

CELENT

APIs IN BANKING: UNLOCKING BUSINESS VALUE WITH BANKING AS A PLATFORM (BAAP)

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EXECUTIVE SUMMARY

KEY RESEARCH QUESTIONS

- 1** *How have APIs evolved into building blocks for the bank of the future?*
- 2** *How are banks driving business value with different API approaches?*
- 3** *How should banks begin their API journey?*

For decades, getting disparate bank applications to talk to each other was a nightmare. Most integration involved custom, point-to-point code, manually written by a programmer. This included manually translating data fields between the two systems, and defining business rules for the use of the information. Starting in the mid-1990s, enterprise application integration (EAI) rose to prominence along with message-oriented middleware, linking disparate legacy systems across multiple software platforms.

In 2000, APIs emerged for externally facing integration, driven by pioneers Salesforce.com and eBay. The business value of external APIs is seen in the monetary results of three leading firms. Salesforce.com generates 50% of its revenue through APIs, eBay generates 60%, and Expedia.com generates 90%.

APIs are critical technology enablers for several use cases in banking including application integration, banking as a platform, innovation, and client connectivity. Although there is much blurring of lines between the use cases, there are different target audiences for each of the four API approaches.

- APIs for Integration → Enterprise architects and developers
- APIs for Banking as a Platform → Digital neobanks
- APIS for Innovation → Fintechs
- APIs for Connectivity → Bank customers

Web services, microservices, and APIs enable legacy modernization by wrapping legacy systems with a decoupled **integration** layer, bridging traditional batch-based processes to real-time, digital cloud, mobile, and social applications. APIs enable the modular application stack underlying **Banking as a Platform** and provide neobanks with state-of-the-art digital banking capabilities. As open banking grows, driven by regulatory imperatives, shifting customer demands, and the threat of fintech firms, APIs connect banks and third party firms entering into collaborative partnerships for **innovation**. To access banking services, most customers manually log in to a web-based or mobile platform, pulling balance and transaction data on demand. APIs are emerging as a new **connectivity** channel, streamlining and securing on-demand, programmatic access to financial data for accounting packages, treasury management systems, and ERP platforms.

It is clear that internal staff, neobanks, fintech partners, and end customers all gain business value when banks adopt APIs for one or more of the four approaches discussed in this report. We offer updated case studies from CBW Bank, Fidor Bank, JB Financial Group, Citi, and YES BANK detailing their API journey, including technology architecture, monetization approach, and latest results. For banks seeking to begin their API journey, we recommend a series of guideposts that banks can follow to unlock business value with APIs.

THE EVOLUTION OF APIs

Key Research Question

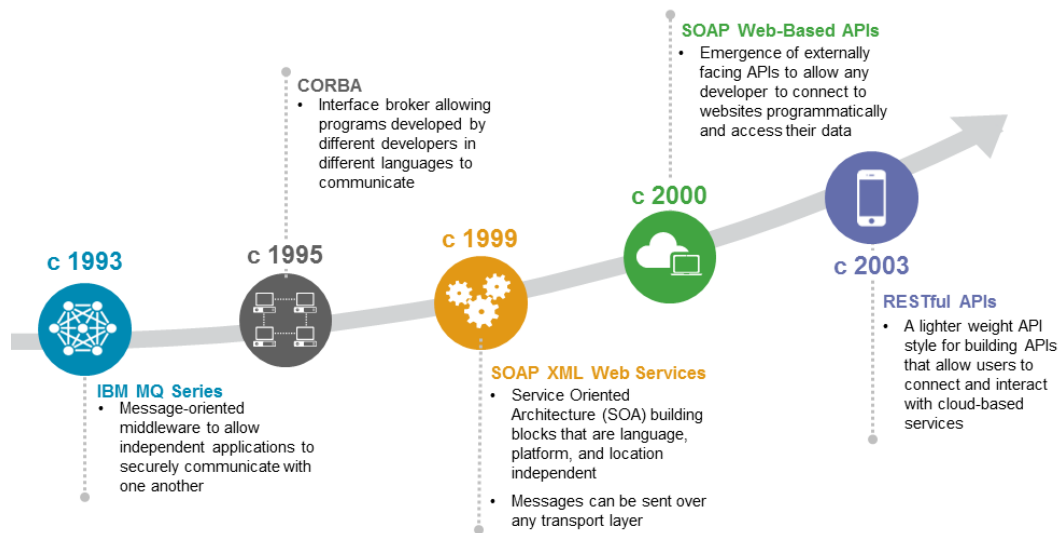
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How have APIs evolved into building blocks for the bank of the future?

REST APIs are the latest evolution in integration technologies, enabling fast performance, reliability, and reuse of components that can be managed and updated without affecting the system as a whole.

Before the 1990s, getting different applications to talk to each other was a nightmare, especially if different hardware, operating systems, and programming languages were involved. Most integration was point-to-point — custom code written by a programmer, connecting one system to another, including translating data fields between the two systems and defining business rules for the use of information. In the early 1990s, the concept of enterprise application integration (EAI) held promise to link disparate enterprise applications such as core banking, loan servicing, and customer relationship management (CRM). IBM MQ became the most popular solution for integration and messaging across multiple platforms, and it still plays a major part in many banks' back office integration architecture and is the backbone for IBM's service-oriented architecture framework, and its growing API Connect solution (Figure 1).

Figure 1: The Evolution of APIs



Source: Celent analysis

Circa 1995, Common Object Request Broker Architecture (CORBA) allowed components to communicate with one another no matter where they are located, or who has designed

them, using an “interface broker,” a foundational element for traditional client-server software.

Service-Oriented Architecture Protocol (SOAP) emerged around 1999. At the time, web services were a new breed of software component that was language, platform, and location independent. The tenets of Service-Oriented Architecture are to decouple applications and to provide a well-defined service interface, which can be reused by applications and composed into business processes.

SOAP APIs were particularly well suited to externally facing integration enabling the sharing of services with external firms. On February 7, 2000, Salesforce.com officially launched as an outgrowth of Salesforce’s revolutionary delivery of business software applications as Software-as-a-Service. On November 20, 2000, eBay launched the eBay Application Program Interface (API), along with the eBay Developers Program.

The launch of the eBay API was a response to the growing number of applications that were already relying on its site either legitimately or illegitimately. The API aimed to standardize how applications integrated with eBay and make it easier for partners and developers to build a business around the eBay ecosystem. eBay is still considered a pioneer in the current era of web-based APIs and web services, and still leads with one of the most successful developer ecosystems today. Moreover, the importance of external developer ecosystems is seen in their monetary results. Today, Salesforce.com generates 50% of its revenue through APIs, eBay generates 60%, and Expedia.com generates 90%.

The next stage on the maturity curve is REST APIs. REST stands for “Representational state transfer,” considered a stateless protocol — enabling fast performance, reliability, and the ability to grow — by reusing components that can be managed and updated without affecting the system as a whole, even while it is running. REST is considered the most logical, efficient, and widespread standard in the creation of APIs for Internet services.

Enterprise architects still value SOA for its ability to facilitate the exchange of structured information between applications, and we see continued development of web services to expose underlying systems functionality and facilitate integration with legacy systems.

DRIVING BUSINESS VALUE WITH APIS

Key
Research
Question

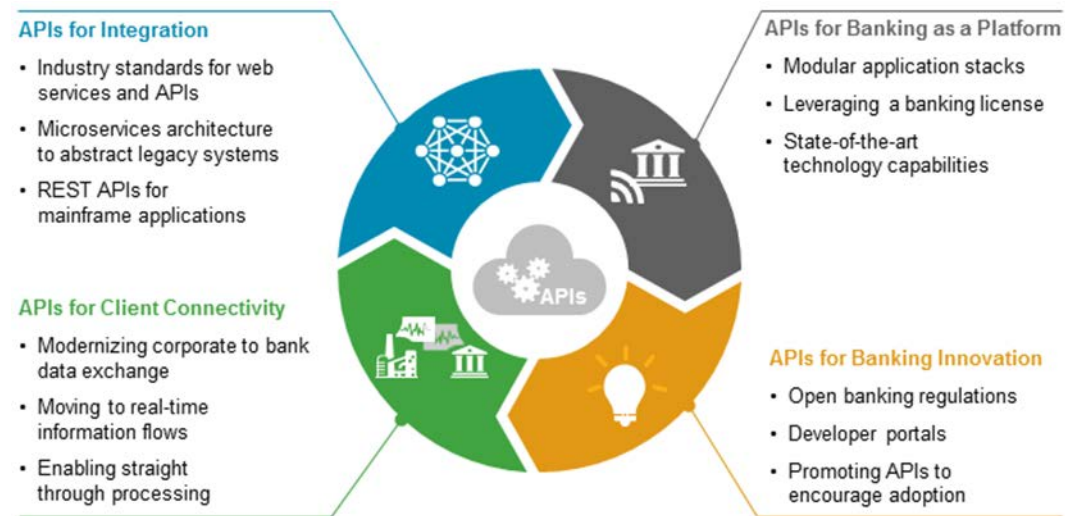
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How are banks driving business value with APIs?

