Rise FinTech Insights

Embedded Finance



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Embedded Finance: Creating a seamless future for financial services

In simple terms, Embedded Finance allows companies to create innovative financial offerings that are integrated into the act of purchasing a non-financial product or service.

By embedding financial services (from payments and lending to savings and insurance), new customer journeys that solve real-world problems for consumers are possible in many sectors, including retail, health, education, transportation and agriculture.

What makes Embedded Finance exciting from a FinTech perspective is not only the possibility of developing creative solutions to these problems but also the availability of new, modular technology, in the form of Banking as a Service, that underlies and supports those solutions.

The importance of new technology reminds me of the closing keynote, given by FinTech investor Eileen Burbidge of Passion Capital, to a recent New Frontiers conference. Barclays' annual technology event, which included a number of predictions about what businesses would be focused on in 2025. One was that innovation and digital strategy would no longer be separated from an organisation's core business strategy. The merging of these formerly distinct elements reflects the growing importance of innovation in our evolving digital world. The keynote also anticipated that FinTechs would increasingly shift from B2C to B2B models, as smaller financial services companies emerge as agents of change, injecting innovation into traditional banking technology.

The growth of Embedded Finance is a reliable indicator that those predictions are playing out. It's a trend that everyone in financial services should be familiar with, because of its transformative vision of the industry, shaped by the combined forces of disruptive technology, new customer journeys and banks' abilities to add value. Together, these factors will shape how brands are experienced by customers and clients in many sectors, at an estimated value in the US alone of \$3.6 trillion in ten years' time!

For example, in lending, retailers are embedding loan options when customers purchase big items like large electronic goods at the checkout. In transportation, ridesharing companies Uber and Lyft have already created seamless payments for customers, and are now extending this to the insurance market by providing cover for their drivers – cover that's active only when they're carrying passengers. That's quite different to traditional car insurance models.

Neat, innovative ideas like these are a very different way to reimagine the core payment, insurance and lending operations of a traditional bank or insurance company.

New value propositions extend beyond those use cases.

By embedding financial services into their offerings, fields such as healthcare and agriculture, and even the music industry, stand to benefit.

You might ask what's new and whether this has been done before. It has, but in a relatively small way. In payments alone, Embedded Finance 2020 revenues were \$16.1 billion, but by 2025 they're forecast to reach \$140.8 billion². Embedded Finance, on a deeper and bigger scale, really opens the door to major innovation. That is, as long as three things happen:

- Financial institutions will need to discover possibilities by redesigning and opening up their core technology stack (for banks, this means Banking as a Service)
- FinTechs will need to continue their innovative drive and partner with the financial services sector to fuse their offerings into that core stack
- Both financial institutions and FinTechs will need to explore partnerships across other sectors where the magic of 'embedding' really takes place

Technology is key – APIs and the cloud allow core financial services to be re-formed, offered and co-developed with third-party companies, bringing to life the predicted B2C-to-B2B shift for FinTechs. As change in these technology domains takes place, a new era of rapid evolution may present itself to the industry. Being prepared for that and being open to the opportunities and partnerships it presents will be vital because of the opportunities for the FinTech ecosystem, the financial services industry and its global clients.

If the big incumbents are brave enough, and the FinTech community can continue to be nimble in innovating, then new value propositions and customer experiences should emerge that truly solve for customer convenience. In this way, Embedded Finance would enable a 'win-win-win' for incumbents, startups and consumers alike.

Read on to learn how market sectors, FinTechs and the banking industry are responding to Embedded Finance and developing new opportunities.



Paul Compton Global Head of Banking and Co-President, Barclays Bank PLC

If you're in FinTech and are as excited as we are by these developments, we'd love to hear your ideas and thoughts. <u>Contact your closest Rise team</u> in London. New York or Mumbai to discuss how we can collaborate.

1. Forbes

FinTech Insights 2. Forbes 04 / rise.barclays

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The next wave of FinTech infrastructure

In this article, Michael Gilroy, General Partner at Coatue Management, considers Banking as a Service (BaaS) infrastructure, which is providing opportunities for forward-looking technology companies.

It's expected that greater disruption in the Embedded Finance space will result from BaaS, along with more innovation by banks and newer, better ways to meet customers' financial needs.

BaaS companies are attacking one of the largest total addressable market opportunities on the planet, but BaaS is a term that's much overused and, in some cases, misused. For example, people use it when they're simply providing a basic card-issuing capability, purely by connecting consumers to banks. That may be a growth model for many in the industry, but it doesn't capture BaaS to the fullest. BaaS encapsulates not only the offering of a financial product, but also provides the infrastructure to manage the product from compliance through marketing and servicing.

Additionally, the best-in-class BaaS platforms will allow brands to become 'programme managers', companies that banks underwrite and authorise to distribute their products and that take on the additional compliance burden in exchange for economics.

I've been investing in FinTech since 2014 and in many ways it felt too early – adequate infrastructure did not exist. Millions of venture dollars went into working with regional banks to stand up even the most basic of programmes, which instead should have been spent on new and innovative financial products.

Today, all that's changed. The current scale at which FinTechs' P&Ls are growing is unprecedented and, judging by the total market capitalisation across financial services globally (which is growing at a rate of 6%), there's still a lot of legacy financial services out there ripe for FinTech disruption.

Payments

One area – the biggest financial service to become embedded – is B2B payments. Historically, payments live at the edges of an experience for businesses. A majority were either offline, or buried in PDF invoices being scraped by 'version 1' bill pay solutions. For forward-looking technology businesses today, payments are fully embedded into a software suite that provides not only a better customer experience, but also a nice gross margin lift.

BaaS providers today are not only enabling brands to decide which financial institution to partner with on processing payments. They're also helping them to offer additional financial products via simple APIs. For a SaaS business that has historically only processed payments, they can now very easily complement that experience with a business bank account or merchant cash advance.

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Merchant benefits

As these merchants move beyond simple payment processing, the next logical step becomes proprietary credit opportunities enabled by an eager audience, proprietary data and direct access to payment flows. As software platforms have evolved, they've opened their APIs, and created a treasure trove of underwriting data that merchant lenders previously never had. Once the underwriting problem is solved, the next thing is to have a fail-proof way to get paid. The ability to immediately credit and debit the merchant account by accessing its payment processing is the way.

