



OPEN BANKING: THE ART OF THE POSSIBLE

MAKING OPEN BANKING WORK
FOR YOUR ORGANISATION

1. OPEN BANKING AT A GLANCE

There are few more radical developments in the payments space than the concept of open banking. For decades, providers of payment services have focused on maintaining 'closed' systems that protect their account-holders' data—and their own—at all costs. But the basic principle that value can be created by sharing key data assets rather than owning them has taken root. Challenging as it is, open banking is here to stay.

Open banking is all about creating new business models, both inside the business and in the wider environment. It makes important digital capabilities, such as algorithms, data, and identity management available to internal parties and to external bodies.

What was once a silo of customer information can be shared with other business units. Or it could be accessed by third-party developers, most notably FinTech companies, and other vendors and partners. The goal? To develop new and innovative customer-focused services.

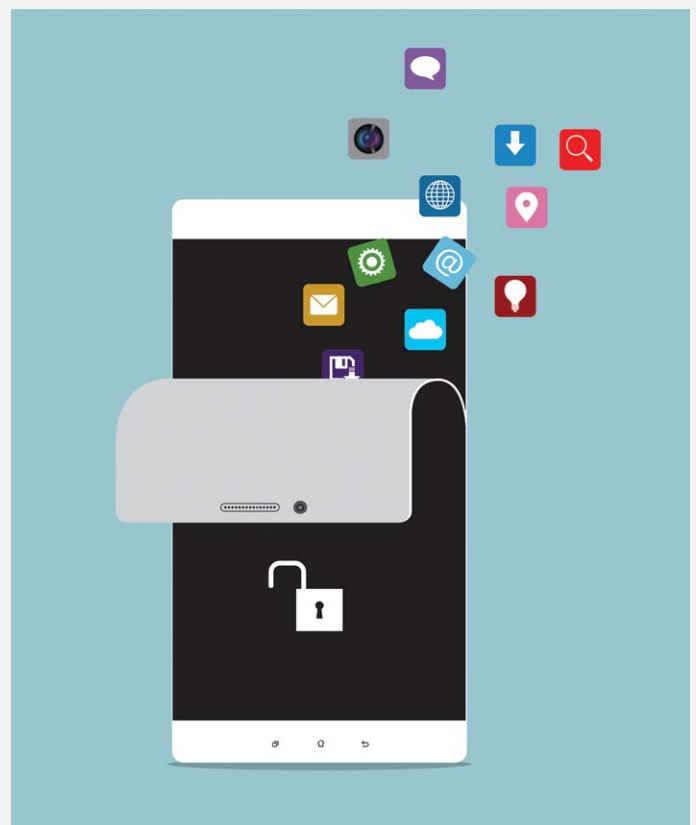
Open banking works on the principle that collaboration is the mother of innovation. Working with third parties of all stripes, financial institutions can enable new app-based services quickly and easily. They can make the best possible use of existing bank products and assets and extract maximum value from them. They can even build entirely new business models to meet expectations of customers familiar with the digital experience and intuitive interfaces offered by companies like Amazon and Uber.

To make all this work, however, requires not just technical capability but a new way of thinking about banking. The work of the UK's Open Banking Working Group provides some illustration of the areas that need to be addressed.

They include:

- Technical design and infrastructure
- Approaches to sensitive customer issues
- Consent and access rights
- Authorisation and authentication
- Vetting, accreditation and governance

While industry groups continue to develop the standards to make it all work, there is still plenty that CIOs and their teams can do to make open banking a success.



2. UNDERSTAND THE CONTEXT: WHY HERE, WHY NOW?

In part, open banking is being driven by simple acknowledgement of the changing reality in the world of payments. Between them, digital disruptors and tech-savvy consumers are challenging old assumptions.