Banks are using APIs for integration, banking as a platform, innovation, and client connectivity.

APIs are critical technology enablers for several use cases in banking including application integration, banking as a platform, innovation, and client connectivity (see Figure 2).

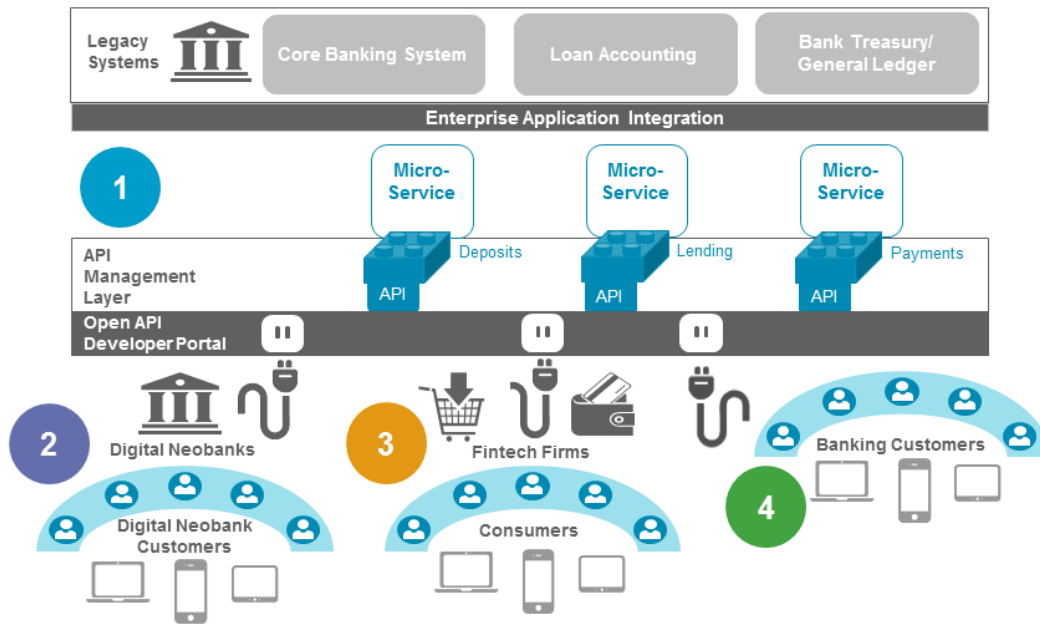
Figure 2: Four Approaches to Unlocking Business Value with APIs



Source: Celent analysis

Although there is much blurring of lines between API use cases, there are different target audiences for each of the four API approaches (Figure 3).

Figure 3: Different Audiences for Different API Approaches



Source: Celent analysis

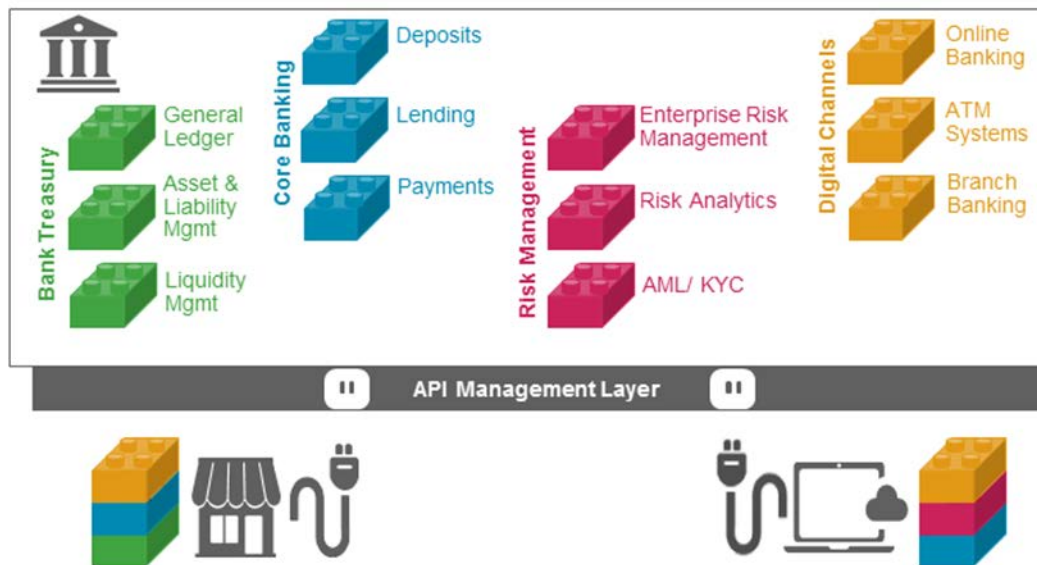
1. **APIs for Integration** → Enterprise architects and developers
2. **APIs for Banking as a Platform** → Digital neobanks
3. **APIs for Innovation** → Fintechs
4. **APIs for Connectivity** → Bank customers

APIs FOR BANKING AS A PLATFORM

Banking as a Platform (BaaP), sometimes referred to as Banking as a Service (BaaS), occurs when a bank acts as an infrastructure provider to external third parties. Variations include other banks white-labeling the BaaP platform for faster time to market, fintech firms leveraging the BaaP provider's banking license to provision bank accounts, and banks and fintechs using the BaaP platform for testing purposes.

Banks like CBW, Fidor, JB Financial, solarisBank, and wirecard built their BaaP architecture from scratch, without the constraint of legacy systems, creating modular application stacks broken into discrete services. The modular banking services on a BaaP platform serve as building blocks, accessible to third parties through an API management layer, where they can be mixed and matched to create new products and services tailored to the third party's business model (Figure 4).

Figure 4: Banking as a Platform Modular Architecture



Source: Celent analysis

Using an API approach to provisioning banking services for third parties provides a single gateway to interact with many connected partners. For BaaP providers, advantages include the ability to monetize state-of-the-art technology capabilities, gain indirect access to new client groups, extend the existing product distribution network, and attract fintech development of new products. For consumers of BaaP, advantages include time to market, banking license leverage, regulatory compliance expertise, and state-of-the-art technology capabilities.

We profile three BaaP providers, CBW, Fidor, and JB Financial, below.



Table 1: CBW at a Glance

FINANCIAL INSTITUTION	CBW BANK
INITIATIVE	Leveraging Modern APIs
SYNOPSIS	CBW Bank developed and implemented an API-enabled digital banking platform that facilitates real-time, contextual and conditional payments across multiple channels.
KEY BENEFITS	<ul style="list-style-type: none"> Created 500+ internal APIs connecting to 30-40 external APIs, allowing many connection points into its digital banking platform. The first bank in the US to publish its API set. Allows banking as a platform service, where customers choose what they want, how they want it.
KEY VENDORS	Yantra Financial Technologies

Source: Celent

Celent Perspective

CBW Bank is a small bank in rural Kansas with \$33.3 million in assets. It offers retail and corporate banking services. With just one branch, it has been transformed and rebuilt in recent years by senior figures in the fintech industry to become much more than just a local bank. As profiled in *CBW Bank: Leveraging Modern APIs* (April 2017), CBW was the winner of the Celent Model Bank 2017 Award for Banking as a Platform. This was CBW’s second win. In 2016 CBW was a Celent Model Bank winner in the Corporate Payments and Infrastructure Modernization category.

Since 2013, CBW Bank has set out to redesign its banking technology, using modern IT principles that are still rare in financial services but widely used in other industries. The bank has ensured that, wherever possible, every granular process becomes an API. These APIs can be used in multiple ways and avoid processes being replicated across the bank. Also, it allows the bank to combine multiple internal APIs and publish discrete process APIs in its own API store, “Y Labs Marketplace.” In doing so, it became the first bank in the US to publish APIs.

Since the launch in June 2016, over 300 companies have signed up to use the APIs, primarily fintech firms. In addition, a number of banks are using the APIs as a form of rapid prototyping tool for their own digital transformation. The success of CBW Bank comes as much from its approach to banking as its technology. While the ability to offer APIs is the result of the technology, asking why something was done in a particular way, and how it could be improved, was the necessary trigger to change the technology in the first place. This is an important distinction to make. Without this vision that things could work differently, the bank could have rebuilt the underlying technology, but in effect only have built “a better mousetrap.” That is, until they used the technology differently, they would have only made an incremental change to what they had before. What CBW Bank has built is less a banking platform, and more a set of building blocks that can be assembled in ways that banks on old technology can only dream of.