Infrastructure ecosystem

While BaaS is the connective tissue between the brand and the bank, it also relies on an entire ecosystem of value-add services. BaaS platforms are evolving to offer 'app stores' for key functionality including account aggregation, KYC, payroll and brokerage.

BaaS platforms are the final piece of the puzzle and allow brands to dynamically adopt the latest infrastructure pre-approved by their partner bank. For the last five years, startups have been steadily building the API stack for financial services. During that time, all of those services have been integrated into one brand or another, after having been approved by the appropriate regional bank.

FinTech infrastructure has matured significantly during this last cycle, but there are certainly new and interesting pieces on the horizon that are being demanded by brands. For example, recently the market has been asked for a way to seamlessly move direct deposit accounts to and from incumbent payroll providers. As consumerfacing FinTech has grown from relative obscurity to scale in the last few years, it's become clear that direct deposit accounts have higher long term value than non-direct deposit ones. As other areas of FinTech reach scale, there will surely be new areas of demand.

Get BaaS, get creative

Remember, at its core BaaS eliminates time and money to market. So, whereas in the past companies would spend millions of dollars and months on end getting a Bank Identification Number (BIN) to launch a basic card, with BaaS you can now drastically reduce that outlay, allowing you to reallocate the effort on creating new financial products and features.

In this respect, perhaps the most compelling application of BaaS, one supporting societal change, is getting important financial products into the hands of individuals historically underbanked. BaaS has the potential to easily stand up programmes for them, freeing up budget for more important activities like product development and marketing.

"The best BaaS platform will offer brands the greatest choice every step of the way."

Michael Gilroy General Partner, Coatue Management

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FinTech's role in Banking as a Service

Access to financial services should be a human right not a privilege, and that requires changing the way financial services are provided and redesigning the customer journey in what's now called Embedded Finance.

FinTechs are one of Railsbank's segments, especially those who want to embed extra services within a brand's customer experience, whether the brand is a supermarket, a telco or other consumer product offering. As a leading global BaaS platform, our aim is to allow FinTechs to prototype and launch financial services apps rapidly, globally and cheaply.

The two key questions for any of us interested in Embedded Finance are how will the current world of highly silo-based banking change to accommodate this new phenomenon, and how exactly will target consumers and corporates benefit from it?

One piece of the puzzle, which many Banking as a Service (BaaS) providers focus on, is the underlying API technology that fundamentally simplifies connectivity to a bank or its services. For consumers to experience seamless journeys involving financial services, the product structure of traditional banks will need to be hidden behind this set of APIs, giving access to whichever services are needed in those journeys.

Another piece is operational - streamlining and automating workloads, money movements, settlement, clearing, reconciliation and so on. This is equally important and is a focus for us at Railsbank.

There's an analogy with how Amazon still owns servers and warehouses (akin to the API infratructure of BaaS) but what matters just as much to the customer is the operational piece, the massively digital processes that fit on top of that legacy hardware and real estate. And that's what BaaS does as well - replacing traditionally very analogue banking practices with fully digital frictionless processes and great new products built on API infrastructure.

We see two main models in the market adopted by businesses launching new products: B2B BaaS providers delivering a platform for their business customers, and B2C BaaS providers, also delivering a platform but with a retail banking operation too. The distinction is not one that's discussed often, but it could be an important consideration in the success of your BaaS model. The fundamental difference between the two is that retail operation in the B2C model. If that's you, and one of your customers is a FinTech building infrastructure, be aware that your BaaS team might well inadvertently be competing with your FinTech customer – not a great position if they come to realise that their banking provider is also a competitor. My take on these two models is that B2C banks will be more successful if they continue to go 'direct-to-customer' and not build a platform, avoiding this potential conflict.

For the same reason, B2B platforms should concentrate on their platform offering and never compete for customers. Railsbank has adopted the latter model.

And talking of launching new products, regulatory approval is key. With three things - new core technology, streamlined operations and a licence from the regulators – FinTechs have a big part to play in the BaaS transformation that's impacting financial services now.

A word of warning to FinTechs. Don't make the mistake of equating BaaS with 'white label banking', which is just tinkering at the edges and re-badging broken, legacy processes. API-led BaaS is much more than that. It's a toolkit for your creativity, and lets you trailblaze using the best of your FinTech skills. That's really important and it's allowed Railsbank to provide new global infrastructure and services from the ground up in the US, UK, Europe and Southeast Asia.

APIs may have been around for ages but, as an industry, we're really only now beginning to realise their full potential with the emergence of the 'API economy'. This is what BaaS is all about, especially for retail and corporate banking where API use has been dormant for a long time. For incumbents, Open Banking has been a start but it's more than the compliance requirement that some banks still consider it to be. This powerful technology can take us a lot further. For example, Open Banking does not have APIs for issuing a card, opening a bank account, onboarding an end-user, etc. but customers would most certainly benefit from new APIs like these.

Whatever new product or service industry players are contemplating, a test environment is key. Railsbank provides two sandbox environments to experiment with APIs and prototype workflows, value propositions and app integrations: Play uses simulated data, and PlayLive uses actual money, bank accounts, IBANs and partners. You can validate that everything works in your app in Play first, using small transaction values (in Sterling, Euros or Singapore Dollars), then check in PlayLive, issuing a real bank account, receiving real money into it and sending money to another real account. Compliance is ensured using a firewall, which enshrines a partner's risk policy.

Railsbank considers it quite profound that new BaaS models, technologies and testing capabilties are enabling services and financial inclusion in the new API economy. The potential for FinTechs to embrace that and pivot into new sectors and brands is immense.



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Cloud and APIs enable new banking digital journeys

How do incumbent banks view the growing world of Embedded Finance, worth an estimated \$7 trillion globally in the next 10 years?

In this article, I take a look at how technology and regulation are impacting this trend and the ability of traditional banks to get deeply involved in it by adopting Banking as a Service (BaaS).

Large financial institutions have been investing heavily in Embedded Finance with the intention of bringing banking in its many forms to their customers wherever they are – even in the digital world. Users have shifted in recent years to digital journeys involving ecommerce sites, aggregator sites and apps. The COVID-19 pandemic has accelerated this, with McKinsey even suggesting digital products have leapfrogged seven years due to the crisis². By placing banking functionality such as payments and credit financing at the very centre of these journeys, banks are creating new and innovative value propositions faster than ever.

