



WHITE PAPER

# PAYMENTS AND API BANKING

Riding the Third Wave of API Innovation to Enable the Digital Economy



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## **EXECUTIVE SUMMARY**

Innovation around open application programming interfaces (APIs) and banking has now entered its third and most powerful phase. Having progressed from their origins as proprietary, largely internal tools, via their use in bank-specific systems, open APIs are now emerging as the vital enabler underpinning a new era of 'platformification' in banking and payments services.

Catalyzed partly by regulations such as the European Union's Payment Services Directive 2 (PSD2), this new generation of services is driven and enabled by an open, collaborative ecosystem of innovative API providers—and is characterized by a remorseless focus on delivering the optimal payments experience for customers. To participate fully in this new environment, banks must embrace the third wave of APIs. In most cases, this is likely to mean implementing a payment API hub as the core of their payments offerings and capabilities.

As this paper explains, payment API hubs—especially when combined with other advances like cloud and immediate payments—bring a host of benefits for banks, their customers and their ecosystem partners. Conversely, banks that choose not to participate fully in the new open API ecosystem will face the risk of becoming disintermediated and marginalized.

The third wave of open API innovation is here. For banks, the choice is clear: move proactively to ride the wave—or get submerged by it. If a bank wants to be part of the future of payments, banks must act now.

# Open APIs: At the Top of Today's Banking Agenda

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The second wave of Open APIs is now being subsumed by the third and most powerful wave of all: banking as a platform, driven by an ecosystem of API providers that operate in an environment of open collaboration.<sup>97</sup>

#### Anders Olofsson

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#### **First Wave of Open APIs**

Ask any informal grouping of financial institution technology executives to name their top ten priorities for the coming year, and you'll likely find open APIs at the top of their lists. The growing importance of open APIs is borne out by research studies: a recent survey by Accenture finds that 90% of bankers worldwide believe that open banking—which is enabled and facilitated through open APIs—will boost their organizations' organic growth by up to 10%<sup>1</sup>.

Given such high expectations, you might assume that API banking is fundamentally new. But you'd be wrong. The 'first wave' of banking APIs emerged as long ago as the 1980s, mostly focused on internal reconciliation and account information rather than executing transactions. These APIs were typically developed for specific projects or customer requirements and were delivered using complex proprietary technologies as they pre-dated the commercial Internet.

#### Second Wave of Open APIs

We are now well into the 'second wave' of APIs in banking. This wave has several distinct and powerful drivers. One is the introduction of new regulations including the European Union's PSD2 and the UK's Open Banking initiative, among others. These drivers have the goal of moving data ownership from the bank to the client (working in conjunction with other regulations such as General Data Protection Regulation [GDPR]) and widening access to banking services by new market entrants. Another driver is rapid advances in technology since the first wave, including pervasive broadband Internet access, cloud computing, and easier-to-use Representational State Transfer (REST) APIs. The third—arguably most important driver is growing demand for real-time, connected customer experiences from both consumers and businesses, driving banks to digitalize and deliver next generation API services.

The second wave has been characterized by a proliferation of bank-specific API platforms, designed by individual banks to provide a differentiated level of service within a closed environment. But this phase is now being subsumed by the third and most powerful wave of all: banking as a platform, driven by an ecosystem of API providers that operate in an environment of open collaboration, and account for the vast majority of financial services innovation taking place outside banking institutions. Payments is a fundamental component of this API ecosystem, because the most compelling and valuable use cases ultimately involve a movement of funds to settle a transaction. The third wave is seeing the emergence of ever more advanced payment APIs that cut across silos, across multiple industries for example combining credit and payments in 'pay later' APIs—and incorporate increasingly sophisticated analytics. As innovation continues, a robust suite of payment APIs is becoming essential to the success of any bank's API program, and indeed to API banking as a whole. If money doesn't move, neither does commerce.

#### Third Wave of Open APIs

In this white paper, we explore the characteristics of the third wave of API banking, focusing specifically on the role of payment APIs in driving innovation and transformation, and enabling banks to deliver new banking services.



