

Innovation in Investment Management:

The current technological landscape, how to
transform and unlock the opportunity

March 2022





About IA Engine

Engine is a wholly owned subsidiary of the Investment Association supporting the adoption of technology within investment management, for the benefit and changing needs of consumers. It is a buy-side focused technology hub and accelerator providing connectivity, access and education both nationally and internationally through focused programmes and outreach.

Launched in October 2018 Engine remains the only buy-side focused hub of its kind globally and actively works with over 150 FinTech solution providers and the investment management sector.

About Expand Research / Boston Consulting Group

Expand, a Boston Consulting Group company, enables the development, validation and execution of better operational strategies. We empower organisations to grow, compete and operate with increased effectiveness. Expand provides independent, impartial and anonymous benchmarks of firms' business, operations and technology performance relative to peers.

Foreword by The IA Engine

The Investment Association and Engine are delighted to have partnered with Expand Research and Boston Consulting Group (BCG) on this report looking at innovation in investment management.

The last couple of years have seen the global economy focus on tech and digitisation in order to meet shifting client requirements and business needs. We are proud the UK remains one of the largest and most diverse centres of investment management in the world, second only to the US with total UK assets under management (AUM) reaching £9.4 trillion by the end of 2020, an impressive increase of 11% year-on-year.

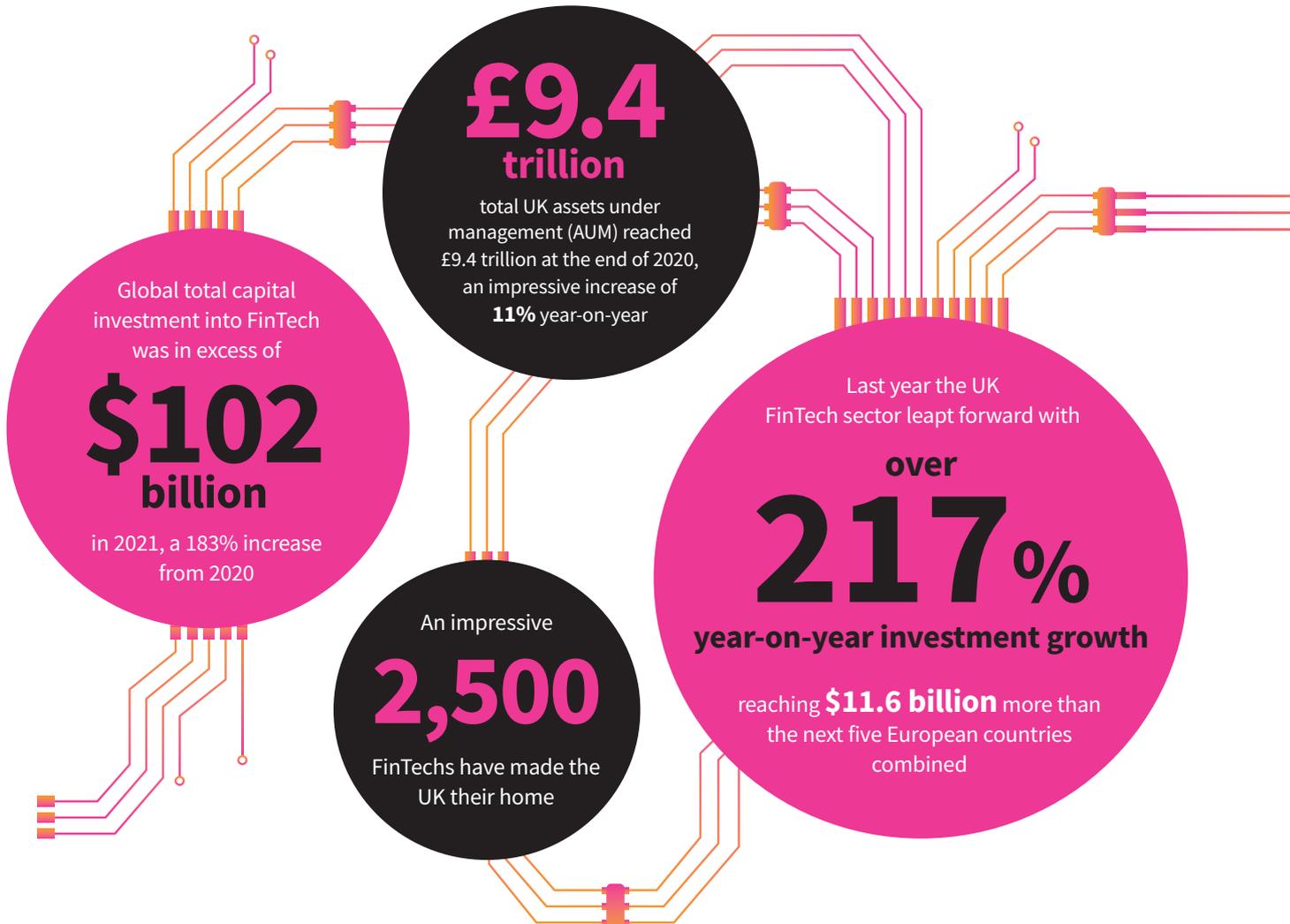
The UK is a country of entrepreneurs, innovators and implementers. The UK's position as a global leader in FinTech is a great strength. Global total capital investment into FinTech was in excess of \$102 billion in 2021, a 183% increase from 2020 and indeed last year the UK