Introduction

With a new digital banking infrastructure, CBW Bank was one of the first, if not the first, bank in the US to offer real-time payments that could reach virtually the entire population.

CBW Bank developed and implemented an API-enabled digital banking platform that facilitates real-time, contextual, and conditional payments across multiple channels, effectively modernizing conventional approaches to payments and digital banking.

Opportunity

The Chairman of CBW, Suresh Ramamurthi, is an ex-Google executive, and along with his wife, Suchitra Padmanabhan, bought CBW largely with their savings in 2009, just after the financial crisis. With his technology background, Mr Ramamurthi saw both the need and an opportunity to fundamentally rebuild the bank from the ground up, by using modern technology and a fundamentally different mindset than a traditional banker but still bound by the same regulatory rules as any other bank.

CBW identified that the core banking solution itself was a legacy solution, and consequently that it did not support many things that CBW believed were central to the ideal solution. The following shortcomings were identified:

- Lack of API support for rapid account configuration.
- No support for online account opening.
- No option to embed risk scoring, compliance, or risk management.
- The legacy design meant that it could not support custom integration into third party payment rails including to other banks, including lack of support for debit rails.

Effective use of APIs can revolutionize traditional approaches to banking and payments, and consequently, resolve pain points for both consumers and businesses in various verticals. For this reason, CBW Bank built 500+ modern APIs, empowering the bank to take a marketplace approach to banking. This marketplace approach enables CBW Bank to develop payments products and services that anticipate market needs, spanning various business verticals, and delivering tangible value to both businesses and consumers.

Solution

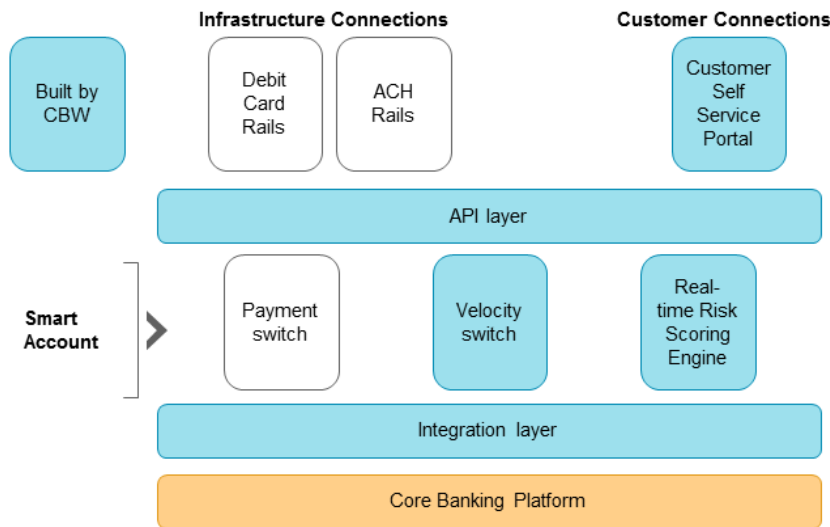
CBW Bank recognized that many challenges hindered the banking industry's digital transformation, such as how to develop new services while ensuring regulatory compliance, and the lengthy time it takes to bring new products/services to market. In part, CBW recognized that this was due to inflexible banking platforms. Furthermore, they realized that if they solved this, they could offer this as a service to others.

One key challenge, then, was how to achieve this marketplace service while maintaining compliance. CBW had to solve compliance at scale and in real time, as well as across all payment channels, and have the ability to stop a transaction immediately if it did not meet the risk score or fraud check. CBW accomplished this by completely redesigning the constituent parts of the process. While all banks have similar elements, CBW separated the elements to have greater flexibility and control. For example, it built an authorization engine separate from the card switch, which allows it to set conditional and contextual management at both card level and merchant level. Furthermore, it built a real-time risk scoring engine which ensured every transaction was risk scored and watchlist checked. It is these elements that CBW has created from APIs.

The bank formed a delivery team with virtually everyone at the bank involved in the discussions, requirement gathering, and testing. They then leveraged an external IT partner, Yantra Technologies, to help with some of the coding and building. Yantra is also partly owned by Mr Ramamurthi and effectively acts as a reseller of productized elements of the solution built for CBW.

CBW's approach of using a single API as an integration point eliminates the challenge by integrating endless connection points into one digital banking platform. The platform provides a single way to interact with many connected partners, instead of hundreds of individual connections. It acts essentially as a gateway that gives the end user access to multiple payment networks and delivery channels. This gives customer benefits of control, but equally reduces dramatically the cost of adding and maintaining additional connections and testing them. Rather than a "many-to-many" approach that most banks take (that is, many connections connecting individually to each of the many systems a bank has), this is essentially many-to-one, with the "one" insulating everything internally from any changes (Figure 5).

Figure 5: CBW Enabled and Extended Existing Legacy Technology to Deliver New Services



Source: CBW Bank

CBW uses machine learning for real-time transaction scoring and analysis using an in-house developed platform. While most banks only capture transaction data for analysis, CBW looks at contextual data from API calls as well. Contextual data includes browser information, device ID, IP address, and geographic location, allowing CBW to more readily detect fraud. Machine learning in its bill pay API allows fintechs to develop apps that can recommend short-term investments or financing. Due to the massive amounts of data it collects, CBW has become expert at efficient storage methods and seeking low-cost storage providers.

CBW Bank runs its systems in a private, secure cloud. YLabs is hosted in the cloud on Amazon Web Services (AWS).

Results

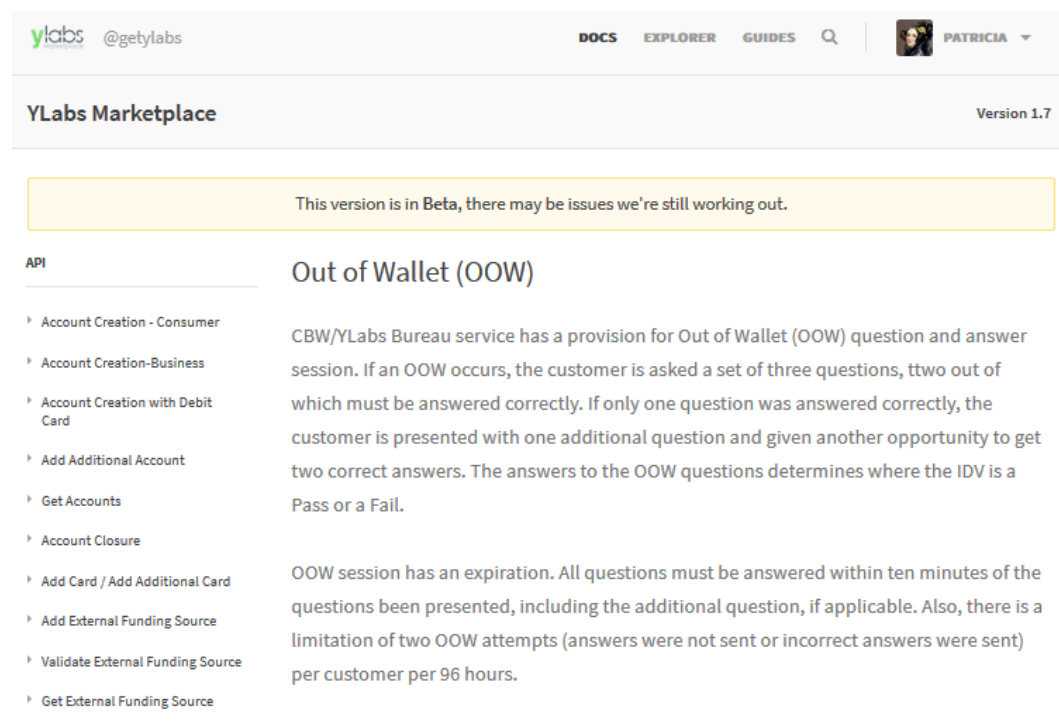
The bank can now leverage the 500+ APIs to provide connection points into the digital banking platform, giving users access to multiple payment networks and channels. This approach ensures interoperability between anything and everything, regardless of the system, including multiple financial institutions, programs, product combinations, and accounts. As a result, CBW Bank can use its technology to create solutions that meet the needs of consumers and benefit a wide range of business verticals.

Additionally, CBW Bank published its APIs, becoming the first bank in the US to do so, in Yantra Technologies' "YLabs Marketplace." By granting access to its APIs, the bank now allows fintech startups and other financial institutions to rapidly build and validate a variety of business and consumer banking products while ensuring compliance. This also

allows any startup or bank to leverage the YLabs platform to build a digital bank within six months.

YLabs Marketplace does not publish all 500 APIs, but a selection of 30 to 40 process abstractions; a sampling is listed in Figure 6.