As an example, some Asian banks now allow customers to redeem loyalty reward points at merchant sites, creating a compelling win-win-win proposition for the customer, merchant and bank. Customers win because they save money by instantly redeeming loyalty rewards at ecommerce sites. Merchants win because they pay a much lower interchange rate on these transactions compared to card schemes. Banks win because they make money through an interchange rate on these transactions that's lower than card schemes.

Other benefits include getting reward points (which after all are liabilities and IOUs) off the books quicker and savings on print and mail costs for youchers.

The cloud and APIs remain vital

A key technology, central to BaaS, is cloud computing and its on-demand and highly elastic and configurable capabilities. It has lowered the barriers to entry for non-traditional players and allowed them to offer services of all kinds across many sectors in the last decade. Financial services are no exception. Disruptors in this space have varied pedigrees – FinTechs, Big Tech, neobanks and incumbent banks are all leveraging the cloud's potential to innovate faster at a lower cost and to support newer and better B2B and B2C use cases.

In the drive to take financial services to new heights using cloud technology, FinTech representation is, as you'd expect, healthy and has allowed some startups to scale fast. In the payments space, for example, Adyen and Stripe have built modern platforms designed from the ground-up with the cloud at their core.

Traditional banks are keenly aware of the disruption to banking experiences brought by neobanks. They of course rely heavily on the cloud, and may be able to leverage this core strength to embed payments and other financial features into third-party, web-based products more easily than many incumbents currently can.



Embedded Finance is even seen by some as a growth model for neobanks³.

Big Tech firms are also keen to drive Embedded Finance into their offerings. For example, Barclays recently partnered with a leading smartphone provider on the pre-launch of their flagship product, with applications for financing from customers proving highly popular.

All of this shows how 'getting the cloud right' is key for any organisation – big or small – interested in Embedded Finance. It's essential to Barclays for several reasons. In addition to improved elasticity, resilience and economics, it helps us focus on apps instead of infrastructure, increase our release cadence and inspires us to new ways of working and thinking.

Regulators are beginning to recognise the importance of the cloud and are working with financial institutions to understand the associated risk and to ensure that customers continue to get great services in an evolving tech landscape. As a result, in the future we may see more regulations that support Embedded Finance. Hopefully, these will be developed collaboratively with innovators of all sizes to enable new services to come to market smoothly and at pace.

APIs are another key technology enabling BaaS. They're what lets a bank extend its reach into those new digital journeys that users take. Whether it's a payment transaction at the end of your taxi ride or a request for an instant personal loan when you purchase a luxury item, there are numerous jobs-to-be-done⁴ that culminate in a banking transaction. Research tells us that users are reluctant to move to a different digital site to complete that transaction, and APIs are behind-the-scenes operations that support a seamless experience. And such frictionless experiences are king in today's digital world.

Customer journeys drive technology

Embedded Finance sounds easy to achieve but there are challenges for incumbents. For a start, we need to think about banking services in new, customer-centric ways. Instead of providing a financial product, we're part of the customer journey and are meeting a financial need along it. It sounds like a subtle change in mindset but it can be a lot of work, especially for large organisations with traditional, product-centric business-development processes. Reframing a banking product this way may have dramatic results in terms of core technology, and how and when that's exposed to users.

Another challenge that comes after this mindset change is the need to remove non-value-add human touchpoints from digital journeys. This requires redefining customer journeys from scratch. The challenge is seamlessly transitioning to the new proposition (with a better, redesigned flow) from the old one with a similar set of processes and technology stacks.

1. FinTech Futures

3. Embedded Finance

2. McKinsev

4. Strategyn

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Speaking of technology stacks, new digital services must be always-on, reliable and performant at all times. This will often require a significant uplift to current technical capabilities, as will dealing with legacy systems that are decades-old and costly to adapt to new propositions. This is possibly why incumbents invest so heavily in digital-only propositions and their tech stacks.

Think like a FinTech

Back to mindset for a final challenge. Embedded Finance means collaborating with nimble digital players – they might be nimbler than you or your organisation as a whole. You need to move fast to partner with some of the big retail and tech brands, and that can be a challenge to banks if their processes are slow and cumbersome.

The good news is, of course, the opportunities that are available to those who overcome the above hurdles. Banks that can innovate – aggressively – through digital transformation are rewarded not just with new propositions and successful partnerships (often in very new areas). They also benefit from a culture shift that allows them to face multiple headwinds – competition, low economic confidence and a generally uncertain future. The ability to inspire new ways of thinking and to innovate at speed through Embedded Finance has far-reaching benefits to the banking sector.

Barclays has a long history of innovation. In the last few years, we've transformed the way we think about and deliver technology, partnering with new providers to deliver better products, customers experiences and to do things faster.

An 'embedded future' for us takes many forms. Sustained innovation with partners has taken Barclays in new directions, including a recent football fan loyalty programme that uses embedded payment technology to enhance match-day experiences of ticketing, online and offline purchases, and rewards⁵.

FinTechs are important to Barclays. For example, a recent collaboration has led to a new way of providing insurance to business customers: insuring single invoices simply and quickly helps protect them from insolvencies and late payments⁶. Another collaboration resulted in new technology that allows our mobile banking app customers to digitally store their loyalty cards and earn rewards and other benefits simply by paying with a linked payment card⁷. Read more success stories from Rise members on our website.

How can large financial institutions collaborate with FinTechs to enable innovations in BaaS? For those of us in big banks, embracing fresh thinking and some of the culture of FinTechs is a must. We can bring a sharper focus to our banking services by making them more available and seamless using the cloud, APIs and digital-first customer journeys. But it's not only reimagining that backend technology or those frontend journeys. Other processes such as our legal workflows, risk and compliance operations and supplier onboarding also need to be examined and streamlined to make it easier for FinTechs to work with us.



Don't forget developers

When building your BaaS model, the FinTech developer experience should be key. After all, they will be the first consumers of your service, and if they struggle with opaque processes, difficult integrations or non-intuitive interfaces, you will lose the agility and scale of delivering great customer experiences. This includes test environments. FinTech developers must be allowed to experiment easily with 'safe' data and sandboxes because, only if they're in place, will financial institutions be able to deliver co-created value propositions at scale.

Many of the examples in this article were made possible by Barclays embracing the possibilities of APIs and creating the <u>Barclays API Exchange</u>. If you're a developer excited by the idea of collaborating on BaaS, take a look at the range of secure Open Banking and experimental APIs, or get in touch. The 'embedded future' awaits us.