FinTech sector leapt forward with over 217% year-on-year investment growth reaching \$11.6 billion more than the next five European countries combined. There is, however, no room for complacency.

An impressive 2,500 FinTechs have made the UK their home with a growing number seeing investment management as an opportunity to redefine existing processes and business models, benefiting from access to a global market, global talent and global connectivity.

We hope this report will provide a useful and accessible overview of the dynamic innovation landscape, areas of focus and priorities as well as key requirements to unlock the transformative opportunities within investment management.

For more information on the work of Engine and how to get involved please visit theiaengine.com





Foreword by Expand Research

Innovation has become increasingly important within investment management throughout the last decade. This has been driven by a need to deliver the cost efficiency and competitive advantage required to combat margin pressures.

While the financial services sector is not short of innovators, investment managers have historically been conservative in their approach and slow to evolve due to the weight of legacy infrastructure, culture, and processes.

In recent years, more frequent examples of successful FinTech collaboration and deployment within investment managers has led to an increased openness to change. While many in the industry remain risk-averse, more firms have become willing to cooperate with smaller FinTechs, mobilise innovation hubs, and drive new capabilities through third party expertise. The landscape has changed from simple buy versus build to much broader strategic partnerships with mutual benefits that transcend transactional relationships.

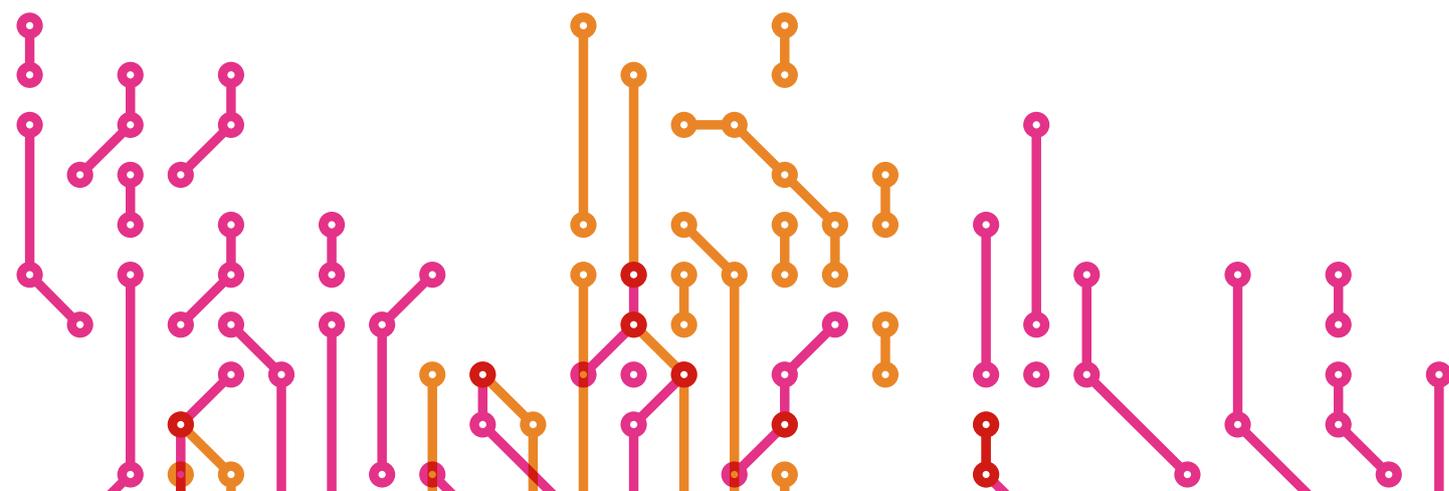
The benefits for firms who engage more openly with the FinTech community extend beyond simply adding new platforms and tools. The expertise of FinTechs can often engender a shared learning environment for both vendor and client, passing on valuable skills and knowledge in areas such as artificial intelligence, agile, data science and advanced analytics. These are skillsets which are difficult and costly to recruit for within investment management.