Figure 6: YLabs Marketplace API Portal



Source: Yantra Financial Technologies

Each abstraction is typically made up of multiple APIs, which are brought together to complete a specific function. For example, doing a KYC check uses up to four “public-facing” APIs, with each API connecting to an average of 10 to 12 “infrastructure” APIs.

Since the launch of ylabs Marketplace in June 2016, over 300 companies have signed up to utilize the APIs. Although fintechs are the largest proportion of the firms signed up (approximately 75% to 80%), some of the heaviest users are large banks. The banks use the platform as a sandbox for inspiration and rapid prototyping tool for services that can accelerate the banks’ digital transformation and better meet the shifting demands of consumers. Furthermore, CBW’s focus on compliance ensures that the system results in the ability to quickly add new services without taking on inordinate risks or increasing exposure to fraudulent transactions. By leveraging CBW Bank, financial institutions can ensure compliance and validate innovative services or products.

CBW’s fintech clients represent different business models:

- **Infrastructure extension partners:** Allowing fintechs to extend their product infrastructure with features such as bill pay, mobile wallets, and multi-country support.
- **Vertical specialist partners:** Helping firms in different verticals such as healthcare and insurance to incorporate banking and payment services into their software solutions.

- **Nonbank financial services partners:** Supporting fintech firms offering services such as person-to-person payments, mobile lending, and bill pay.

Once a fintech develops an application using ylabs APIs, CBW evaluates the fintech's business case to determine whether it will allow the application to move into production. CBW is strategic in its choice of production applications, choosing partners with clear roadmaps and an ability to extend CBW's ecosystem.

Yantra Technologies also white-labels a platform for global money remittances, connecting to multi-currency payments providers such as Currencycloud and TransferTo. Connections with telcos around the world enable top-ups for digital wallets.

Supporting cross-border payments, CBW has correspondent bank relationships with banks in 15 to 20 countries, allowing it to offer real-time gross settlement directly with an international bank, bypassing traditional payment and messaging networks for clearing. CBW uses its own messaging standard that includes more contextual data than existing standards. When looking for a bank partner in a specific geography, CBW looks for the most advanced banks in the locale.

FIDOR BANK



Table 2: Fidor at a Glance

FINANCIAL INSTITUTION	FIDOR BANK
INITIATIVE	Reinventing banking
SYNOPSIS	Starting from scratch, Fidor Bank redefined traditional banking from the ground up, leveraging its technology and business model to develop a differentiating customer experience
KEY BENEFITS	<ul style="list-style-type: none"> • Flexibility and agility that enables the bank to create an extensive ecosystem of partners and capabilities. • Leveraging APIs to develop differentiating applications. • Leveraging APIs to onboard B2B partners, allowing them to run their business and grow with their growth • Creating a community that brings users together and solidifies a bond between the bank and its customers. • White labeling of its own platform to support partner banks, incumbent banks, or consumer-led organizations to launch their own digital brand
RELEVANT PARTNERSHIPS	<ul style="list-style-type: none"> • Core Banking: G&H Bankensoftware Bancos, Swisscom • Payment/Card: van den Berg, Mastercard, PetaFuel • API Crypto: bitcoin.de, Kraken, several ICOs, and crypto companies • API distribution, White-Label Bank: O2/ Telefónica • Marketplace/Branding: Eight Inc. • Investment: Scalable Capital, Ginmon, Nutmeg • Savings: Raisin • Trading: Ayondo, eToro

- Insurance: Allianz, Friendsurance, Helvetia, Hiscox
- Peer-to-Peer Lending: Smava, GIROMATCH
- Crowd Finance: kapilendo, Exporo, Seedrs
- Business loans: iwoca
- Crypto/Blockchain: Ripple, bitcoin.de, Kraken
- Cross-Border Payments /FX: Hyperwallet, Currencycloud
- Precious Metals: Goldmoney
- System Integrators: EPAM, GFT Technologies, DXC.Technology
- Online Lending: Smava, O2/Telefónica, FINANZCHECK
- B2B: Van Lanschot (Netherlands), Abu Dhabi Islamic Bank (UAE), a leading bank in France, a leading bank in Africa, o2/Telefónica (Germany)
- Education: Singapore Polytechnic, partnering with universities to educate students on how to set up fintechs using the Fidor API sandbox
- Financial tools: OptioPay, Volders

Source: Celent

Celent Perspective

As profiled in *Fidor: Celent Model Bank of the Year 2015* (March 2015), Fidor Bank was the overall winner of Celent’s 2015 Model Bank Awards. Fidor Bank in Germany was one of the first neobanks with a banking license, allowing it to redefine traditional banking from the ground up. Started from scratch, it aims to provide a truly innovative and differentiating customer experience that offers a comprehensive suite of financial products and services by owning the entire infrastructure. The bank adheres to two main principles of financial innovation: openness and community. Openness is the flexibility and agility that enables the bank to create an extensive ecosystem of partners and capabilities, while also leveraging APIs to develop differentiating applications. Community is about bringing users together and solidifying a bond between the bank and its customers, as well as between the customers themselves, discussing financial topics in an open and transparent manner.

Introduction

Fidor Bank was launched in 2010 with a new German “de novo” charter. The bank is the primary entity in the Fidor Holding Group, which holds two additional entities: Fidor Solutions and Fidor Factory. Fidor carved out its IT department to form Fidor Solutions, focusing on financial technology innovation. With a focus on the B2B market, Fidor Solutions has doubled its revenues for the past two years. The company designs, develops, implements, and maintains the digital backbone of Fidor Bank: the fidorOS digital banking platform and its library of APIs that enables a variety of strategic features.

In addition to serving Fidor Bank, Fidor Solutions co-innovates with incumbent or startup challenger banks, as well as consumer-led organizations that wish to launch a digital bank, leaning on Fidor Solutions for both its banking expertise and technology. Fidor Factory is an in-house digital marketing agency that oversees all customer communications and services of Fidor Group’s customers globally. Combining their expertise in neobank, payment, and technical innovations, the Fidor entities have expanded their value proposition to include digital banking solutions and banking-as-a-service since 2015.

Fidor was acquired in 2016 by Groupe BPCE, a leading banking group headquartered in France and the parent of two major Banque Populaire and Caisse d'Épargne cooperative banking networks. Fidor's current portfolio of products in Germany covers retail and business banking ranging from basic bank accounts and savings bonds to various lending offers. In Europe, Fidor currently has more than 750,000 community members.

Most recently, Fidor developed a credit-as-a-service offer. Again, APIs play a major role in that service. Fidor Bank and its B2B partners can run their credit distribution model, including risk-adjusted pricing, digital signatures, and real-time 24 x 7 payout with constant monitoring of credit customers. Fidor Bank and its partners started the credit distribution of consumer loans on Fidor's infrastructure in December 2017. Fidor is rolling out its credit-as-a-service solution across Europe in 2018, starting in France.

Opportunity

In the mid-'90s the founders of Fidor were at work creating their first financial institution, the first European discount brokerage named DAB Bank (like Charles Schwab), capitalizing on the rise in amateur stock trading. In 2007, web 2.0 was changing the way users used the Internet and consumed services. Customers were demanding increasingly high levels of engagement and a customer-centric experience across the growing number of web-enabled devices and social media platforms.

The founders of Fidor recognized that few financial institutions were meeting customers on their terms (like eBay, Amazon, collaboration platforms such as XING, and others), but instead continued to pursue a traditional product-focused and bank-focused view of the business. The design concept was simple: create a bank from scratch that focused entirely on the customer, be relevant, and give something back. The bank would put the customer first, create a community of like-minded users, be transparent, and provide incentives.

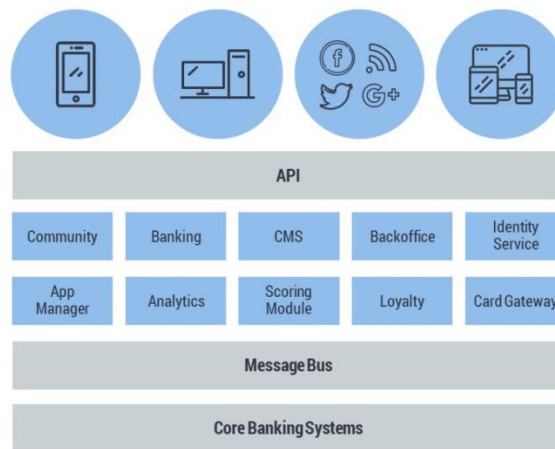
Fidor applied for a German banking license in 2007, just weeks before the financial crisis began. The license was granted in May 2009 (despite the crisis), and the bank went live on December 31, 2009. In the meantime, Fidor started work on the initial model for the Fidor operating system, fidorOS, and launched a financial community and loyalty scheme. Fidor's interaction with its customer community is the bank's core asset, and its community is one of the largest financial communities in Germany.