For example:

- Banks face evolving customer demands for real-time, personalised, and seamless services across all channels and all devices
- New competition from 'digital-first' providers, including the fast-growing FinTech community as well as non-traditional players like Apple and Google, is making innovation essential
- Advances in other types of technology—like block chain, mobile authorisation, and the Internet of Things—are creating new ways to digitise the payments value chain
- Consumers are already familiar with 'one-stop shop' digital services that bring all functions together in a single user-friendly app—like Uber's ability to locate a destination, find a route, book an available car, and arrange payment
- Regulations like the eMoney Directive or caps on interchange fees are changing business models and encouraging competition

Open banking therefore presents opportunities and challenges for traditional banks and new entrants alike.

These changes are reflected in, and accelerated by new regulation, notably the EU's Revised Payment Services Directive (PSD2). The goal of PSD2 is to enhance consumer protection and convenience, improve the security of payment services and promote innovation and competition. It extends to operators of e-commerce marketplaces, gift card and loyalty schemes, bill payment service providers, public communication networks, account access services, mobile wallets and anyone who receives payment by direct debit.

PSD2 accelerates open banking by defining new organisational types that banks will have to open up to, namely, payment initiation service providers (PISPs) and account information services providers (AISPs). Under its 'Access to Accounts' (XS2A) rule, banks have to provide open access to account information, transaction information and payment initiation to AISPs, PISPs and third-party apps via APIs. The goal is to encourage more competition from new types of payment providers and stimulate new market entrants—who, in turn, could become PISPs and AISPs.

Europe may be formalising this process through regulation, but the use of open APIs is also picking up pace elsewhere, for example in Australia and Singapore. In the US, where the banking industry, regulators and consumers are embracing more collaborative relationships between financial institutions and FinTech companies, open banking has become a major theme. NCR customers around the world tell us that open banking has become a priority.

What is an Open API?

An application programming interface (API) is a proven technology that can help provide access to data (such as a list of products that a bank provides) and secure shared access to private data—such as a list of the transactions from an individual's account. APIs can also provide access to a specific service, such as executing a payment. APIs can expand addressable market share by making product, pricing and other data available for comparison and consumption through social media sites, online stores and other digital media. Data accessed via an open API may itself be closed, shared or open. Open APIs need to be supported by robust security, legal and governance frameworks.

3. WHAT WILL OPEN BANKING LOOK LIKE?

Currently, data sharing through APIs in the payments space is functional, but very limited. For example: customers can access and download bank statements but cannot share them in machine-readable formats with other systems. Alternatively, product information can be published on a bank's website—but is rarely available in a well-structured format that can be shared and used, for example by FinTechs, to create another value-added service that benefits the customer.

Price comparison web sites are another example. They can 'screen scrape' information from a vast range of individual websites, but they need a separate programme to create structured datasets that can be stored in a useful and actionable spread-sheet or database. It's a two or three-step process where one step would be more efficient and accurate.

However, when securely shared or published using open APIs, data can be used to build useful applications and resources that improve banking for all parties. For example, The Open Banking Working Group suggests that in an open banking environment:

- **Consumers** can make more meaningful comparisons between bank accounts from different providers. By giving a price comparison service express permission to access their current bank account data across an open API, they could select from bank accounts—or other financial products like mortgages or credit cards—that most closely reflect their individual needs
- **Small business** could use cost-effective, resource-efficient cloud-based platforms for bookkeeping and financial management. An open API would allow their current account provider to reconcile payments across all accounts, and then share the resulting report directly with the business's accountant for better management of cash flow and working capital

- **Lenders** could use historic transactional data to determine a customer's individual risk level for paying off a loan. This would enable lenders to target their loans at their preferred customer profile, and develop competitive offers for individual customers
- **Third-party fraud detectors** could securely share transaction data and use it to offer customers better monitoring and notification services. Sophisticated aggregation tools would allow them to bring together data from multiple accounts, product types and providers, and enable them to spot behavioural and spending patterns that cannot be detected in a single data set
- **Challengers and third-parties** gain access to open bank data, as well as clear and secure ways to integrate it with shared customer data, enabling them to quickly develop new products and services that better serve retail and business customers.