FinTechs can also provide commercial opportunities for investment managers who wish to take a stake in their operations. The mechanics of these commercial opportunities can be varied, ranging from cooperation on a platform's development within the technology stack to full acquisition.

Despite the apparent benefits, barriers to entry for smaller FinTechs still remain significant. Among the most challenging of these are the obstacles put in place by procurement, InfoSec and risk functions. The lead time for closing commercial deals is long for small firms trying to meet cash flow requirements, and the provision of information for purposes of due diligence can be onerous and time consuming.

Other challenges for FinTechs include grappling with their client's legacy infrastructure along with extensively siloed data, both structured and unstructured, as well as effectively publicising their products in a crowded marketplace.

These obstacles are far from insurmountable, and so the inexorable rise of FinTechs continued at pace in 2021, a community which includes an expanding catalogue of well-known subcategories (e.g. RegTech, WealthTech). The backdrop of a continuing global pandemic has, in places, sharpened the focus of investment managers when it comes to the importance of a tech-focused and digitised operating model.



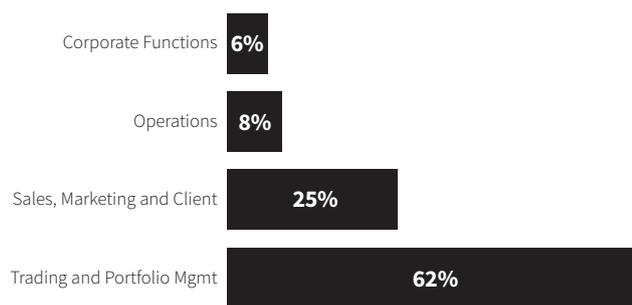
The Innovation Landscape in Investment Management

Global

The United States has dominated the FinTech landscape in Investment Management over the last two decades. The quantity of funding for US-based start-ups has been around four times greater than all other regions combined. However, major European hubs such as London, Berlin and Paris are now growing at a faster rate than their American counterparts. Most Investment Management FinTechs focus their efforts into value-add areas such as Trading and Client Management, as firms have already spent many years optimising their commoditised operations and it is more straight forward to prove return on investment in these more front-office areas.

The Asia-Pacific region is also a key driver of FinTech activity, with a combined community of over 5,000 companies. Key hubs in this region such as Singapore and Hong Kong are being boosted by a relatively relaxed regulatory environment. This is paired with initiatives such as Singapore’s Smart Nation strategy which are helping to boost the presence of FinTechs across all service segments.