#### Figure 1: Three Waves of API Technology Evolution.<sup>2</sup>

# The Progression from Products to Solutions to Platforms

In tandem with the advance to the third wave of API innovation, a further advance is underway in systems generally, with banking and payment systems in the vanguard.

#### The Evolution

The transition of systems from products to solutions to platforms began in the era when systems were provided as effectively stand-alone 'products', aimed at providing a closely defined function and a specific level and form of value to the user. The next step involved combining a number of these products into 'solutions' that addressed a wider range of use cases, with the ability to provide consolidation of the banks' infrastructure and end-to-end processing.

Now the latest step is the move to 'platforms': flexible environments that provide a single access point to a full array of products and solutions, which are integrated through open APIs and provide broader additional value.

This progression has significant implications for the payment hubs that many banks currently operate. In simple terms, a payment hub is a single solution designed to manage and process payments of all kinds. To participate in the latest phase of API banking, banks need to move beyond traditional payments hubs, and start thinking in terms of 'payment API hubs' capable of supporting API access and consumption. A bank without a payment hub will need to re-platform to an API-ready architecture to play a role in the open API ecosystem that's now taking shape.

The right platform is essential because, with the new model of API-enabled banking, services such as payment initiation and account aggregation will come from a much wider range of sources, with corresponding impacts on system scalability and capability, and raising potential security and compliance concerns. If the payment processing solutions in place are the weak link, then the whole payment value chain will break with dire consequences both for banks and their customers.

#### Payment API Hubs Provide More Granular Functionality

For banks, moving to a payment hub can be the first step in breaking down the traditional monolithic, silo-based payment model, where each input flows through an opaque, convoluted process to create a corresponding output. Implementing a hub based on workflow stages allows specific functionality and logic to be 'packaged' into granular components. The extension to a payment API hub allows these services to be externalized and accessed by other systems within and beyond the bank, removing duplication and opening up opportunities for external collaboration within a broader services ecosystem. One Example might include data enrichment processes for validation that the payment hub currently carries out using internal data. With a payment API hub these functionalities can become a collaborative effort between the hub and third-parties, with FinTechs exposing valuable reference data that can be combined and integrated with internal bank data to enhance the overall service. The results include higher accuracy and service quality, together with improved efficiency and consistency across the enterprise.

A further advantage of a payment API hub is that a traditional payment hub is oblivious to what is happening in the channel ahead. When a payment hub receives an external input in the form of a message or file, it assumes that activities such as authenticating third-party payments providers accessing the bank's systems will already have taken place. An API hub's higher degree of exposure to the outside world means such activities can be handled efficiently and securely as part of the hub processing, rather than in individual channels. Similarly, activities such as warehousing may be best carried out in the hub. This model also allows for the fact that some functionalities may be more suited to remaining at a channel level, such as services delivering secure customer authentication. Figure 2 shows the future state of an open payment API hub.

#### Seven Characteristics of a Payment API Hub

So, what characteristics does a modern payment API hub possess? Here are seven that commonly apply:

- 1. Always available 24x7 and with guaranteed rapid response times. The stringent operational requirements around immediate payments is also driving adoption of solutions that are cloud-ready and can therefore provide the elasticity of the IT resources that map well to the support of unpredictable volumes.
- 2. Exposes public level APIs. ISO20022 is comprehensive but can be too generic; instead of having a one-size fits all approach, support smaller but well defined and accurate payment initiation APIs to ease third-party integration. Examples could include an API for initiation of immediate payments in USD (in which case there is no need to specify the currency, or the date and the banks are being represented by their routing number, no further identifications are required), an API for ACH initiation in EUR, an API for SWIFT GPI cross border initiation, and so on.