Saket Saith Chief Technology Officer, Barclays UK

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Point of Sale financing is driving ecommerce

Innovation in Point of Sale (PoS) financing is driving change in Embedded Finance.

The model, also known as 'buy-now-paylater', is growing in popularity, with Capco research showing that more than ten million people in the UK have used it for purchases in 2020¹. Its simple premise is that providing quick and convenient purchasing options is possible in secure and financially appropriate ways. The model is growing in popularity and allows consumers to procure important or desirable things through in-store and, increasingly, online purchases that are paid for through instalments.

Models vary among the FinTech players in this area but, in ecommerce, customers are presented with different payment options at checkout - typically, they can choose from multiple payment providers. FinTechs make their money from merchant fees, which means customers can be offered zero-interest repayments. In addition to core PoS offerings, integration with loyalty cards and other branded lifestyle features can be offered and allows FinTechs to expand their product offerings to merchants and financial institutions.

In a year that saw such economic and social turbulence, 2020 has seen several tech companies in the PoS lender space roll out new products to support customers with evolving online purchasing behaviour. The demographics are interesting. As the 56% increase in transactions across Europe on Black Friday 2020 showed, growing numbers

of Gen Z and millennials are relying less on traditional forms of credit. Merchants are keen to support this evolving behaviour.

Recently, Barclays Investment Bank helped in one PoS lender, Affirm Inc., with its IPO, empowering its mission to deliver honest financial products that improve lives. Affirm's vision demonstrates how radical the payments space can be reimagined. Founder and CEO Max Levchin (a PayPal co-founder) reminds us that the user interface for cards has changed significantly in the last few decades, with developments such as swiping, chip-and-PIN and latterly digital storage on mobile devices. The underlying financial product is also benefiting from this rapid innovation.

Affirm's platform integrates with a wide range of merchant technology, and they've already partnered with brands like Walmart, Expedia Group, Dyson and Peloton. The company's vision is to be a payments platform that delivers convenience and transparency for consumers, and sales volumes and customer retention for merchants. To do that requires reinventing how payments work from the bottom up.



What are the trends in PoS financing? This alternative payments model is here to stay and, judging by its recent growth, will soon become mainstream. North America has to date proved the biggest region in the market but Asia Pacific is predicted to grow fast. Globally the market is expected to reach \$13 million by 2022. Spends in fashion and apparel are likely to fuel this growth in the short term².

FinTechs in this space are aware of the ethical implications of extending payment terms, and are driving responsible spending through transparency and customer education as part of their propositions. This theme among new providers is noticeable and is bound to continue as part of their vision not only to provide convenience but also to drive more transparent and ethical ways of paying.



Jeremiah Leong
Barclays Investment Bank

in jeremiah-leong-guanghao-42331516

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Point of Sale financing

Case study: Jifiti's proprietary PoS-financing platform enables traditional banks to compete in the buy-now-pay-later space.





The company

Banks can easily scale and deploy their consumer loan programmes as an end-to-end financing solution to customers at any merchant's point of sale without the need for integration with the merchant systems.

Jifiti is currently active in North America and Europe, facilitating consumer loans for global financial institutions and major retail brands.



The proposition

Consumer loans have trended over the past years towards the point of sale. Shoppers online or in-store are seeking payment options at the point of purchase, making big-ticket purchases more affordable with easy and accessible monthly payments.

Traditional banks have historically specialised in consumer loans with advanced decision-making and underwriting capabilities. Despite competitive rates, traditional banks often lack the technological tools required to easily deploy and scale their loan programmes at merchants' point of sale.

The Jifiti platform provides banks with capabilities to make their loan programmes accessible and available for consumers in-store and online. It includes a fully white-labeled and seamless checkout financing experience, with fast and easy integration for both merchants and financial institutions.





Key features

End-to-end, white-labeled solution for banks and merchants

- Unified experience both online and in-store
- Deep client-side technology to increase financing adoption and average order value
- Supports one-time loans, revolving credit, lease-to-own, split payments and other loan programmes

Quick to market

 Requires zero integration with merchant systems – merchants can be live within days

- Built-in merchant onboarding platform allows merchants to instantly sign up and launch the bank's POS financing service
- Requires no new hardware. Merchant operations continue business-as-usual

Advanced payment stack

- Funds can be disbursed to merchant via a number of options such as a virtual card for use only at the merchant, Automated Clearing House payments or direct deposit to merchant account
- Seamless integration with ecommerce platforms
- Contactless payments for in-store use



Working with Barclays

Jifiti has been a Rise New York member since 2019 and works closely with its advisors in the payment and FinTech space. Rise has helped Jifiti navigate the ecosystems and optimise its solutions. Jifiti is also working closely with the Barclays Payments team on building out a buy-now-pay-later solution that can be used by Barclays merchants.

iifiti.com





The team



Yaacov Martin Co-Founder, CEO



Meir Dudai Co-Founder, CTO



Shaul Weisband Co-Founder, CMO

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Enabling sustainability through embedded investments

Embedded investments can enable non-financial institutions and consumers by simplifying the investment process and broadening the distribution of the investment product.

Embedded finance reduces complexity for example by reducing clicks and improving the customer journey when buying a new product online — and it improves the discovery of innovative or niche offerings that might suit potential customers or clients. This is also true of embedded investments because any investment arguably requires more research, analysis and commitment than, for example, a traditional retail purchase.

Companies like Spark Change, a technology platform that simplifies investing in carbon instruments, are keen supporters of the ability to embed investment solutions that are specifically focused on green investments. We imagine a future in which non-financial companies and brands are better positioned to serve their concerned customers — those who want to take action but don't have access to or awareness of sustainable investment products.

By responding to the burgeoning gap between the world's climate change ambitions and the investment products currently available, this vision makes great business sense too.

How can FinTechs enable this change? In the sustainability and EnergyTech space, Embedded Finance and embedded investments are helping to broaden awareness and simplify access to technological innovation. With this greater awareness and technological availability comes quicker and more widespread adoption, in turn creating more environmental impact or helping new ideas to get early traction. Spark Change's embedded investment solution is an example of this. It provides direct exposure to the value of physical carbon allowances without the complex and costly setup requirements needed by investors to access the market directly and take delivery of physical carbon allowances. That's driving more investors into the market, which in turn means a bigger impact on the environment.