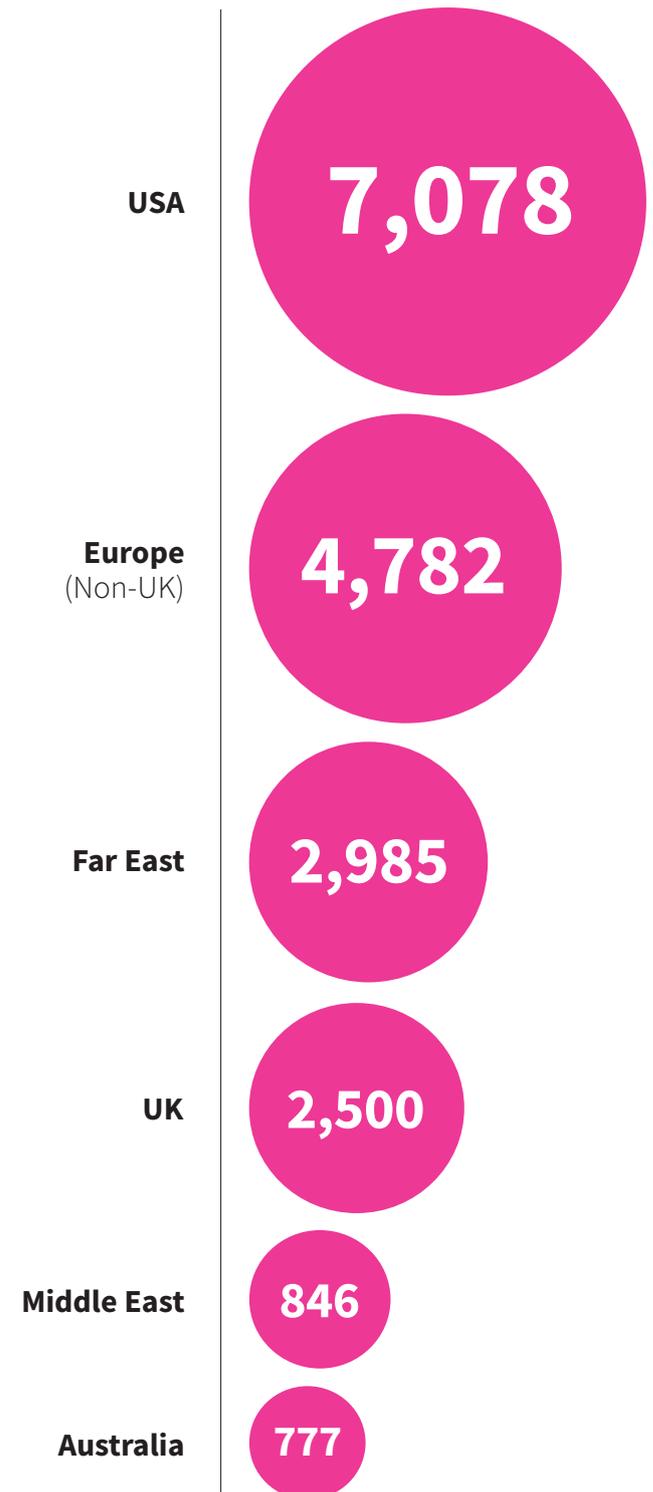
Illustration 1 % of global FinTechs focused into each functional area



~80%
of equity funding for Investment Management FinTechs comes from the USA

only 6%
of global FinTechs specialise only in Institutional Investment Management

Number of FinTechs (all Financial Services Segments) by Key IA Global Partner Regions

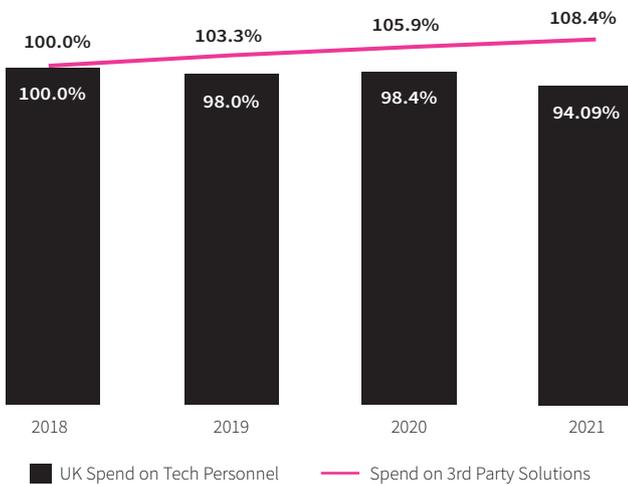


United Kingdom

The United Kingdom continues to host the largest FinTech community in Europe – representing approximately a third of all European FinTechs. Investment Management and Trading FinTechs make up 26% of the entire ecosystem, trailing only behind Payment FinTechs in representation.

As a high-cost onshore hub, the budget allocated to UK-based technology personnel internally for investment managers has been slowly decreasing, whereas the budget allocated to third-party solutions follows the global trend of slow increase. This is driven by competitiveness on cost as well as the value-add benefits that specialist solutions companies can provide.

Illustration 2 IM Spend on Tech personnel and 3rd party solutions (indexed to 2018)



There are an estimated
~2,500
 FinTechs currently
 operating in the UK



~£9.4Tn
 of funds are managed by UK
 investment managers¹

The UK FinTech Environment

While the UK has historically been a friendly environment for FinTechs, it cannot afford to stand still if it wants to continue on a high growth trajectory. In 2021, the government's Kalifa Review of UK FinTech² recommended five areas of focus to keep the UK at the forefront of this technological revolution. These recommendations included policy and regulation support, promotion of financial technology skills, investment and the unlocking of institutional capital, international collaboration, and coordination of hubs at the national level.