- 3. Exposes basic APIs that will help in the construction of a valid payment. For example, Validate IBAN, Enrich BIC and Validate a cross border transaction to a certain country. Such finer-grained services will establish a better handshake between systems.
- 4. Adopts market standards for security (including authentication of the API requester and of the Payment Service User [PSU]). Reference to those defined for PSD2 and UK Open Banking can assist in the assessment.
- 5. Balances the need for authorization and Strong Customer Authentication with the requirements for high STP and levels of automation. If there are too many stages in the authentication of an established PSU it will interfere with the UX - but it is a balance. An example could be an exemption from SCA for repetitive transactions or for payments to a list of predefined and trusted beneficiaries.
- 6. Designed for differentiation. For example while the provision of a request to pay API will be commonplace, can the solution support a 'partial' response to an incoming request to pay? Or an automated response to an incoming request to pay? Can it support an API to auto-generate an outgoing request to pay? Or an API to resubmit transaction requests? The key is that such capabilities allow the construction of innovative use cases and unique service offerings.
- 7. Supports a transformation journey. As the figure below illustrates the solution must be architected to allow progressive renovation of the payments infrastructure. The integration layer ensures that services are exposed in a consistent manner to both bank and third-party channels and the payment order

#### Figure 2: The Future State: An Open Payment API Hub\*

management layer supports co-existence of both legacy engines and new workflows provided as part of the payment hub (in the figure immediate payments and cross border have been targeted first). Value added or overlay services can be made available on each new rail (though these will typically be targeted at immediate payment rails). As each legacy engine is migrated the power of the payment hub is increased in terms of centralization of control, maintenance, and visibility of transaction data broadening the scope of use cases that can be supported.

#### **Extended Reach and Back-Office Integration**

On top of those already mentioned, the benefits of a payment API hub also include an ability to expand the reach and functionality of a traditional payment hub. Most payment hubs have been built from ground-up to support specific networks in the bank in terms of payment methods or regions. But by collaborating with FinTechs and consuming third-party payment execution APIs, the bank can extend the hub's scope to support additional or alternative services layered on top of payment methods.

The key here is that an open API architecture is one of the vital criteria required for moving to a 'platformification' strategy. Such a strategy is also likely to involve a mix of other elements, including cloud enablement, a commitment to collaborating with third-parties to consume and expose services, and a focus on realizing further value through API-driven integration with back-office systems in areas like accounting, compliance and foreign exchange. The payment API hub can act as the core driver and enabler of all these advances.



\*Source: Finastra research

## From Point-to-Point Partnering to Collaboration Across an Open API Ecosystem

The collaboration model enables banks to harness a vast range of Fintech-led innovation to deliver more compelling services and experiences to their customers.

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Our research suggests that Banks that exploit Open APIs will profit from a potential revenue uplift of 20 percent, whereas those failing to do so risk losing 30 percent to disruptive industry players by 2020."

#### Amit Mallick

Digital Lead, Open Banking and Open APIs, Accenture

Back in the first wave of payment APIs, the only option for banks looking to collaborate or partner with another entity or system was through point-to-point connectivity. This required both the payment solution and proprietary API application to know specifically about the other, with the connection and exchange of information handled through bespoke links that couldn't be reused with other potential partners. On this basis, traditional payment hubs use bespoke 'call-outs' to access specialist third-party products for functions such as anti-money laundering (AML) and transaction screening.

Fast-forward to today's third wave world of open APIs and payment API hubs, and collaboration looks very different. It's pivoted from a one-to-one model to one-to-many—with banks, FinTechs and a wide array of other third-parties able to collaborate flexibly and seamlessly. This enables a bank to harness a vast range of FinTech-led innovation to deliver more compelling services and experiences to its customers, while also enabling the FinTechs to gain benefits including access to the bank's customer base and therefore the ability to enhance and extend their services.

The new collaboration model is enabled and supported by the open API ecosystem shown in Figure 3.

#### **Blending Standardization and Flexibility**

The collaborative power of the open API ecosystem springs from the unprecedented combination of standardization and flexibility that open APIs bring. These qualities enable rapid, seamless and easy integration between different entities with little additional effort. As API-enabled collaboration grows, a switch is under way from complex shared revenue commercial models towards simpler and more transparent pay-per-use arrangements that are much easier to implement in the open API world. This increases the benefits derived from the ecosystem still further.

Overall, the result is clear. Under the new collaboration model, every banking product, third-party or partner can extend its value by connecting with others via open APIs. This benefit applies irrespective of whether the value is derived from utilizing payment processing services, increasing clearing reachability, or leveraging the rich data associated with ISO20022 that a payment API hub can provide to increase automation and gain insights on customers' behavior and usage patterns.