How does it work? The core financial instrument created by Spark Change is a security backed by carbon allowances.

For every security purchased, the company buys and withholds from the marketplace one carbon emission allowance, which is a regulator-issued 'permit to pollute'. A finite and declining number of allowances is issued each year by organisations like the EU Emissions Trading Scheme, (Unlike carbon offsets, these initiatives are designed to drive decarbonisation. The higher the price of the security, the more incentive there is for companies or industrials to decarbonise.)

Research quantifies the nature of this environmental impact. If an investor buys and withholds from the marketplace a carbon allowance for 10 years, the total permanent impact on CO2 reductions is estimated at 1.43 tonnes.1 This means investors can use Spark Change products to gain financial returns or improve risk management and, crucially, they can also drive significant environmental impact at scale. This is because by holding this investment they are fundamentally preventing an emitter from polluting and therefore accelerating the rate at which emitters are investing in new technologies.

By anchoring a technology platform like Spark Change within the carbon marketplace, investing sustainably becomes easier. It's a great example of the power of Embedded Finance to make a difference to society.

"We are transforming a hard-toreach asset class into a widely accessible investment product that can create significant environmental impact."

Elliot Waxman, Spark Change

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Elliot Waxman CEO, Spark Change

in elliot-waxman-8381762 sparkchange.io

1. Combined analysis of a London School of Economics model and Independent Commodity Intelligence Services (ICIS) research

Carbon investments

∮ sparkchange



The company

Spark Change is a technology platform and financial product ecosystem for institutional and individual investors who are seeking exposure to physical carbon allowances but who are unable to directly access existing markets. The company is on a mission to simplify access to carbon markets and prices

around the world, as more investors with access can create a bigger environmental impact.

The company is focused on accelerating the rate at which society can achieve its climate goals.



The proposition

Current research shows that carbon price exposure plays an increasingly important role in investors' portfolios. For example, asset owners or managers may want to ensure their portfolios are aligned with internal, industry or regulatory-imposed environmental benchmarks. Or, from a purely financial perspective, they want to ensure that if carbon prices reach certain levels — so some companies default or their operating margins are impacted — having some carbon price exposure within a portfolio makes sense. Their products give investors flexibility, whatever the reason for investing.

To meet this increasing demand, Spark Change is creating a new generation of financial instruments that allow the carbon price to be fundamentally embedded into equity and fixed-income portfolios.

Since investing directly in carbon emissions requires complex market infrastructure and operational capabilities, investors have typically been forced to use a rolling futures strategy. This has drawbacks, including exposure to a futures price higher than the spot price (known as 'contango') or investors bearing the negative impacts of interest-rate slippage.

Only by buying and withholding a physical carbon allowance, rather than buying a futures-backed product, can you be sure that the allowance has not been used to cover CO2 emissions.





Key features

- Physically-backed by carbon emission allowances, with none of the drawbacks of using a futures-backed product
- Tangible, quantifiable and permanent environmental impacts
- Spark Change products can be combined with equities and bonds to manufacture bespoke product ranges for third party distribution



Working with Barclays

Spark Change graduated from the 2019 London Barclays Accelerator programme.

In July 2020, the company closed a £3.5m funding round led by Barclays, and is working with the bank on some unique and innovative Zero Carbon product ideas.

sparkchange.io







The team

Spark Change's leadership team combines 100+ years' experience across ESG, data science, ETFs and algorithmic trading as well as deep domain expertise in designing, executing and monetising low carbon investment strategies.



Dan Barry Chairman



Elliot Waxman CEO



Joff Hamilton-Dick COO and CMO

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"Increased velocity in cash flow can enable the 43,000 small bands that comprise 90% of the music industry to invest in themselves to define and build their niche brands." Willard Ahdritz Founder and Chairman, Kobalt Share this... in 25 / Rise FinTech Insights

Monetising the creative economy

What's driving the change to a more digital, technology-focused approach in media and entertainment? As in some other industries, the answer is dissatisfaction with the traditional way of doing things. Two entrepreneurs in the music industry tell us how they're responding.

For customers, ticketing is opaque and that creates great power to incumbent ticket providers. We accept that, when you buy a concert ticket, you're charged different fees – but for what exactly, and why are they added at the end of the transaction? And how come, if a show is sold out, someone still has tickets for sale – at vastly inflated prices? It's created a really bad experience.

For artists too, an opaque system means that finances are traditionally far from straightforward. The idea that, with five clicks you'd be able to be paid by concert promoters for your gig and see exactly how much you've made, would significantly benefit their lives. The situation is just as bad if not worse with recorded music. Artistic and publishing laws might grant individuals the theoretical right to payments but a complex and bespoke system has been in place for decades that too often ensures the money takes years to appear in a bank account. The lack of transparency in what payments are due means artists can't budget and their banks can't rate them for credit.

Incumbent ticket providers, studios and promoters pull a lot of strings and control the purse, and complexity is an issue. Not surprisingly, the solution for concert goers and artists relies on transparency, simplicity and education.

Kobalt Music - Empowering artists

Kobalt, based in London, has created a centralised platform that allows artists and creators to access their payments, royalties and data through APIs linking directly into global music hubs such as Spotify, Apple and YouTube. Artists use this service to get worldwide, real-time information on transactions that, for example, DICE (see later) has collected for them from payees. This gives artists the transparency and control they seek, and is a far cry from the old days when you might have to approach your bank with a personal guarantee or negotiate an advance with your record label or publisher, which could take three to six months and come at a very high interest rate.

Kobalt is also using algorithms on new music usage data to let artists forecast future earnings, which lets them understand their cash flow and take more informed financial and life decisions.

The alternative data streams are key, and are a core part of our offering: the information provided by our technology allows us to form stronger relationships with artists because it provides the answers that they need to plan their finances and build their brands.

This especially matters for up-and-coming content creators and young artists who need to maintain a critical income threshold to survive, often through financial products like revolving credit or SME loans. Increased velocity in cash flow can enable the 43,000 small bands that comprise 90% of the music industry to invest in themselves to define and build their niche brands. This is also a winwin for fans who benefit from more choices and more music on the shelves.

By defining this basic financial framework through our platform, we are creating the infrastructure for the new economy – for example, new markets and revenue streams that can now begin to monetise social media.