However, in this new financial services ecosystem, the banks' position changes. In the current model, banks own the product, process and customer engagement, and offer a range of end-to-end financial services through various digital and physical channels. In the open bank model, they act as a platform from which third parties can build applications using the bank's data and compete directly with FinTechs for each aspect of their service. Analysts at Accenture suggest there are four options open to banks in this new environment, as follows:

- **Compliance only** by giving third parties access to data required by law and provide a basic-level open API free for anyone. In this model, banks may need to narrow the focus towards the provision of liquidity and infrastructure services to TPPs who own the customer experience.

- Facilitate and **monetise access** by developing a more advanced API platform and allowing granular data access beyond what is required by law. They can then monetize access to the data to create unconventional revenues. For example, a bank could (with permission) share a customer's mortgage data and identity documents with a home insurance provider.
- Provide **advice and new services** by going beyond providing API access to offering insight and services to monetise data. For example, in the case of a mortgage application, this could include brokered services like estate agent, home insurance or utility discounts. In this case, the bank receives a fee from the partner, the customer receives relevant and timely discounts, and partners obtain new business at a lower cost of acquisition.
- **Expand the ecosystem** and aggregate its value by opening APIs and creating a partner network with the bank, merchants, and consumers. Banks can offer products and services to address both financial and non-financial needs that are central to a customer's daily transactions. For example, an online banking portal could evolve into a single source for business advice, with direct access to management tools for SMEs like web pages, payment options, digital marketing capabilities and customer communication channels.