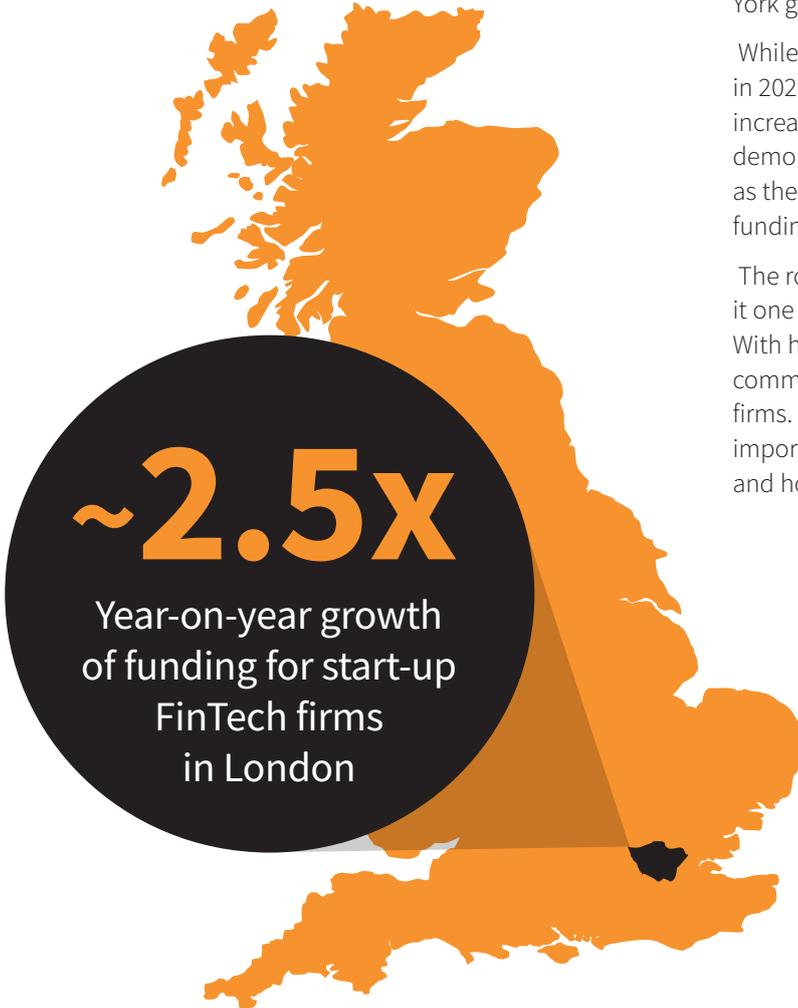
London

London's continued importance in global financial services lends itself to a thriving FinTech community. In terms of recruiting, London has one of the richest and most diverse talent pools in the world, allowing start-ups to hand-pick the best of the best to accelerate their ventures. Through this fostering of an innovation culture, many now view London as a challenger to traditional FinTech hubs like Silicon Valley³.

Investment into FinTechs within London has continued to accelerate from previous years, growing by 2.5 times from USD 4.7Bn to USD 11.7Bn. Overall London ranks fourth globally for investment raised in technology start-ups, with only the major US hubs of Silicon Valley, Boston and New York generating more funding⁴.

While this trend of increased investment was seen globally in 2021, London outpaced the average, driven by an increased volume of USD 100m+ funding rounds. This demonstrates the maturity of London's FinTech landscape as the pipeline of firms moving through Series A, B, and C funding rounds strengthens.

The robustness of the London FinTech landscape makes it one of the most competitive regions in the world. With hundreds of start-ups vying for contracts within the community of London-based investment management firms. This competitiveness means that it is increasingly important for FinTechs to 'know their customer' in detail and hone their unique selling points in order to succeed.