This may not be revolutionary in other areas but it is in the music industry, and we see the use of alternative data sets from music consumption growing. It provides valuable information to artists and other creators, who today are also budding entrepreneurs. And, like any imaginative business owner, they have complex questions about how their product is being consumed by their global customers. Modern artists require marketing tools with new underlying technology that unlocks their digital and media assets, and makes frictionless connections to audiences. We're talking behavioural economics on a big, digital scale.

DICE - Engaging with fans

Concert ticket sales alone represent over \$30 billion a year of revenue and for a typical artist it represents over 80% of their income. There is some correlation between streams and social followers, on the one hand, and concert tickets, on the other, but the investment decision by a fan to pay for a ticket has many more inputs (data points), the principal one being the artist's ability to perform a fantastic show.

At a macro level, people have more access to experts and so-called 'niches' are becoming much more popular now they're global. It's just the same in other areas - if I want to make the best Irish soda bread, I can find the recipe from the best baker online. With music, the impact is especially great and is accelerating. An artist in Sydney can get popular really quickly in Barcelona, say, now that the whole world has access to their songs at the same time.

The quality and supply of live concerts is increasing, and is powering personalised experiences for fans, and insights for artists. DICE acts as a trusted discovery engine for fans and has invested considerably in data science to ensure fans know what is happening in their city. For artists, venues and promoters, DICE provides expertise to maximise the potential of touring without over-exposing artists.



There are huge long term advantages in providing financial transparency and simplicity to the live industry and DICE has helped thousands of artists become profitable by helping them make smarter decisions about touring. DICE has a huge data set and assists with pricing, timing and avoiding conflicts with similar artists. Data science has been at heart of the company since day one.

We anticipate a huge shift in merchandising during 2021 with the growth of on-demand, localised printing and the organised distribution of physical goods created by middle-tier artists and other creators. There's a gap in that market, which parallels the rise of Shopify. This is why DICE is launching a new way for fans to buy merchandise around the world.

To us, Embedded Finance doesn't just mean embedding ticket payments. It enables new scenarios, inspired by gaming, that have accelerated as a result of the pandemic. Since lockdown, DICE has ticketed over 5,000 live streams. Artists have sold virtual and physical goods around the world and created a new form of virtual meet-and-greet, which will continue after COVID-19. As with gamers, music fans don't care what

time zone a gig is in, or even what currency they're using, which is quite fascinating. They just pay. For example, DICE provides multiple currency options for live streams, but fans often choose the best time for them and pay in whatever currency that time zone requires. It makes us wonder what exactly 'currency' will mean in, say, five or 10 years' time. The case for a global currency may be non-traditional but, from our perspective, it seems an obvious next step.



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Machine learning in healthcare

Case study: Seldon supports enterprises with their machine learning (ML) deployments.





The company

Seldon's technology supports the development of machine learning (ML) models at scale. It does this by allowing IT teams to switch to a 'model-as-a-service' (MaaS) paradigm, which uses ML-based decisioning to automate the packaging and containerisation of ML models. This MaaS paradigm enables businesses in every sector to rapidly improve and deploy their ML-powered products.

Seldon also has extensive model management and monitoring abilities at the infrastructure layer, which better protects models from developing unethical biases, adopting systematic errors or succumbing to adversarial attacks.



The proposition

Until recently, the process to adopt a MaaS paradigm has been one of the most time-consuming parts of ML deployment. By automating this step and providing a MaaS solution, Seldon's technology has a profound effect on any organisation that seeks to deploy ML models.

Seldon has also proven beneficial in drug discovery for major pharmaceutical organisations, speeding up the time it takes to deploy models key to making breakthroughs in the research process. Seldon enables users to screen massive numbers of new chemicals to predict their properties, like permeability, solubility or toxicity without having to physically perform the tests in the wet lab. Data scientists and computational chemists can therefore drastically cut down the production process by over half and get essential drugs to market faster.



Benefits



- Reduces lag times, which can often be in the order of months
- Empowers data scientists to increase their productivity, and become less dependent on engineering teams to test, deploy or upgrade their models
- Allows developers to use whatever languages and frameworks they like within their ML models, giving them more freedom to tackle the business problem
- Drives innovation in the internal banking stack at every level of a financial organisation including fraud, Know-Your-Customer procedures, marketing, compliance, finance and customer service



Example

Working with one bank, Seldon reduced the time it took to deploy and update models by several orders of magnitude: down from months to minutes. This allowed the bank's data scientists to be able to test, update and deploy models themselves on-the-fly, both improving the time-to-market and allowing data scientists to iterate freely and improve their models. Altogether, this had significant effects on the quality of products and on the speed-to-market, with Seldon's MaaS allowing the production of a new minimal viable product in under 90 days.



Working with Barclays

Seldon was part of the 2016 London Barclays Accelerator. The same year, they moved into Rise London and signed a deal with Barclaycard to predict credit default and thereby reduce bad debt and enable Barclays to support customers in difficulty sooner.

seldon.io





The founders



Alex Housley Founder & CEO



Clive Cox Founder & CTO

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Using alternative data to rethink financial services for Indian farmers

With the world population reaching nine billion by 2050, the world needs to find more sustainable ways of producing food. Whether it's robots planting and picking crops or machine learning and Al analysing crop performance, emerging technology is playing its part in the agricultural industry.

Startups like FarmGuide are helping to embed intelligence into financial services for the farming community in India by building a 'farming data stack' for both public and private sectors. The data in question is the geographical distribution of farms across the country, interpreted from satellite data and including other information describing the farms in detail. This rich data, backed up with deeplearning algorithms, can be used by farmers, banks, insurance companies and state governments to model a wide-ranging set of outcomes from crop success to insurance risk on a farm-by-farm basis.

This modern approach using new sources of data to predict individual farm outcomes challenges the prevailing view that the financial services industry has of farmers in India. Any agricultural loan for growing crops, even microfinance, is backed by government and also requires insurance, so multiple parties are involved. The situation is made more complex by a lack of data.

Agricultural officers in villages would be ideally placed to gather the required information about farms and farmers, but in a country with 300 million smallholdings, on average less than one hectare each in size, it isn't feasible. Because the traditional data sources are scarce and unreliable, and also because government loans aren't very profitable and are manually intensive. Indian banks have never considered farming loans as a strategic proposition. They are merely a compulsory product, and a burden to manage.