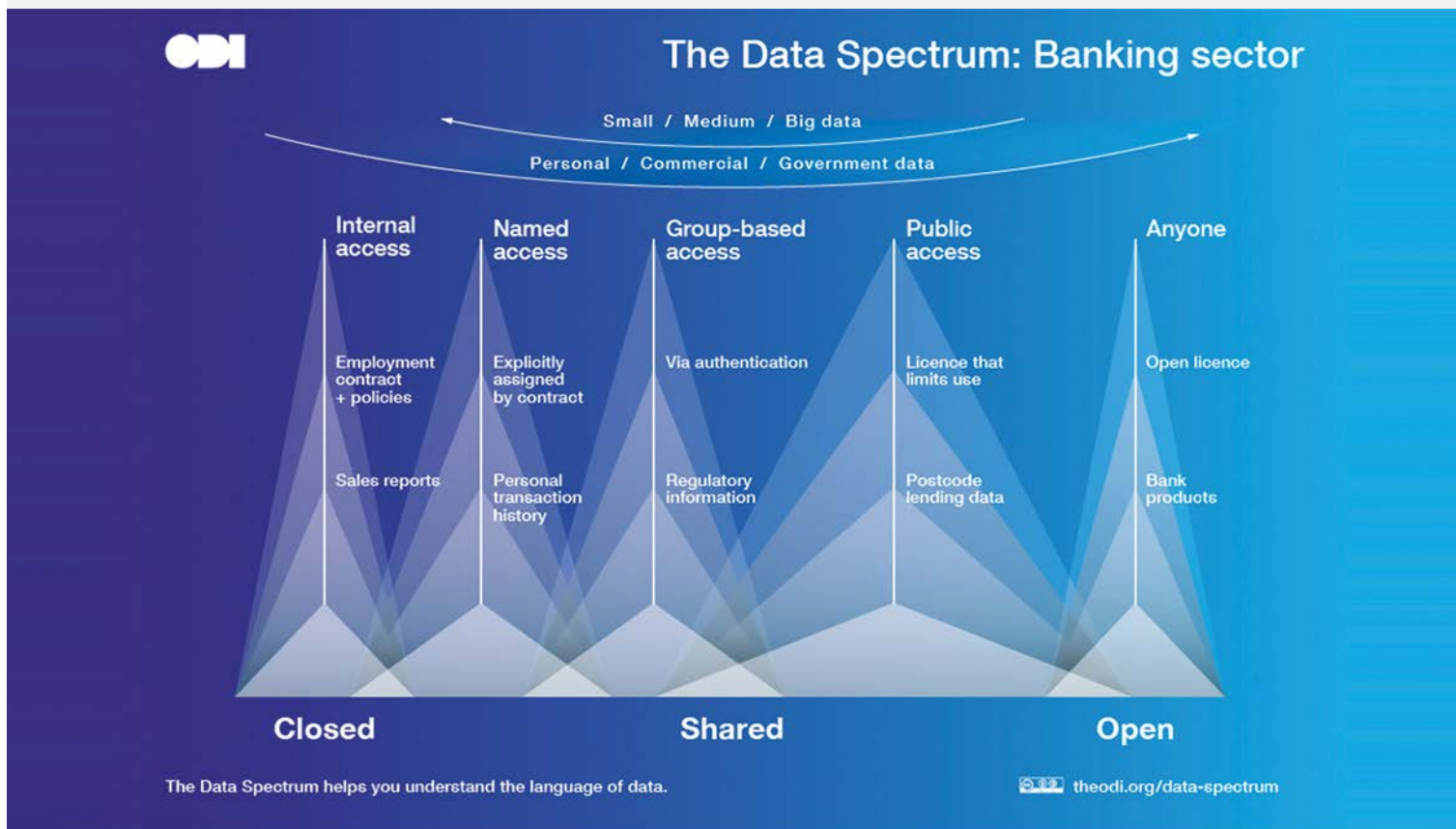


Figure 1: Open data is data that anyone can access, use or share and exists on a spectrum from closed to open. The Data Spectrum image is available from Open Data Institute: theodi.org/data-spectrum

Spotlight on: Early European adopters

One of the first banks to develop public APIs for various parts of its business, Spain's BBVA then enhanced its technology capabilities by acquiring the banking start-up, Simple. The Simple solution acts as a 'smart layer' on top of BBVA's existing banking networks, offering customers data-rich analysis of their own transactions.

French bank, Crédit Agricole, launched its own app store in 2012, stating that "data the customer creates in his relationship with the bank, or any partner, is his own property so

he should have access to it, but he should have access to it in apps that are useful to him." More than 50 outside companies and individuals now develop applications available on the CA AppStore.

In addition to developing public APIs, Germany's Fidor Bank has started an API developer community, which has developer days to promote the programmability of its banking data. Fidor has recognized that the key to its success is a widely accepted and engaging platform.



4. HOW DO WE GET THERE?

Open banking can be seen as the latest stage in a journey away from siloed functions and data, through multi-channel payment operations, and into omni-channel businesses. As a 2015 survey from Finextra¹ showed plenty of respondents considered the requirements of PSD2 compliance as a catalyst for a wider payments modernisation programme.

However, open banking means exposing existing enterprise assets, such as algorithms, information, resources, processes and analytics to outsiders. Banks will find ways to incorporate open APIs into their workflows, and to think beyond organisational silos. The goal should be to match resources to the wishes of customers rather than to the limitations—or motivations—of internal product development.

Open banking also adds a new dimension to who is considered a customer. The experience and expectations of FinTechs, developers and TPPs becomes an important consideration. These groups will need to understand and evaluate a bank's services even before they approach its business development team. If those services are deemed suitable, FinTechs will then expect to implement their solution through the APIs with very little interaction from the bank's teams.

All of which raises the question of standards to guide financial institutions and third parties, protect customer privacy and keep data secure. If every bank publishes its own unique APIs, it becomes significantly more difficult for third parties to support them. To counter this, the UK's Open Banking Working Group is working on a set of commonly defined APIs as is Germany's Open Bank Project. The proposed Open Banking Standard also defines the framework for more data being linked and made accessible, along with the technology required to integrate it.

ISO 20022 and Open APIs

ISO 20022 is the new international messaging standard covering all major areas of communication in banking, including those required by open banking. Although other standards and protocols already cover at least some of the informational needs described by PSD2—and hence Open Banking more generally—very few have been widely adopted. Even common standards like SWIFT MT messages and ISO 8583 are not suited for contemporary APIs, and may not cover all PSD2 requirements. In contrast ISO 20022 supports interoperability between all parties in the payments process and enables participants and systems in different markets to communicate with each other using consistent terminology and formatting.