~2.5x

Year-on-year growth
of funding for start-up
FinTech firms
in London

Regional

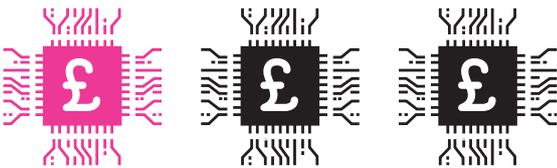
While London is the largest FinTech hub in the UK, there has been significant movement towards decentralisation of innovation to the many established regional hubs⁵ including the North-West, the West Midlands and Scotland but also emerging hubs in Cardiff, Bristol, Cambridge, Northern Ireland and the North-East. Some of the highlights of these regional communities are listed below:

North-West

Manchester and its surrounds host just over 100 FinTechs, accounting for 8.2% of UK FinTech gross value added. It is also a hub for private equity, with Europe's highest concentration of PE firms outside of London. Private equity assets are a key segment in investment management but continues to be very manual, complex, and underserved by technology solutions.

West Midlands

Birmingham and other major city hubs in the West Midlands host 122 FinTech firms of which 60% are established financial services firms. It is a student hotbed, with 40% of the population comprising young people under 25. Its proximity to London is an asset though it is also home to several other large financial institutions including HSBC UK and the recent addition of Goldman Sachs technology hub⁶. It is home to the cross-sector partnership hub SuperTech WM, where advances are being made in areas such as PropTech and No-Code development, as well as the IA's own Engine Room, a FinTech hub and workspace for investment management-focused FinTechs located at Wesleyan's headquarters in the centre of Birmingham.



1 in 3

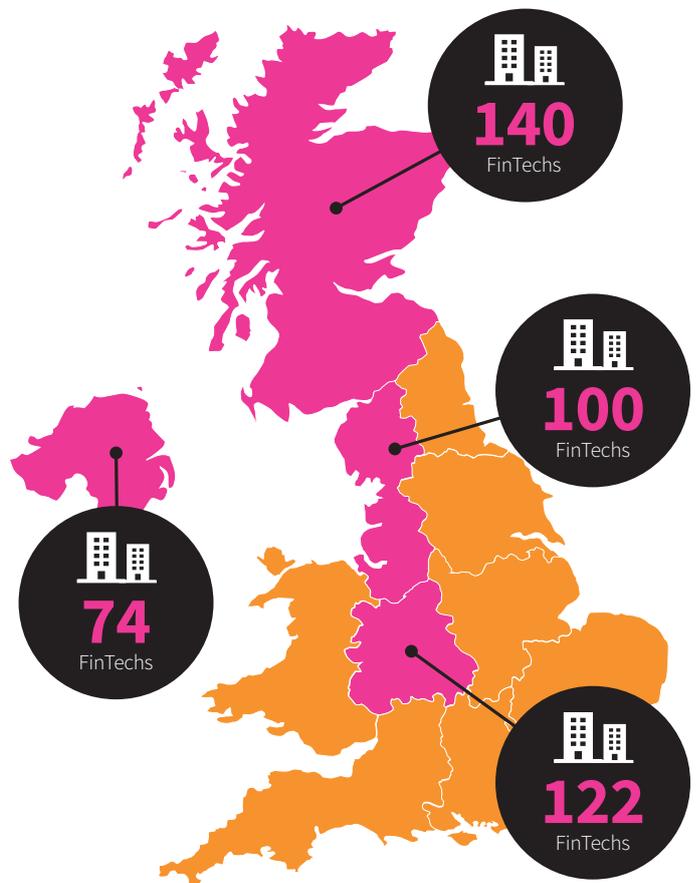
The proportion of FinTechs based outside of London

Northern Ireland

Recent developments in UK politics may make Northern Ireland more advantageously positioned given its direct border with the EU. It is home to 74 FinTechs, currently employing ~7,000 people. 26% of Belfast's job vacancies are in the technology sector and its strength lies in RegTech, compliance and cybersecurity.

Scotland

Scotland is one of the largest FinTech regions outside of London, hosting over 140 FinTechs⁷. Again, it benefits from proximity to a large finance community, as many international financial institutions have either large regional technology branches in cities such as Edinburgh or Glasgow, with some being headquartered there.



Innovation in Investment Management – IA Engine

Engine (previously Velocity) launched in October 2018 with the mission ‘To fuel the adoption of technology within investment management, for the benefit and changing needs of consumers’. Since its inception Engine’s unique approach focusing purely on buy-side innovation has created significant traction and publicity for FinTech solution providers within the sector as well as highlighting the transformative opportunities to improve client outcomes.