The development and use of a countrywide farming data stack is changing that perception. FarmGuide's data-driven technology lets:

- Insurance companies assess individual farms' risk rigorously
- Banks check risks quickly before offering loans more swiftly
- Government monitor their subsidies on the loans across the country

Farming loans are just one example. At FarmGuide, we believe the range of AgriTech scenarios is as great as the data is rich. With 160 million datapoints from satellite imagery, you can create a map that distinguishes farm boundaries. Other imagery from the visible, infrared and microwave spectra lets you separate water from land, distinguish different types of vegetation and determine local soil and climatic variation. Armed with this powerful data and the algorithms to process it, stakeholders can fully digitise their decision-making and base it on real data at scale. They can also develop a range of new insights.

Take the 140 million Indian farmers behind the satellite data. Many are underbanked because they're subsistence farmers that traditional credit ratings algorithms. based on outdated information and old ways of looking at the world, often overlook. But what if we considered them as entrepreneurs? Like any other business person, they understand all too well the concepts of cash flow, return-on-investment and the bottom line. So why not profile the farmers as small business owners and get insights into a huge and completely new segment, one that deserves new, targeted financial products? That wouldn't just benefit the financial services industry -

the ratings agencies in particular – it would also increase financial inclusion across the massive farming sector in India. Those ratings have, for far too long, been accepted as the norm by the industry. In fact, they're inaccurate and exclude millions of farmers. With the new satellite data sets and modern data science techniques that error can be corrected, and ratings agencies can now develop a better, more representative approach to credit scoring and, in doing so, they can improve inclusion within a large part of society.

These examples demonstrate how, like other industries at the intersections of FinTech, AgriTech is benefitting from new types of data. Satellite imagery is opening the door to new products, segments, processes and ways of looking at the world of farming, and is shaping innovation among the industry players in India.

For more information on how Barclays is supporting AgriTech businesses, see https://labs.uk.barclays/agritech.

"FarmGuide is building a new data stack to support 140m Indian farmers."

Ankit Gupta, Co-Founder, Farmguide

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Ankit Gupta Co-Founder. FarmGuide

▼ farmquide.in

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Rise ecosystem insights





Source

1: Innovate Finance via PitchBook. Q4 data, not reviewed or approved by PitchBook analysts, and not limited to Rise ecosystem companies. 2: Q4 2020 data



From our Rise sites

Rise London

As 2020 drew to a close and we reflect on the challenges we have all had to navigate last year, it may seem difficult to pick out any positives. But remarkably, individuals, families and retailers adapted practically overnight, in part through the power of technology. London FinTechs adapted their business offerings in light of the pandemic. Rise London member Funding Xchange partnered with Experian to speed up CBILS lending applications to help smaller businesses get access to much needed funding. And Starling launched its Connected card, allowing customers to grant trusted people access to a pot of money that can be used to buy food and other essential items on their behalf.

We at Rise London also had to pivot to a virtual first model, in order to continue providing the ecosystem with business development opportunities. And celebrating Rise's fifth anniversary, of course!

As Brexit is now upon us, the UK will lose the right to 'passport' financial services into other member countries. Until now, UK FinTechs operating in the EU have used free-market regulations to do so. Some European FinTechs, like German-based challenger bank N26, have announced that they will cease operations in the UK from April, leaving many of their loyal customers disappointed.

This will, we're sure, evoke a shift in strategy from many of our UK FinTechs, who will favour growth in non-EU markets like Asia and North America.

But it's reassuring that London is well placed to continue leading in both finance and technology, and remains one of the leading global FinTech hubs, having been placed second in the Findexable Global FinTech Index's city ranking at the end of last year.

With COVID-19 still at large, there are a lot of question marks over what this year has in store. But one of our strengths in this industry is our ability to innovate and adapt to meet challenges and grab new opportunities. The pandemic will continue to accelerate digitalisation and FinTech will increasingly be applied and adopted to drive inclusivity, better access, more choice and greater competition. FinTechs must focus their attention on achievable milestones, meaningful partnerships and agility. We have every confidence they will, and 2021 will be another great year for FinTech development.



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Rise Mumbai

Like all other regions, India too was affected by the pandemic. Life and economy in parts had come to a standstill for some time. However, the ambitious "Digital India" and "Cashless India" journey that India had embarked upon few years back, have acted as tailwinds in its recovery. Most Indian FinTechs have managed to leverage this crisis as an opportunity to push forward their innovative solutions.

The pandemic provided the much-needed impetus to digital financial services. Lending and payment FinTechs took a hit initially with many shutting shop or reducing. However, the pandemic eventually was instrumental in pulling customers and small merchants out of inertia and prodding them towards digital financial solutions. Case in point - Unified Payments Interface (UPI), an instant real-time payment system facilitating inter-bank transactions, experienced a 20% decline in transaction count between March and April 2020, before reviving and hitting new records, wherein it took less than a year to reach the 2 billion transactions per month as compared to the three years that it took to reach its first billion transactions per month^{1,2}. Digitalisation of the traditionally offline channels such as grocery stores and growth of new online segments such as EdTech and over-the-top (OTT) media services played a crucial role³.

With changing customer and client behaviour, traditional incumbents – banks and insurance companies too have promptly responded by accelerating efforts to build digital infrastructure capabilities in partnership with FinTechs.

For example, according to a recent study by Matrix Partners India and McKinsey, 90% of Indian neo-banks surveyed have said banks are more open to partnerships⁴. As a result, investors too, who were initially wary are betting heavily on this trend, with Indian FinTechs attracting \$1.7 billion investments in 1H20, almost double the investment in 1H19⁵.

2021 promises to be a year where FinTechs will start achieving the scale that they have always been hoping and planning for. Most FinTech leaders in the McKinsey study expect volume recovery in the next 3-6 months and also have plans to launch new products and capabilities.



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Rise New York

There is a long road ahead in 2021, but for many of us there is light at the end of the tunnel in the shape of a new normal. Digitalisation will be central to our new ways of working, and it's this that has so rapidly accelerated the growth and impact of our FinTech that it's now seen as the new normal by 73% of Americans¹.

Some of the big headlines last year shone a spotlight on the trends and developments to watch in 2021 and beyond. News such as Visa's attempted acquisition of Plaid brought attention to Open Banking in the US. APIs are the new building blocks of the financial services industry, and the impact of digitalisation has accelerated this next wave. By unbundling the monolithic financial services offering and rebuilding it with agility, specialisation and customers in mind, FinTech is creating a new lexicon for the infrastructure of financial services and its benefits to consumers.