ISO 20022 also offers financial institutions a degree of 'future-proofing', as it was also created as a new way to develop message standards within the financial industry. Banks that ensure their Open APIs and related business rules are aligned with ISO 20022 and emerging API standards can protect their investment in API development and ensure the widest possible application.

¹ PSD2 and XS2A—Regulation or Opportunity? Finextra Research Ltd, 2015.

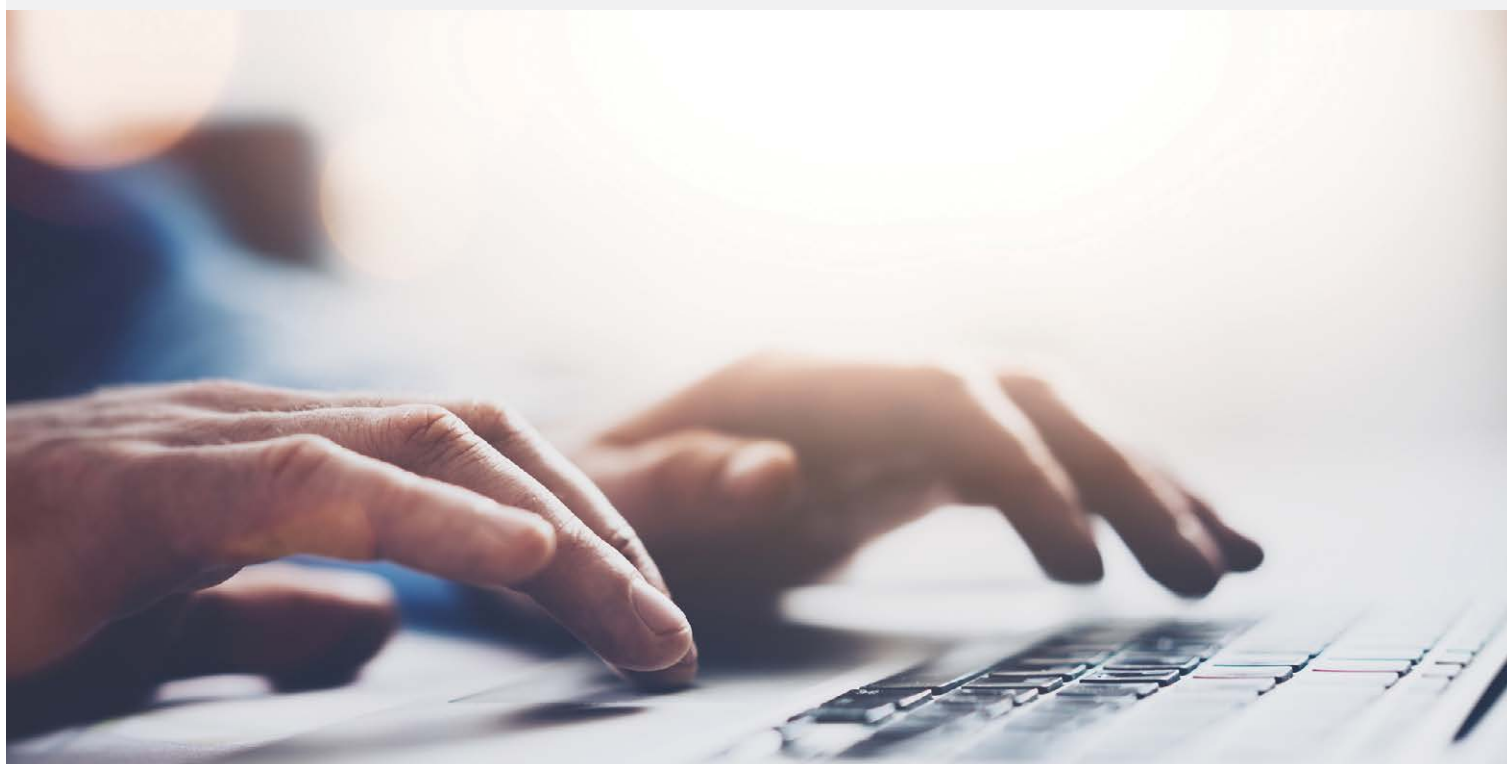
5. FLEXIBLE FEATURES, FLEXIBLE ARCHITECTURE

All this places new burdens on IT teams and their infrastructure. Application redundancy and complexity are a significant challenge, for example, and require rationalisation and simplification of the IT estate. The inflexibility of certain older core systems is also problematic, since they tend to prevent access being granted in a robust and secure manner. They can prevent third parties' apps from being 'plugged in' and commit banks to re-inventing the wheel each time a new TPP requires access.

Security requirements become more stringent, as all parties grapple with the high-grade data protection and authentication demands. What's more, availability, performance and exception handling requirements demand an infrastructure that can scale to cope with