Engine has overseen four Innovator Programmes with 25 firms benefitting from the focused support and mentoring of the Engine Advisory Panel – over 28 senior industry practitioners from investment management firms provide unparalleled access and engagement. This is in addition to the extensive industry outreach and amplification opportunities afforded to the 150+ FinTech members: they benefit from initiatives that educate and connect such as TechTalks, TechSprints and Tech TuneUps. This is in addition to initiatives such as SPARKS (for pre seed start-ups); and the Global Partners Programme (connecting and collaborating with key financial centres for international FinTech engagement.) FinTechs also benefit from access to a purpose built co-working space in Birmingham and international engagement opportunities through governmental and sector relationships as well as amplification through a bespoke solution directory providing search capability on value chain positioning, asset class and other key criteria.

Work is ongoing to develop best practice for FinTech engagement and facilitate improved onboarding through initiatives and support by the Engine Advisory Panel (Best Practice Paper) and other industry programmes such as Tech Nations FinTech Pledge. Clear identification of the problem / use case is key to the development and identification of solutions, and Engine works hard to facilitate and communicate requirements for both sides.

Success has been extensive with firms highlighting significant increase in profile, traction and revenues:

‘The IA Engine programme is an example to follow and should be replicated by every professional sector.’

‘We easily secured six new pilots with firms whilst on the programme’

‘Our participation in the cohort has generated over £1m per year of new annual revenue that simply would not have been accessible without the support of the Engine and its panel’

‘Engine had a positive impact on our top line, raised our profile, gave us access to individuals across the industry, and allowed us to be incredibly close to policy and regulatory industry discussions’



150+
FinTechs



>30
Events and webinars



25
Innovators



10
Global Partners



28
Engine Advisory Panel members





Innovation Focuses and Priorities

Budget Trends Overview

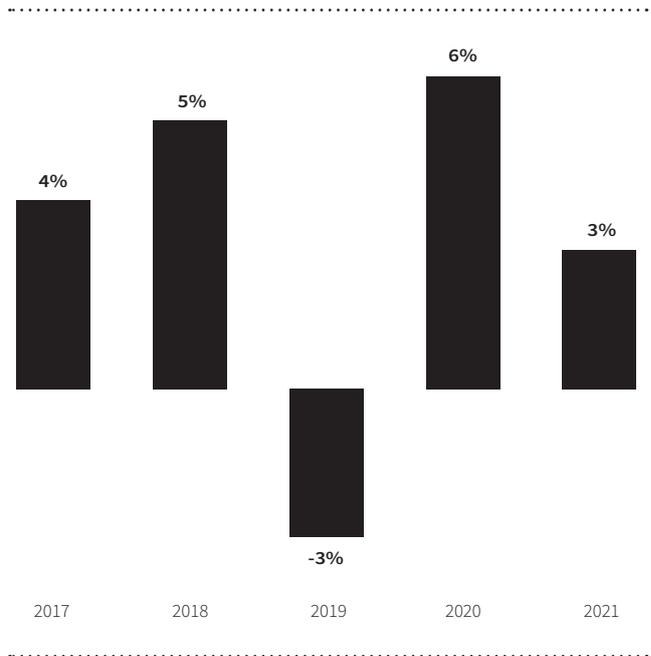
Over the last five years, investment into technology development at investment managers has generally increased except for 2019 (see illustration 3). This is indicative of a broad consensus amongst the community that consistent investment in technology solutions is required to both remediate legacy architecture and maintain competitive advantage.

Even more important than the presence of continuous investment is where those funds are directed. The decision between investing to remediate and investing to add new capability is often a difficult balancing act to manage for Chief Technology Officers.

Firms who are further behind are spending only 5-20% of their development budgets on new capability versus up to 50% for the leading firms. This 'value-add component' has remained roughly flat over time, whereas regulatory pressures and increasing complexity have escalated the proportion of 'mandatory' change. Not all of this is directly linked to specific regulation but often fears of future non-compliance or the need for cost prevention. As a result, change budgets are predominantly spent on simplification, automation, tool and platform replacement and smaller systems upgrades rather than new capabilities.

The prevalence of increasing investment shows that budgets are available for adding new solutions and partnering with firms in the FinTech space.

Illustration 3 % Change in Technology Development Spend Per Year (2017-21)



~50%

of technology development budget allocated to new capabilities at leading investment management firms

Customer Journey

Technology solutions in Client Relationship Management (CRM) and sales are highly desirable for investment managers. Business cases are easier to build for systems that have a direct impact on revenue, and customer journey software is designed with this in mind.