Figure 3: The API Ecosystem That Enables the Collaboration Model\*

## **04 BRINGING IT ALL TOGETHER: SHOWCASING THIRD WAVE INITIATIVES**

As we have highlighted, the move to open APIs positions us in the third wave of API innovation. Here we showcase some real-world examples of third wave initiatives, examining how they work and the value they bring to banks and their customers.

#### 'Pay Later' APIs

These APIs create higher value and a better experience for customers by enabling them to buy on credit from a merchant's eCommerce site without having to use a credit card paid from their bank account. Instead of having the customer pay through a single credit transfer, the bank exposes the ability for the user to pay in installments or defer the entire payment to a later date. In effect, the customer is making an online application for a loan through the open 'pay later' API, which combines elements of a payment API and a loan API.

The process through which this value-added service is provided to customers includes the following steps:

- The merchant requests permission from the bank's end user to put consent in place for eligibility to receive financing.
- · The end user's bank approves the consent.
- With eligibility approved, the merchant makes better propositions to the end user, allowing the user before checkout to choose the best deal.
- On checkout, the user is redirected to the bank to take the final loan.
- The merchant transfers to the bank all the information required for the loan framework previously provided by the bank.
- The end user completes the order.
- The merchant then receives all funds immediately from the bank (the loan is transparent to the merchant).
- The bank is able to provide a client they know with a loan that otherwise would have gone through non-banking networks.

#### 'Request to Pay' APIs

A request to pay transaction is where the recipient makes a request for the user to make a payment, and the user simply has to approve the payment for it to go ahead. The effect is to turn all payments into 'push' payments, as opposed to a mixture of 'push' (e.g. normal credit transfers) and 'pull' (e.g. the payment triggered through a direct debit).

The request to pay can offer a wide range of options for making payments. Examples include the ability to pay in full versus paying partially, ask for extension, or decline a request to pay. The request to pay API also results in the payer having control over the timing and the amount of the payment, and enables them to choose how to receive the request to pay – via mobile, online banking, other application, social media, and so on. In addition, request to pay enables two-way direct communication between the payee and the payer – essentially a dialogue of linked interactions as opposed to a one-way conversation.

In a commercial business-to-business context, request to pay is especially valuable for supplier-customer transactions where the supplier wants payment up-front or doesn't know the customer very well, enabling the supplier to take an active approach to collecting the funds due. In everyday life, its most common uses might be in situations such as sharing a bill in a restaurant or the cost of buying a leaving present for a work colleague, where one person has paid the whole bill and is looking to recoup the other people's share of it. In non-commercial use cases, the person sending the request to pay no longer has to keep track of who has paid or who hasn't, as the app holds a record and makes it easy for the user to resend the request as a friendly reminder for anyone who hasn't paid yet.

A benefit of having open APIs for this type of functionality is the ability to use aliases such as mobile numbers to issue a request or approve it, as opposed to having to reveal account details. As a result, it provides greater convenience and improves the service experience for both beneficiary and payer. It also opens up the potential for much easier group payments, aggregating multiple smaller payments into one bigger one. In terms of enabling request to pay transactions through an open API, the process goes like this:

- A supplier receives an order from a business (such as a restaurant), and sends a 'request to pay', using their mobile banking or other third-party provider (TPP) app, for the goods being supplied.
- The 'request to pay throughout API' is used to initiate a request to pay in the payment API hub.
- Accounting and compliance APIs may also be invoked during processing of the request, such as available funds or account closed checks at the payer's bank.
- The payment API hub is connected to the immediate payment scheme, sending the request to pay to the restaurant's bank.
- The request to pay reaches the restaurant manager via their mobile banking app, or any other third-party application, and the manager chooses to 'pay now'.
- A payment initiation API is used to initiate a payment in the restaurant's bank payment hub, which will be sent via immediate payment clearing (where supported) back to the supplier's bank.
- The supplier receives a notification via a notification API that their request was approved, and another notification once the money is transferred to their account.