millions of diverse transactions. Not surprisingly, more than half of respondents to the Finextra survey agreed that their core-banking platform could prove a hurdle to becoming an open-API bank. Only five per cent were convinced that their core-banking platform was fit for purpose in this newly open environment.

These are the early days of a changing relationship between financial institutions and members of their broader ecosystem, especially as the regulatory technical specifications (RTSs) are yet to be finalised. Over the next few years, APIs and their environment will change and grow as financial institutions and FinTechs learn from the initial deployments.



What we can say at this stage is that, as a bare minimum, financial institutions require a solution that can operate a multi-faceted payments business from a single platform. It needs to be able to connect to a wide range of systems to handle all requests, and have a rich workflow engine so processing can be easily defined and changed as APIs are developed. It also needs to be highly configurable: a great new idea emerging from data collaboration amounts to nothing if the underlying platform cannot be adapted to support it.

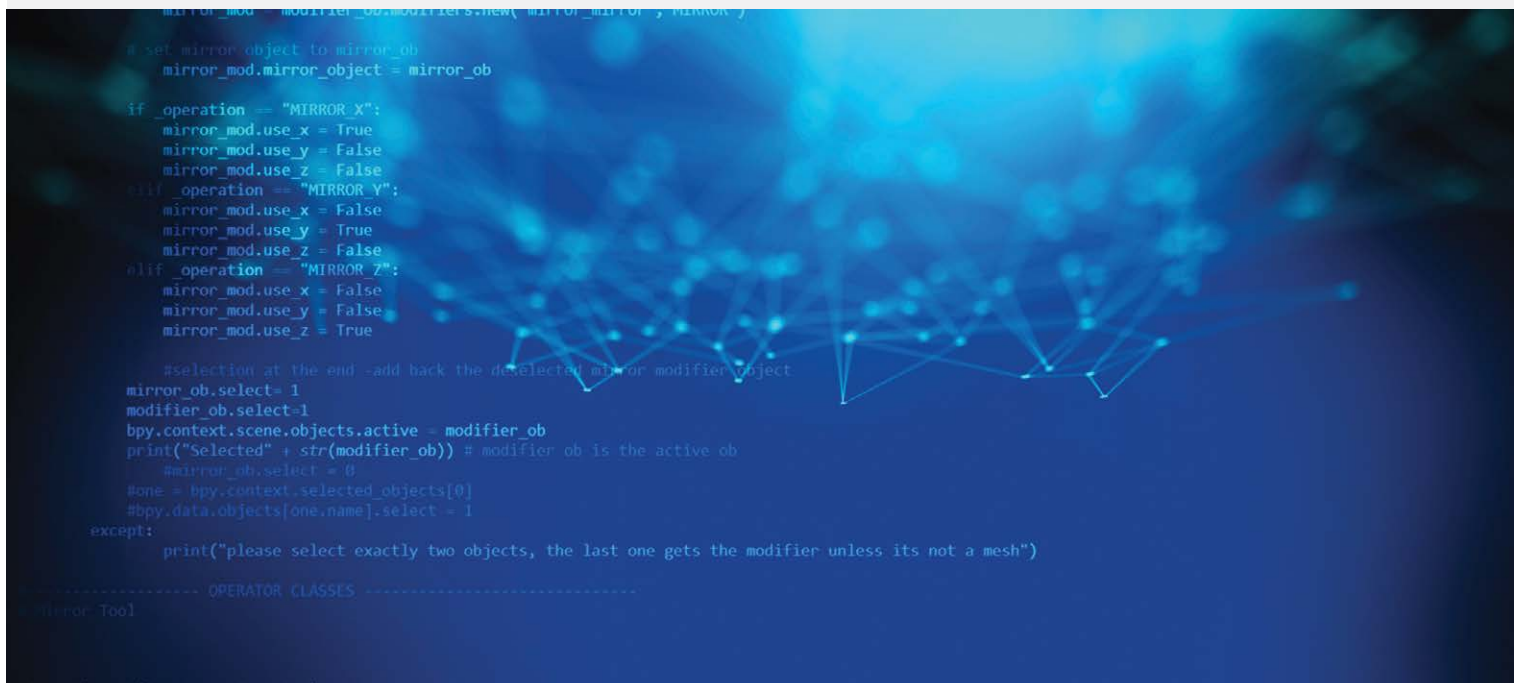
Financial institutions also need to look at the underlying architecture. For example, Authentic from NCR is written entirely in non-proprietary Java. It uses open systems standards and object-orientated design for flexibility. It is linearly scalable and has the 'pluggable' capacity that is so necessary when using open APIs.