Last year also marked the growth of public-private partnerships in the United States. FinTech companies such as PayPal, Kabbage and Square partnered with the US Government to participate in the Paycheck Protection Program and distribute relief funds. Rise has published several case studies that demonstrate how some of our members have been able to pivot their businesses to support the pandemic relief². While these partnerships were previously limited to infrastructure projects such as pay roads, there is a newfound optimism about the future of alternative forms of finance (including Embedded Finance, this edition's focus) and a more digitalised government, whether through advanced lending models or long-awaited digital currencies.

These efforts are paving the way for financial inclusion and impact. The idea that products need to be more customer-centric has changed how companies perceive their operating models, hiring practices and mission statements. Alongside social movements that swept across the US and corporate responses ranging from sustainability to diversity, we are optimistic these efforts will begin to produce tangible results in 2021.

Looking further into this year, investors are optimistic about liquidity events. New vehicles, such as Special Purpose Acquisition Companies (SPACs) and IPOs, as well as rumours of big mergers and acquisitions with even bigger valuations - are all of interest to the FinTech community. With the cost of capital low, money continues to flow into tech. And, as Embedded Finance begins to feature more heavily in our world, we begin to see how FinTech can really impact the wider tech sector. It will be a year of growth for FinTech as a whole and at Rise New York, we're excited by the opportunities for startups, and to be part of their growth at all stages of their lifecycle. We welcome back the community to the #HomeofFinTech.



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1. Plaid

2. Rise, created by Barclays

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^{1.} Economictimes.com

^{2.} ET BFSI

^{3, 4.} Matrix Partners India

^{5.} KPMG

Rise FinTech Company of the Year

And the winner is...



Augmenting human intelligence through simulation

simudyne.com

It was with great pleasure that, in November last year, we announced Simudyne as the winner of the 2020 Rise FinTech Company of the Year Award.

The Award is a major accolade in the FinTech industry, and is part of the annual Barclays Entrepreneur Awards, which highlight and recognise entrepreneurs who are changing their industries, the economy and society in unique, original and positive ways. The winner of the Rise category has been assessed by a panel of judges focusing on identifying the company who is:

- Leading the way as a FinTech disruptor
- Demonstrating value and impact in the industry
- Having a track record of growth

Previous winners of the Rise FinTech Company of the Year award include Chainalysis (2019), Shieldpay (2018) and Trunomi (2017). By building more accurate virtual models, Simudyne helps banks make better decisions, and allows us all to reframe how we see the world. The company's software creates predictive simulations for things like stress testing and risk assessments.

Reflecting on his company's experience, Justin Lyon, Founder and CEO of Simudyne, acknowledges that it can be an "arduous journey to get an enterprise platform adopted by a bank" if you're in the B2B FinTech space. Establishing relationships top-down and bottom-up throughout the organisation is key, as is the challenge of pitching new technologies to the finance sector when it's reacting to something as traumatic as the COVID-19.

Massive congratulations from Rise to the entire Simudyne team!



The Barclays Entrepreneur Awards ceremony was hosted virtually by Reggie Yates this year:

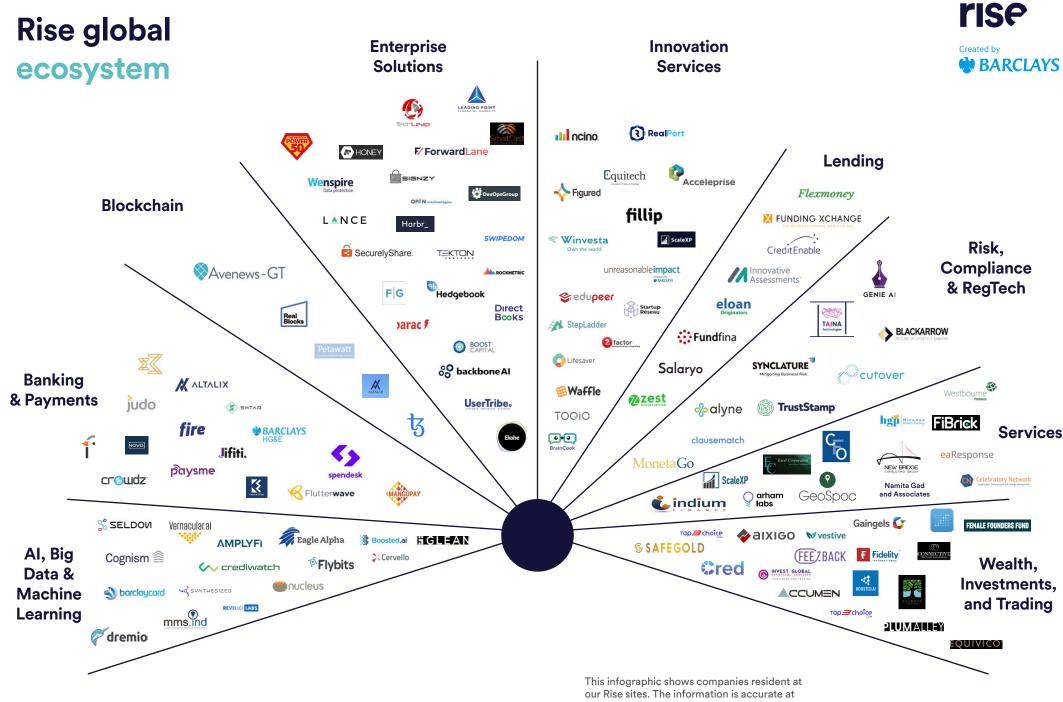


Congratulations also go to Flybits, who received the 'Highly Commended' recognition in the Rise Award category. Flybits delivers data-driven, personalised recommendations and advice inside mobile apps or websites to inspire and delight customers.

flybits.com



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Notes



About Rise, created by Barclays

Rise, created by Barclays, is a global community of the world's top innovators working together to create the future of financial services. With a diverse network of FinTech talent, one of the world's leading accelerator programmes and workspaces based in the main FinTech hubs of the world, Rise is an exclusive place for FinTech companies to connect, create and scale together with Barclays.

To join our community, or keep in touch with the latest from Rise, visit or follow us on:

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