#### 'Request to Pay': UK Case Study from Accenture

Request to Pay in the UK (www.requesttopay.co.uk) is a new, ubiquitous and inter-operable service launched by Faster Payments and the New Payment System Operator (NPSO) in the UK with support from Accenture. The new request to pay service complements existing ways to pay, and brings flexibility to the heart of payments by giving the payer greater control and flexibility over the timing of regular outgoing payments. It allows payees to have early insights into cash flow and receivables and creates a digital channel of communication between payer and payee.

Request to Pay has a range of real-world applications, including:

#### **Bill Payment**

Industry: Utilities, Telecom Payer: Flexibility and better control in bill payment – timing, amount Payee: Early insights of possible non-payment. Better cash flow visibility

#### RTP @Point of Sale

Industry: Retail Payer: Convenient payments, preferential prices and discounts Payee: Savings on card transaction fees, better customer experience

#### Flexible Charity Payments

Industry: Charity Payer: Flexibility to skip a monthly payment to make a partial payment Payee: Retain customer relationship by providing flexibility and keeping communication lines open

#### Voucher, E-tickets...

Industry: Entertainment, Retail Payer: Receive tickets, voucher information on the same channel Payee: Better customer experience, reduced errors

The communication mechanism for the request to pay service is underpinned by simple message flows between payer and payee using APIs. The flow is managed through a set of data repositories for routing and storing payment messages, and index stores for enrollment, routing and managing reference data. Additionally, request to pay is not limited to banks or payment providers, and anybody can be a provider of these services to the industry. Request to Pay will be one of the first service standards launched by the NPSO, which was established in 2017 and is the UK's leading retail payments authority.\*

## **05 BLOCKERS TO SUCCESS**

# Third Wave API solutions will deliver clear benefits for all participants in the banking ecosystem—not least banks and their customers.

While third wave API payment hubs offer clear benefits for all participants, there are however a number of factors that may act as blockers on progress—and could stand in the way of building momentum for their adoption. Here we look at some of the biggest of these blocking factors, and at potential ways to tackle them.

#### Regulation-or a Lack of it

Regulations such as the European Union's PSD2 and UK's Open Banking are major drivers for the move towards open banking and open APIs. However, some major markets-notably the UShave been slower than others to embrace open banking concepts. Also, banks—as generally conservative organizations—often fear that regulations like PSD2, with their focus on opening up banks' systems to innovative third-parties, present a risk that they will become disintermediated from their customers. A further issue is that regulators are leaving it to the market to come up with standards and guidelines for open APIs, and a lack of these could reduce the ubiquity and economies of scale that is so vital to the commercial viability of open APIs. In some regions, institutions are working towards API standardization to help in this area and provide a baseline for banks; examples include the Berlin Group, Open Banking UK, and The Clearing House in the US. Standards are vital, since if two banks' open APIs are completely different from each other, then this effectively doubles the effort to collaborate or integrate with both of them. All of this makes it imperative that the right regulations are imposed in the right way to promote ubiquity, competition and collaboration around open APIs.

#### Complex and Old/Legacy IT Infrastructure

Today, most banks' IT estates consist largely of legacy applications and systems, often more than 30 years old and originally built for the world of mainframes rather than the Internet, cloud computing and open APIs. This means there are often question marks around the competency and capability of banks' IT resources to participate effectively in the open API world. Significant efforts are currently underway within banks to put a layer on top of their legacy systems, in order to enable them to break down legacy processes into services and translate their communication methods from old to new technology. This is a big task for any bank—but it becomes even more daunting if the IT organization lacks the necessary core competencies. To fill this gap, vendors and FinTechs need to be ready to step in with specialist skills and expertise to helps banks along the journey.

#### **Concern Over Early Adoption of the Cloud**

While the open API layer remains useful for on-premise delivery of services-especially in a post-PSD2 world-the move to open APIs has become linked to the shift to the cloud that's underway across and beyond financial services. However, many banks continue to harbor concerns about being first movers to the cloud, worrying-for example-about the security risks it may raise, including the threat of cyberattacks. Many of these concerns are more a matter of perception than reality, since keeping pace with security threats through internal efforts is much more challenging for a bank than relying on a cloud provider to do it. But the fact remains that banks' reservations about deploying and using cloud solutions do need to be addressed, and that a change of mindset is needed to achieve this. Ecosystem participants such as cloud and API gateway providers should engage proactively with banks to help bring such a change about. There's also a very positive story to be told about moving to cloud in terms of reducing infrastructure costs. At root, cloud is about greater elasticity and availability of IT infrastructure. Instead of building and maintaining sufficient system capacity to handle peak volumes, cloud models enable a bank to pay only for what it uses and dial up capacity when needed. The resulting savings are substantial.