Authentic is also designed to accept multiple messaging formats, and can collect data both synchronously and asynchronously from a number of different systems, which means it efficiently and quickly responds to any requests in real time. Routing by channel, account, transaction or payment instrument are all possible. The functions to be applied at each stage of processing a transaction can also be defined in Authentic.

It is unlikely that the new technical standards for open banking will specify how access to accounts is to be achieved. There may be one standard or there may be many. New products or solutions will ultimately require different routing patterns, and—within the scope of the new ISO 20222 messaging standard—many formats will be needed.

Authentic's ability to orchestrate transaction processing also allows businesses to create web-service interfaces quickly and easily. It offers parallel routing to external services, and already has the ability to service APIs for a wide range of banking services. Authentic comes with advanced security features that enable users to secure and encrypt different types of connections.

What is also obvious is that Financial Institutions need to be prepared for fraud through these APIs both from the consumer identity being used by a fraudster and from a fraudulent TPP submitting requests. A flexible fraud detection system, like Fractals from NCR, is needed to handle the real time nature of these transactions and allow the financial institution to quickly respond to the changing fraud threats that will be posed by Open Banking.



```
mirror_mod = modifier_ob.modifiers.new( 'MIRROR', MIRROR )
# set mirror object to mirror_ob
mirror_mod.mirror_object = mirror_ob

if _operation == "MIRROR X":
    mirror_mod.use_x = True
    mirror_mod.use_y = False
    mirror_mod.use_z = False
elif _operation == "MIRROR Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif _operation == "MIRROR Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end -add back the deselected mirror modifier object
mirror_ob.select = 1
modifier_ob.select = 1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier ob is the active ob
#mirror_ob.select = 0
#one = bpy.context.selected_objects[0]
#bpy.data.objects[one.name].select = 1
except:
    print("please select exactly two objects, the last one gets the modifier unless its not a mesh")

----- OPERATOR CLASSES -----
class Mirror Tool
```

6. CONCLUSION

The real point about open banking is that it fundamentally changes what is possible now—and what will be possible in the future. The potential is there to realise ways of serving customers and running the business that can barely be imagined now. Business cycles shorten and change becomes a constant. New services will come and go, with the most popular surviving and being amended as new challenges emerge. In these circumstances, monolithic 'locked down' payment systems are more hurdle than help. The payments business is becoming nimbler, more agile, and more responsive. Financial institutions therefore need enabling systems to match.





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