While developing the functionality and support for the launch of the formal bank, fidorOS acted as a digital platform that seamlessly integrated the community as a module with high-speed banking capabilities for users to come together, discuss finances, and transact in real time. This was a crucial step because it created the foundation for the community of like-minded users that would eventually be rolled into the bank itself. Even today, a person does not have to be a Fidor Bank customer to participate in the community. Each year, the bank earned a Net Promoter Score of over 40; most banks are in the negative range.

Solution

Fidor launched its formal bank operations in 2010 with the motto “banking mit freunden” (banking with friends), a community-first commitment to making banking more fun, transparent, and fair. The journey to build the fidorOS platform originated when Fidor Bank was screening the market for a solution that could respond to a high level of customer engagement, coupled with speedy banking and payment capabilities. The company could not find the right platform and made a strategic decision to architect and build their own platform, fidorOS (fOS) which Fidor Bank now operates on. By taking control of the entire process, providing technology, payments, banking services, and mastering customer engagement, Fidor created an integrated experience with complete control over the products and services suite (Figure 7).

Figure 7: fidorOS Platform Components



Source: Fidor Bank

fidorOS enables Fidor to become more agile and flexible in the market than most of its traditional bank competitors. The bank strives to create a healthy ecosystem of partners and internal development to maximize the strength of its business. It understands that financial institutions cannot be the best at everything, but by creating an environment of openness, as well as owning the entire infrastructure, a bank can create an experience that is truly innovative.

fidorOS distinguishes itself with a number of features:

- End-to-end, fully digital, real-time, “60-second banking.”
- Flexible platform for innovation (e.g. basing interest rates based on Facebook likes, or access to free data versus paying interest on balances).
- Aggregating customer behavior data helps the bank deliver on its promise to be a relevant partner for customers, offering and delivering the right products and services to the right customers at the right time and place
- Proven operating model on a cost-efficient platform, bringing the cost of acquisition to €5 per customer versus €150 to €200 on average for incumbent banks.

fidorOS creates and stores many types of customer and transaction-related data from its banking activity as well as community dialogues. The platform’s success has spurred interest from other institutions, and today Fidor white-labels the operating system for other organizations.

Fidor developed and manages the developer portal, API gateways, and developer sandboxes in-house. The fidorOS platform can be installed and operated on-premise, in Fidor's private cloud (two separate data centers in Germany), or in a public cloud from providers like Amazon, IBM, Microsoft, and Google. Fidor currently collaborates with Amazon Web Services as well as Swisscom.

Fidor built their first banking APIs versions based on market best practices established by early API pioneers like PayPal and the social media networks. More recently, Fidor decided to offer RESTful APIs using the JSON format, designing and publishing in OpenAPI (OAI) Swagger format. (Swagger is a popular API developer framework.) Considering emerging open banking API standards like Open Banking UK (CMA9) or NextGenPSD2 (Berlin Group), Fidor is deciding whether to add one or more of these standards. Since Fidor offers a number of nonfinancial services via APIs for features such as identity, customer service, and community, it will continue to use its own standards and adopt industry standards where applicable.

Fidor's open API consent and authentication approach centers around OAuth2, and in particular, the web-flow (redirect) model), although they also offer the resource-owner-credential-flow. Fidor Bank account holders who want to exchange data with third party fintechns are led through a series of web pages that inform them about risks, and then request consent for data exchange and/or payment initiation. Account holders can later review and revoke their consent via user settings. Depending on the user, the authentication use case and a number of risk-based checks may require additional security elements (e.g., biometrics) before they get processed.

Fidor requires that every third party application requesting access to a customer account or data go through an approval process. This vetting process ensures that Fidor customers can only use, and give consent, to applications previously screened by the bank. Fidor will no longer need to approve third party fintechns when European PSD2 regulations provide the legal and technical framework to license service providers.

Fidor offers a developer portal that includes an extensive set of APIs for banking, payments, credit, card management, user management, community, scoring, integrated services, and third party services (Figure 8).

Figure 8: Fidor APIs

APIs		PSD2 Compliance APIs	Fidor - Banking as a Service / Premium APIs
Data	Get customer data	✓	✓
	Get customer object	✓	✓
	Get customer's bank accounts	✓	✓
	Get all sepa transfers to the current user	✓	✓
	Get all transactions for the current user	✓	✓
	Y/N Fund availability	✓	✓
	Account balance	✓	✓
	General account aggregation	not required for PSD2	✓
	Lending & Credit data including credit scoring, track record and deposit balance	not required for PSD2	✓
	Real-time FX for real-time currency hedging	not required for PSD2	✓
	Community and Loyalty systems for end user engagement and open innovation	not required for PSD2	✓
	Get all Fidor to Fidor transfers for the current user	not required for PSD2	✓
	Payments	Transfers	
Send money to another bank account		✓	✓
Real-time Peer-to-peer payments		not required for PSD2	✓
Real-time payment (SEPA & Faster Payment)		not required for PSD2	✓
Real-time payment to national and proprietary schemes		not required for PSD2	✓
Global Money Transfer		not required for PSD2	✓
Beneficiaries Management		not required for PSD2	✓
Batch payments		not required for PSD2	✓
Standing orders			
FPS Standing order		not required for PSD2	✓
SEPA Standing order		not required for PSD2	✓
Blocking and reserving		not required for PSD2	✓
E-commerce			
White-label-e-commerce payment		not required for PSD2	✓
Direct Debit			
Creditor Identity		not required for PSD2	✓
SEPA DD Mandate Management		not required for PSD2	✓
SEPA Direct Debit	not required for PSD2	✓	
FPS Direct Debit	not required for PSD2	✓	
Identity	Video Ident Onboarding API	not required for PSD2	✓
	Age verification, true/false account verification	not required for PSD2	✓
	"Login with Fidor" for onboarding and conversion	not required for PSD2	✓
	Credential management (password reset, security questions, pin, ...)	not required for PSD2	✓
	Identity infrastructure and data repository	not required for PSD2	✓
Security	Secure Login API / 2nd factor authentication	✓	✓
	Limit setting	not required for PSD2	✓
	Fraud Detection	✓	✓
	Mobile Device Binding	not required for PSD2	✓
Compliance	AML / PEP & Sanction Lists check	not required for PSD2	✓
Cards	Order card, order status, activate	not required for PSD2	✓
	Temp block, cancel card	not required for PSD2	✓
	PAN, CVC Management	not required for PSD2	✓
	Limits	not required for PSD2	✓
	Overdraft	not required for PSD2	✓
Loan	Pay-day loans	not required for PSD2	✓
	Installment loans	not required for PSD2	✓
	Peer 2 peer loans	not required for PSD2	✓
		not required for PSD2	✓
Other	Current Accounts (Retail, SME/Corporate)	✓	✓
	Sub-Accounts and Joint Accounts	✓	✓
	Trust Account Management	not required for PSD2	✓
	Segregated Account Management	not required for PSD2	✓
	Garnished Account Management	not required for PSD2	✓
	Messages Service	not required for PSD2	✓

Source: Fidor Bank

As shown in the API list, Fidor goes well above PSD2 regulatory requirements for account information and payment initiation APIs. Fidor and its partners leverage the long list of open APIs to collaborate and co-innovate in several ways:

Open APIs for Marketplace Ecosystem

Fidor's direct-to-consumer marketplace offers a retail-like experience combined with community features. Customers can fulfill their financial needs with a broad array of solutions from over 50 providers including investments, cryptocurrencies trading, crowdfunding projects, peer-to-peer lending, insurance purchasing, mobile phone top-ups, precious metals buying, voucher purchasing, or personal finance management tools. The marketplace allows customers to interact with one another, asking for advice, reviewing products, and choosing Fidor and partners' products transparently and from a single place.

Through open APIs, Fidor partners can offer their services to Fidor customers. Fidor's marketplace was beta-tested in Germany for over a year, resulting in a successful launch of a tool that responds to the needs of consumers to find the right fintech in a trusted environment. Fidor will expand its marketplace to new geographies and is currently collaborating with Eight Inc., a leading human design agency, to improve the user experience. Eight Inc. is well known for designing the Apple Store in addition to collaborating with innovative organizations such as Nike, Virgin Atlantic Airways, and Tesla Motors.