#### **Challenges Around Monetizing Open APIs**

As newspapers have migrated from print to digital format, they've faced an uphill battle in trying to convince consumers that they should pay for the digital version of the same content. There's a similar challenge in banking. As consumers who are accustomed to 'free' banking services and free apps on their smartphones, banks' customers tend to balk at paying for the API-enabled apps they use-even when these add significant value to their daily lives. So, as adoption and usage of open APIs continue to grow, there needs to be a process of education so that users come to appreciate what they're paying for. Just as paywalls have started to gain traction in newspapers, so charging for value-adding APIs may become easier over time. There are already some clear opportunities for monetizing open APIs in financial services. Examples include new types of personal finance consolidation services made possible by open APIs. These services can look across an individual's finances and apply analytics and artificial intelligence (AI) in the cloud to generate value for customers through offerings such as personalized loans and packaged pricing. Another opportunity is the use of open APIs to support channel analytics, enabling services such as loyalty programs.

## **CONCLUSION AND RECOMMENDATIONS**

The third wave of API banking innovation—like any other profound and disruptive change—poses both opportunities and threats. On the upside, there's the opportunity for banks to ride the wave to accelerate their competitiveness and achieve greater success in the marketplace.

The third wave of API banking innovation—like any other profound and disruptive change—poses both opportunities and threats. On the upside, there's the opportunity for banks to ride the wave to accelerate their competitiveness and achieve greater success in the marketplace. On the downside, there's the risk of being submerged in the flow and left behind.

Banks who are currently in the 'second wave' of API development should maintain a strategic mindset, and actively start seeking to leverage their existing assets and plans to ensure they are 'third wave'-ready. For banks who are still 'on dry land' and yet to join the second wave, they need to move to second wave capabilities while factoring in their next step to the third wave—when they'll be able to reap the benefits of open collaboration across the ecosystem.

Whatever their current stage of maturity around open APIs, a key success factor for all banks moving towards platformification of banking and payments is that they must think holistically about all the elements they'll need if they're to compete and differentiate themselves in this new landscape. Currently, rapid change is underway in a whole range of areas—regulation (such as PSD2 and GDPR), technology (such as AI and migration to cloud), cyber security (as threats continue to escalate), payments infrastructures (as real-time schemes continue to roll out), and the payments ecosystem (as FinTech-led innovation continues to advance).

As banks devise their strategies to seize the opportunities presented by open APIs, they need to take all these dimensions of change into account. Put simply, a bank could successfully open up its systems to collaborative partners through open APIs—but if it lacks immediate payments or secure customer authentication, nobody will want to partner with it.

Finally, it is imperative to keep the customer experience front and center throughout. All banks should approach API banking and payments platformification in the context of delivering a differentiated customer experience for both consumers and businesses, bearing in mind the rising expectations for speed and convenience, including mobility. The customer has always been the ultimate arbiter of commercial success—and amid the disruptive impacts of the move to open APIs, that's one factor that won't change.

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#### **About Finastra**

Finastra unlocks the potential of people and businesses in finance, creating a platform for open innovation. Formed in 2017 by the combination of Misys and D+H, we provide the broadest portfolio of financial services software in the world today – spanning retail banking, transaction banking, lending, and treasury and capital markets. Our solutions enable customers to deploy mission critical technology on premises or in the cloud. Our scale and geographical reach means that we can serve customers effectively, regardless of their size or geographic location – from global financial institutions, to community banks and credit unions. Through our open, secure and reliable solutions, customers are empowered to accelerate growth, optimize cost, mitigate risk and continually evolve to meet the changing needs of their customers. 48 of the world's top 50 banks use Finastra technology. Please visit **finastra.com** 

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