect in September 2019. Even though PSD2 laid the foundation of Open Banking and Secure Payments, it did not provide standards for data exchange between TPPs and FIs.

For payments, the Regulatory Technical Standards (RTS) clarified the SCA process in detriment of user experience. This created opportunities for new solutions to emerge in this space, which aim at making payments frictionless.

Moreover, enforcing FIs to open their APIs without standardized guidelines generated additional confusion in the market. The only country to enforce regulation standards for Open Banking was the UK. This presented opportunities for Fintech to flourish, thus making UK the go-to market in this segment.

Today, still, thousands of banks are not making themselves easily accessible for Fintech. While they are ignoring the opportunity, others are joining forces in developing disruptive platforms such as XS2A, CAPS, or ERPB, among others. Embracing change without a directive demanding it, may lead to a natural evolution towards PSD3 and Open Finance.



OVERVIEW OF ABBREVIATIONS

AIS(P) – Account Information Service Provider

AML – Anti-money Laundering

API – Application Programming Interface

ASPS(P) – Account Servicing Payment Service Provider

CAPS – Convenient Access to PSD2/Payment-related Services

CSC – Common Secure Communication

EBA – European Banking Authority

eIDAS – Electronic Identification, Authentication and Trust Services

ERPB – Euro Retail Payments Board

FI – Financial Institution

KYC – Know Your Customer

NPG – National Payment Gateway

PIS(P) – Payment Initiation Service Provider

PSD – Payment Services Directive

RTS – Regulatory Technical Standards

SCA - Strong Customer Authentication

SWIFT – Society for Worldwide Interbank Financial Telecommunications

TPP – Third-Party Provider

XS2A – Access to Account

PSD2



Author



IOANA BEJAN
Business Analyst

Contributors



ALEXANDRA ȘIPOȘ
Senior Growth Consultant
– Financial Segment



GHEORGHE MÂNZAT
Unit Manager



ANDREI MĂRGINEANU
Growth Manager
– Financial Segment

About Fortech

Fortech is a Romanian software services company, one of the largest IT service providers in the CEE region, awarded by EY, Forbes, and repeatedly included in Deloitte rankings of the fastest-growing technology companies.

As a technology partner for Financial Services companies, we build dedicated teams that truly integrate and provide full-stack, end-to-end custom software development services. Leveraging a quality-focused culture, Agile and modern technologies, we support and accelerate digital innovation.

✉ fintech@fortech.ro

☎ +40 264 453 303

🖱 <https://www.fortech.ro/fin4tech/>

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