Open APIs and Sandbox for Educational Purposes

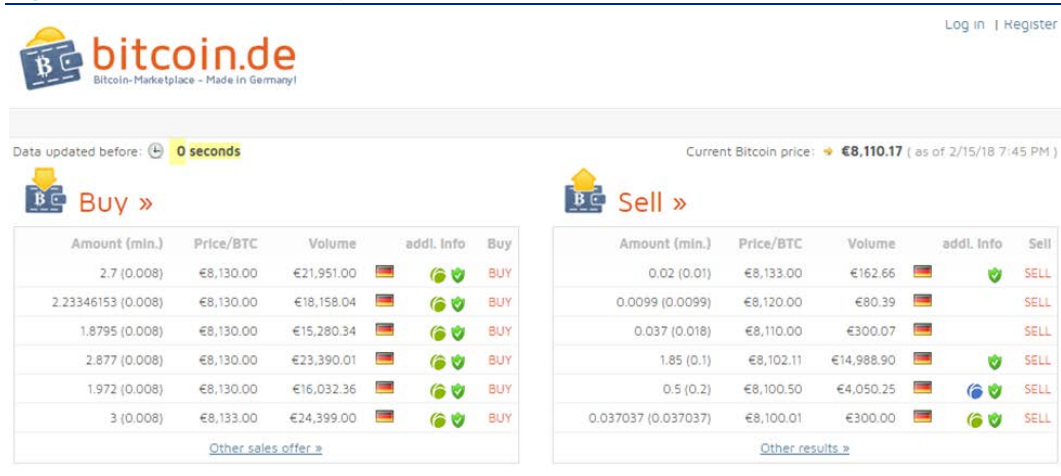
Sharing knowledge and experience with fintechs, customers, and partners is part of Fidor's philosophy. It was no different when Fidor decided to partner with universities and other educational entities with the launch of its Fidor Student Academy. Fidor sees education as an essential element that drives progress in the financial industry. Fidor signed a partnership with Singapore's five polytechnic high schools, white-labeling a Fidor Sandbox to their requirements and allowing students to train in a hands-on simulated digital banking environment, with the freedom to realize their own fintech business ideas using Fidor APIs.

Open APIs for Cryptocurrency

Another example of Fidor's drive to continuously push the envelope is its many partnerships in the cryptocurrency space. Open APIs facilitate easy, secure, standardized integration while enabling new business processes. Fidor Bank itself is not trading cryptocurrencies, but its open APIs enable the real-time clearing of Euro-currencies following the actual cryptocurrency trade. For counterparties that are Fidor customers, clearing happens in real-time, 24 hours a day, and seven days a week.

Fidor's approaches increase the security for trading counterparties because they have already been screened using Fidor's onboarding and KYC processes, and the post-trade transaction and money transfer hits the account instantly. Real-time clearing ensures the trade proceeds are instantly available for further trading. The API-enabled cryptocurrency service enables Fidor's partner [bitcoin.de](https://www.bitcoin.de) to display Fidor's customers on its trading portal, identifying real-time clearing capabilities, and ensuring trust and efficiency for traders in an extremely volatile market.

Figure 9: [bitcoin.de](https://www.bitcoin.de), powered by Fidor



Source: Fidor Bank

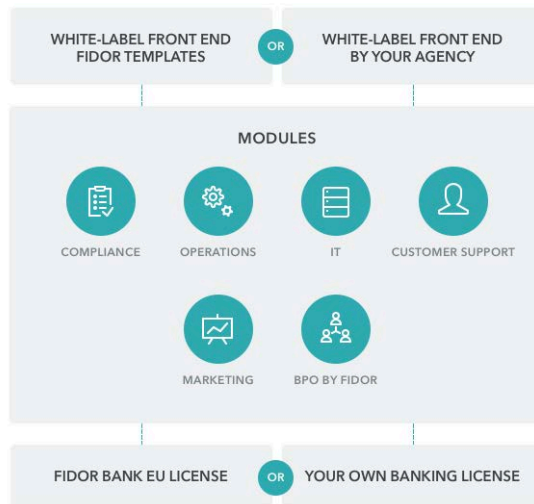
Open API for Incumbent Banks and Consumer-Led Organizations

The above Fidor open API use cases are the foundation of Fidor's Bank-as-a-Service (BaaS) concept. BaaS allows the launch of a new digital bank using Fidor's white-label software solution, including its banking license and operational services. Fidor's BaaS services offer complete business process outsourcing, including:

- White-labeled front end.
- Banking expertise and products.
- Anti-money laundering risk and compliance.
- Dedicated customer service.
- SaaS, AWS, and private cloud deployment.

- Banking operations.
- Fidor Bank's license (EU only).

Figure 10: Fidor Bank-as-a-Service (BaaS)



Source: Fidor Bank

Fidor positions its BaaS solution to consumer-led organizations such as retail, transport, insurance, or telecom firms looking to expand their brand and customer base with Fidor's banking license, regulatory compliance expertise, and cloud-based platform.

Fidor BaaS also appeals to incumbent banks that want to deliver faster on their digital transformation agenda. As an example, Fidor BaaS enabled Telefónica Deutschland to launch O₂ Banking, Germany's first mobile bank combining a telecom operator business model of a telecom operator with a bank. O₂ Banking customers enjoy free data instead of paying interest on deposits. The free data can be used, shared with peers, or converted into Amazon gift cards.

Open API for B2B Fintech Partners

Through Fidor Stack and its banking license, Fidor enables the inclusion of more players in the financial ecosystem. It allows fintech partners to extend their business model with specific banking services such as credit, payments, cards, and escrow accounts. These services are fully enabled through the use of APIs, offering the choice for end customers to subscribe to offers directly from the fintech partner's user interface.

Commercialization/Monetization

Fidor generates revenues through its API partnerships with fintechs with revenue sharing based on number of accounts, subscription fees, or as a percentage of revenue. It also generates revenue through licensing its white-labeled (BaaS) platform for banks that want to transform digitally.

Fidor's agile development approach also applies to its business model. Pricing must fit each specific project and be fair to the consumer, the partner, and to Fidor. A licensing or "pay as you grow" revenue model is agreed between all parties following the inception phase of a project. During this phase, the project is fully defined from ideation to prototyping, and clear KPIs are set across a timeline. This agile-based methodology ensures that pricing aligns with the KPIs and that all parties work towards success goals. One example of monetization is the commissioning of API-enabled transactions. For example, in the cryptocurrency collaboration scenario, Fidor charges a 0.1% fee.

For a customer like O2/ Telefónica, the BaaS use case is invaluable to the provider. Obtaining a banking license is an expensive, drawn-out, complex process, requiring capital, technology investments, technology resources, and office space. In this scenario, O2 benefits from the entire Fidor stack and banking license with a dedicated team running the bank and serving customers, all based on a pay as you grow business model.

Results

Fidor Bank had the luxury of starting from scratch. This led it to develop a state of the art banking platform, unencumbered by the legacy code that hampers most incumbent institutions. Fidor is redefining the customer experience by taking advantage of architectural openness, partner ecosystems, and a community focus.

With a focus on innovation and years of experience operating as an open bank, Fidor created the first direct-to-consumer marketplace providing over 50 fintech, insurtech, and tradetech offerings to its customers. Fidor makes it simple for any API-enabled organization to connect to its platform, expand, and be future ready. Its ecosystem evolves with more and more partnerships, creating international communities with opportunities at a global level.

Fidor states that it is the oldest fintech, and its early adoption of an open banking approach makes it the most experienced bank in building APIs. The bank counts today hundreds of available APIs that enable the creation of new revenue models and business concepts. The API-based microservice architecture allows for an ever-growing portfolio of offers that include various innovative services.

JB FINANCIAL GROUP

Table 3: JB Financial at a Glance



FINANCIAL INSTITUTION	JB FINANCIAL GROUP (JBFG)
INITIATIVE	Leading a new financial paradigm
SYNOPSIS	JBFG developed and implemented an innovative open banking platform allowing third parties to act as a bank's digital branches, enabling the bank to acquire new customers as well as increase fee income.
KEY BENEFITS	<ul style="list-style-type: none"> • Acquire new customers through third party digital channel. • Allow fintechs to overcome financial regulatory and compliance hurdles by leveraging a bank's expertise. • Flexible open banking platform, able to connect to any core banking system across geographic regions. • Provide white-labeled products and services to third party firms including customer portal.
RELEVANT PARTNERSHIPS	<p>Peer-to-peer lending: PeopleFund.</p> <p>International remittance, transfer, mPOS, real estate, and others: under nondisclosure.</p>

Source: Celent

Celent Perspective

JB Financial Group (JBFG) states that it is the first Asian bank to integrate third party services into its existing core banking. JBFG's open bank model allows third parties to act as digital branches, enabling the bank to acquire new customers as well as earn additional fees. JBFG has developed the JB Open Banking Platform (JBOBP). The platform consists of middleware architected with a set of APIs supporting several banking functions. Extending the platform via APIs allows JBFG to reach prospective customers using alternative delivery channels. JBFG is establishing alternative channels by establishing third party partnerships in South Korea, with plans to expand outward into Southeast Asia.

Introduction

A member of the 2017 Forbes Global 2000: Growth Champions¹, JB Financial Group Co., Ltd. has 3,690 employees and total assets of KRW 45.8 trillion. The firm was founded in 1969 and is based in Jeonju, South Korea. Through its subsidiaries, JBFG operates through three divisions: Banking, Credit-Specialized Financial Services, and Collective Investment. The Banking division offers private and corporate banking and long-term and short-term loan services. The Credit-Specialized Financial Services division provides equipment leasing and installment and new technology business financing services. The Collective Investment division encompasses asset management, investment advisory, and discretionary investment.

As part of its desire to provide innovative services and technologies in the financial services space, JBFG sponsors hackathons. In its first hackathon in 2015, JBFG opened its core banking system to the winner, PeopleFund, and the resulting interface and subsequent developments received approval from the Korean Financial Services Commission Institution and led to a patented business model. JB recently held its second Quantum Leap JBFG Global Hackathon, providing fintech firms with a valuable opportunity to demonstrate their technology and benchmark competitors.

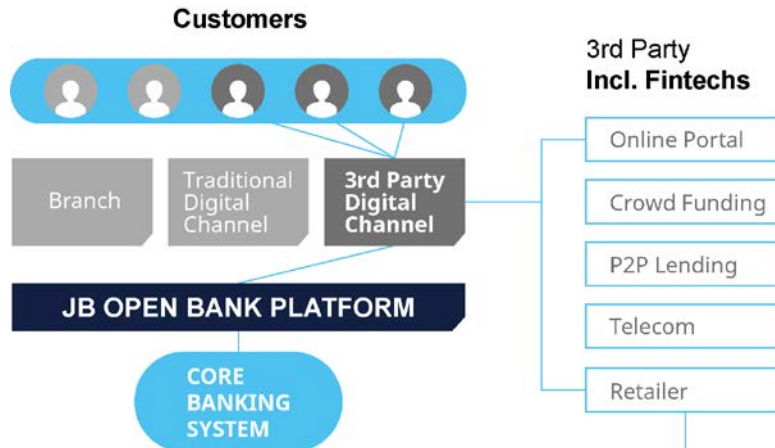
Opportunity

JB Financial Group originated from the southwest region of South Korea. JBFG has aggressively expanded since 2011 through traditional expansion activities like mergers and acquisitions along with opening branches in other regions. Although JBFG is relatively small, it has strong information technology capabilities. The technology team successfully developed a Java-based core banking system for a leading digital bank in South Korea. Building off this expertise, JBFG turned its attention to using its technology strengths as an alternative growth engine.

Recognizing the potential for open banking, JBFG created its digital platform, JB Open Bank Platform (JBOBP), which allows banks to create new financial services for distribution by third parties. The platform features a modular, flexible, and customizable architecture to allow various integration and use case scenarios (Figure 11).

¹2017 Forbes Global 2000: Growth Champions, Andrea Murphy, October 10, 2017

Figure 11: JBFG Banking as a Service



Source: JB Financial Group

JBFG aims its platform at smaller banks with limited branch footprints. Using JBOBP, smaller banks can distribute their services through third parties and attract prospective customers outside of their regions. JBOBP helps larger banks to API-enable their legacy systems and connect with third party providers.

JBFG envisions multiple use cases for its Open Banking Platform such as peer-to-peer lending, mobile point of sale (mPOS), international remittances, deposit-based lending, property rent management, artificial intelligence-based real estate, and white-labeled cards. The deposit-based lending product allows migrant workers to deposit earnings in the country where they are working, with a partner bank in their home country lending funds to their family based on the deposit balance. AI-based real estate can help a company evaluate the price for a potential real property purchase.

In addition to benefitting banks, third parties taking advantage of financial services offered through the JBOBP can enhance their competitiveness over offline firms in various industries. Third parties can offer financial services that leverage the underlying bank's license and regulatory expertise. Fintechs looking to expand into payment or lending services avoid the hassle of navigating multiple regulatory jurisdictions.

Solution

JBFG spent two years developing its open banking platform. The company currently offers the platform only on-premise but plans to launch a cloud-based platform. Similar to decisions made by other organizations, JBFG chose open source software due to its flexibility in connecting with various startups and financial institutions.

Developers often choose open source software because it is less expensive than commercially licensed software, avoids vendor lock-in, and is built and supported by a community of knowledgeable developers. JBFG's open source approach makes it easier to add new technologies and services, along with enhancing flexibility in connecting with various startups and financial institutions. JBFG uses a variety of open source tools including Java, Jason, Spring, Apache Camel, Apache Karaf, Quartz, Alfresco, Activiti, and Hibernate ORM. Furthermore, the RESTful API-based architecture imbues the platform with flexibility and scalability, which enables JBFG to implement the solution into the core banking system without any technical difficulties.

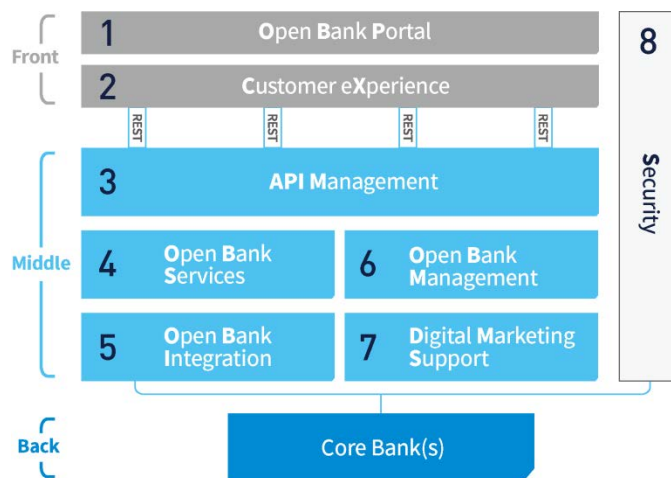
In 2015, JBFG initiated a pilot project to certify that the platform could reliably handle significant volumes of financial transactions. During the pilot project period, JBFG validated that the platform could manage third party data such as peer-to-peer (P2P)

lending services provided by PeopleFund, along with connectivity to a core banking system. After confirming that the platform was software and hardware agnostic, the IT team began to implement the OBP at JB Financial Group's subsidiary companies.

As the first financial services firm in Southeast Asia to develop an open banking platform, JBFG strove to provide an innovative customer experience, openness, flexibility, and scalability. A customizable user portal provides end users with options such as service widgets. Depending on users' preference, they can choose and place various widgets such as account balances and transfers on the main portal screens. Analysis of users' behavioral patterns and demographic data allows JBFG to recommend targeted financial products.

JBOBP's framework consists of eight components, as shown in Figure 12,

Figure 12: JBFG Component-Based Framework

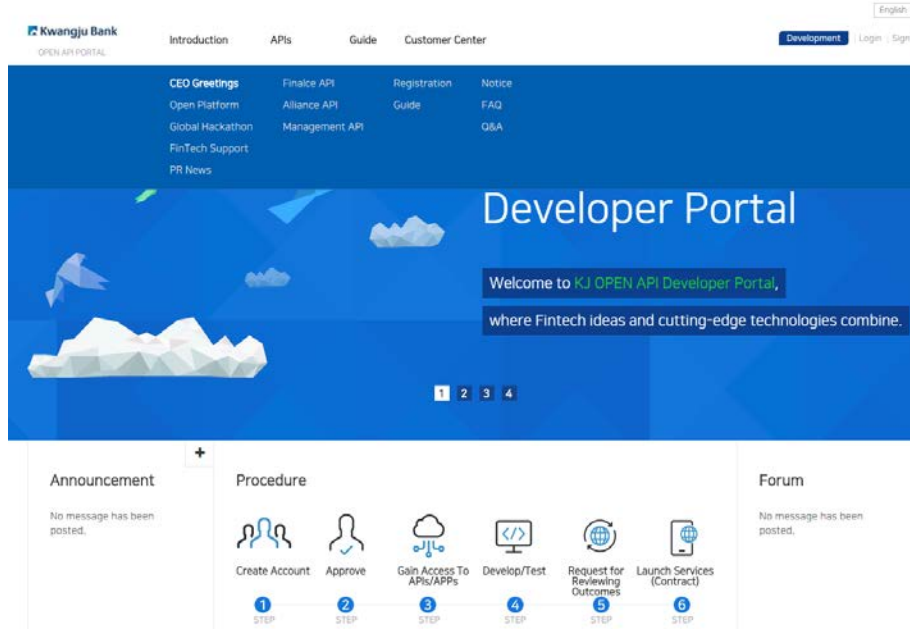


Source: JB Financial Group

Each of the eight components contributes to the overall architecture of the JBOBP framework.

- **Open Bank Portal:** The platform supports three types of portals.
 - The **user portal** contains the lists of financial services and products for both banks and third parties.
 - The **developer portal** provides third parties with access to APIs. After gaining permission from JBFG, third parties can develop and publish their services through the portal.

Figure 13: JBFG Developer Portal



Source: JB Financial Group

- The **user community portal** allows customers to provide feedbacks regarding OBP services and supports discussions with other users.
- **Customer eXperience:** In this layer, an administrator manages existing widgets and develops new widgets for users. Also, the administrator defines the targeting rules to provide useful financial advice to customers.
- **API Management:** This component allows the API owner to monitor and analyze each API transaction to check for errors, controls API traffic, and ensures API security.
- **Open Bank Services:** This module supports the development of banking and nonbanking services and improving business processes to provide better services.
- **Open Bank Integration:** Banks use the integration module to easily embed the OBP into an existing core banking system and other servicing or accounting systems.
- **Open Bank Management:** This module stores customer and transaction data, and monitors the system to resolve technical conflicts.
- **Digital Marketing Support:** The marketing support tool analyzes the data stored in the open bank management layer to provide advice to enhance customer experience.
- **Security:** This component defines the security policy of each module including APIs, customer data, and transaction data, and supports new regulatory requirements.

Monetization

There are three potential revenue sources from the JBFG OBP model. The first and largest is transaction fees. Each participant in the model has an opportunity to benefit. For example, when a peer-to-peer lender uses a partner bank's operational processes and resources to underwrite loans or manage investors, the P2P lender pays fees to the bank as well as the platform service provider.

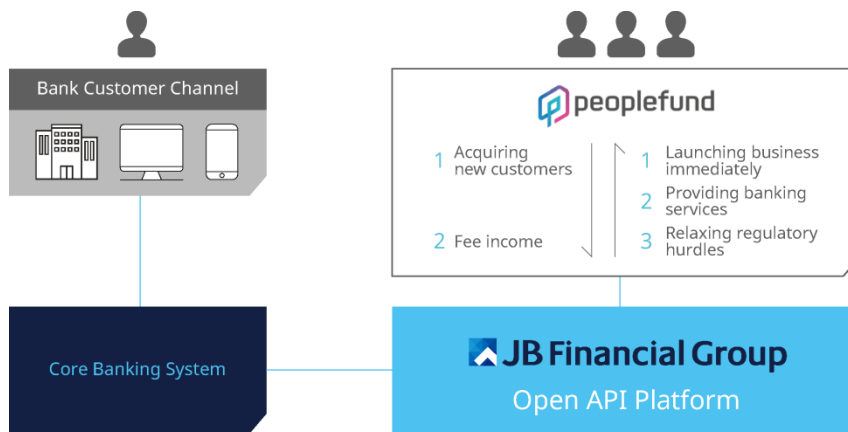
The second revenue source is platform maintenance fees. JBFG earns maintenance and upgrade fees from purchasers of the OBP. The third is consulting and third party registration fees. One of the success factors of JBFG's model will be to find third party breakout providers and to craft solid partnerships. JBFG will work with partners, using professional services to help design new technology and business models. Also, as user and transaction data is gathered and combined with external data sources such as credit bureau information, analytics can be monetized.

Results

JBFG successfully launched the Open Banking Platform in South Korea and Cambodia in 2017 and plans to expand into two more countries in 2018.

One example of JBFG's success is its partnership with PeopleFund. PeopleFund is a peer-to-peer (P2P) lender in South Korea. The P2P lending market in Korea is growing, and PeopleFund combines finance and technology, eliminating the inefficiencies of traditional lending. PeopleFund's banking partner is Jeonbuk Bank, a North Jeolla Province-based local bank (and JB Financial Group subsidiary) striving to expand its presence beyond its local customer base. Their partnership created the first Korean partnership between a bank and a peer-to-peer lender (Figure 14).

Figure 14: People Fund Partnership



Source: JB Financial Group

The partnership with Jeonbuk Bank allows PeopleFund to operate within the official regulatory framework, giving it more options to offer different products such as derivative-linked securities. Most other competitors are focusing on project financing for real estate projects and individual loans. With the PeopleFund partnership, Jeonbuk Bank expanded its P2P lending customer base by 30% the first year and grew loan amounts outstanding by 130%.

Future Plans

JB Financial continues to create new business models across Southeast Asia, combining its open banking technology platform with innovative approaches for leveraging its banking license and regulatory expertise to accelerate customer acquisition and new revenue streams. JBFG aims to form a global banking alliance as a medium-term goal and to serve as an aggregator platform for partner banks and third party providers in the longer term.

All three of the banks profiled in this section leverage their state of the art technology platforms not only for Banking as a Platform but also as drivers of collaboration and innovation.

THE PATH FORWARD

It is clear that internal staff, neobanks, fintech partners, and end customers all gain value when banks adopt APIs for one or more of the four approaches discussed in this report. For many banks, it is less clear how to begin their API journey.

Key
Research
Question

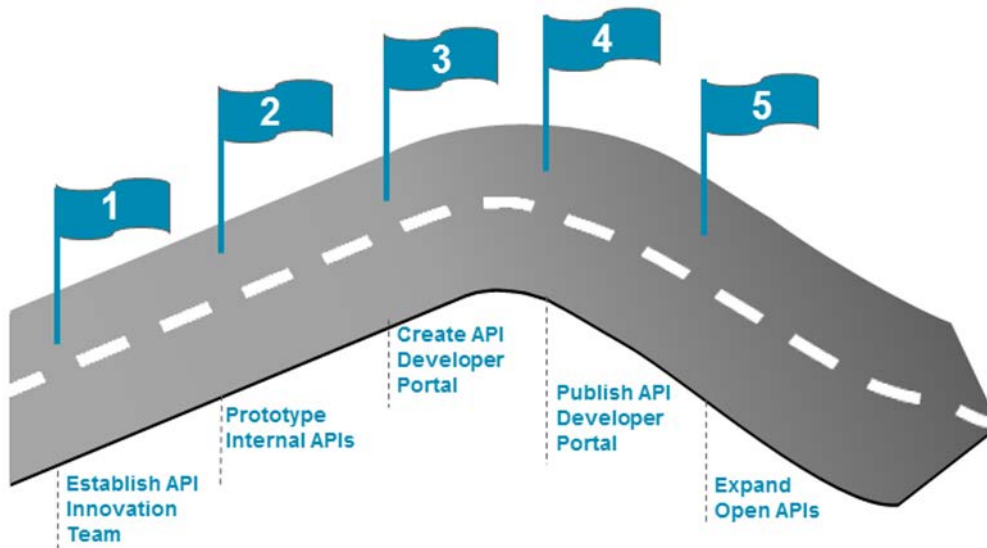
3

How should banks begin their API journey?

Banks can follow a series of guideposts along their journey to unlocking business value with APIs.

As discussed in the four API approaches above, many banks are demonstrating business value with APIs. For banks just starting their API journey, Celent recommends a series of guideposts (Figure 15):

Figure 15: The Journey to Unlocking Business Value with APIs



Source: Celent analysis

1. **Establish API Innovation Team:** For banks at the beginning of their API journey, we recommend they start with a cross-functional API Innovation Team to understand different API approaches along with API creation, security, management, and maintenance.
2. **Prototype Internal APIs:** Once the bank has a solid understanding of the potential for APIs, it is time to identify a handful of use cases for rapid

prototyping. Often, banks start with private, internal APIs, using them to eliminate point-to-point integration and to standardize access to banking services.

3. **Create API Developer Portal:** The next step is to experiment with creating and publishing externally facing, open APIs for a limited set of banking features. A good starting point is the limited set of APIs specified by the UK OBIE.
4. **Publish API Developer Portal:** Once banks fully test APIs, they can move their developer portal into production with a limited set of APIs. Banks can restrict access to a handful of partners, or publish an even more limited set of APIs for public access.
5. **Expand Open APIs:** Follow the path of leading-edge banks that are proactively going above and beyond regulatory minimums, opening a broad array of APIs to attract fintech partners and to create a new client connectivity channel as well as integrating with accounting software, treasury management systems, and ERP systems.

Find Partners Along the Way: Seek technology partners who can help you to jumpstart your API journey.

Forward-looking banks are going well beyond open banking regulatory minimums, recognizing that APIs can unlock significant business value, whether transforming legacy integration, extending banking as a platform, driving innovative new services, or accelerating connectivity to customers and clients.

This report is an extract of the Celent report *APIs in Banking: Four Approaches to Unlocking Business Value* (March 2018), focusing on APIs for Banking as a Platform.

Was this report useful to you? Please send any comments, questions, or suggestions for upcoming research topics to info@celent.com.

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We provide services that help you refine your product and service offerings.

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Celent Model Bank 2016 Part IV: Case Studies in Corporate Payments and Infrastructure
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