Despite this business value, the proportion of budget dedicated to this space for third-party applications is small. This is due to the propensity for investment managers to attempt to build their own proprietary solutions or overtly customise off-the-shelf products. Investment managers are driven by the need to ensure value-add as well as consider sensitivities around exchange of client data with third parties.

FinTechs with more advanced service offerings will play an important role as investment managers become more open to working with external vendors in making the most of their client data.

A particular trend that has been unfolding over recent years is the utilisation of internal fund specialists in direct client communications. The sophisticated fund buyer now wants to understand the macroeconomic factors impacting their portfolios, and marketing teams have become better at leveraging specialist expertise in their communications.

This type of trend plays into the hands of specialist CRM FinTechs whose solutions tie together information and data from multiple internal sources to ensure client journeys and communications are tailored for maximum value.



The pandemic has expedited the way our customers interact with their clients. No longer is it a case of periodic face-to-face meetings where you'd go through a longer form presentation. It is now about providing continuous value, through quick and snappy relevant insights. And to do this, they need sales tools to instantly put these data-driven insights in their sales team's hands.

**Patrick Murphy, Founder of XALT
a PureGroup application**



~5-10%

of third-party application spend
at an average investment manager
deployed into sales

Back-end Infrastructure

Investment managers have been honing their technology and data architecture throughout the last decade.

In recent times the focus has switched from servers and physical assets to cloud and data enablement. Above all, firms across investment management are striving to develop a golden source for data across their organisation. In 2021 firms placed data management and cloud deployment second and third respectively in their list of strategic priorities for technology.

While many have embarked on trying to do this through the construction of complex and internally built systems, the quality of results is mixed and the cost of such an endeavour can be onerous both in terms of time and capital.

Many FinTechs offer expertise in this space that can be leveraged out-of-the-box. While some investment managers remain apprehensive and risk-averse about allowing third parties to construct and maintain their data processes, the benefits of working with vendors lies in their specialism, agility, and focus on guaranteeing a well-maintained and cutting-edge service.

Along with these more foundational activities, the pandemic has focused firms minds on the need for more digital-ready experiences both for internals (advisers, portfolio managers) and clients. 70-80% of all Advanced Analytics and AI use cases are found in front office areas where they are driving more targeted client experiences and supporting trading teams in the generation of alpha.

Illustration 4 Technology investment priorities in 2021

Rank	Technology investments 2021	Trend
1	Digital experience	Rank improved on 2020
2	Data management / governance	Rank same as 2020
3	Cloud	Rank lower than 2020
4	Advanced analytics and AI	Rank improved on 2020

Key:

Rank same as 2020 Rank improved on 2020 Rank lower than 2020



The question is not ‘can’ investment managers build their own data management systems, but rather ‘should’ they. Especially given the benefits that FinTechs can provide in terms of time, expense, and expertise.

Simon Swords, Founder and CEO of Fundipedia



RegTech and Automation

For the second year running, investment managers ranked automation and robotics as their most important strategic priority within operational areas. Of all business areas of innovation, this is also one of the highest spend categories outside of improving data analytics tools in the front office.

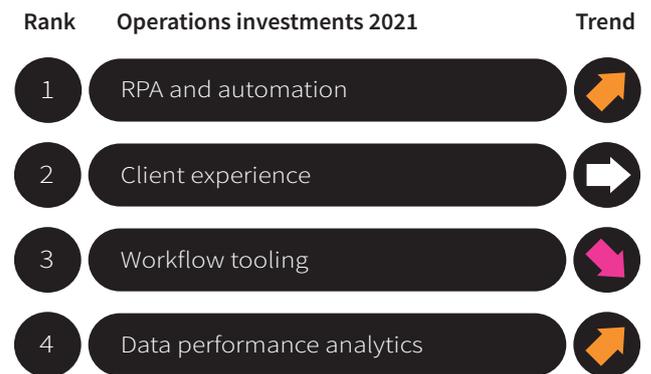
This drive for greater automation is a result of consistent margin pressure and the need for operations to continuously do more with less. In practice this means scaling operations effectively as the business scales.

One major part of this drive for automation is to better enable firms to respond to regulatory requirements. RegTechs therefore have stepped into the fold to facilitate the enhancement of compliance and supervision.

Solutions here are relatively low in number given firms are heavily reliant on their Order Management Systems to do validation and so bespoke layers are often built on top of this existing architecture rather than making use of other third-party solutions.

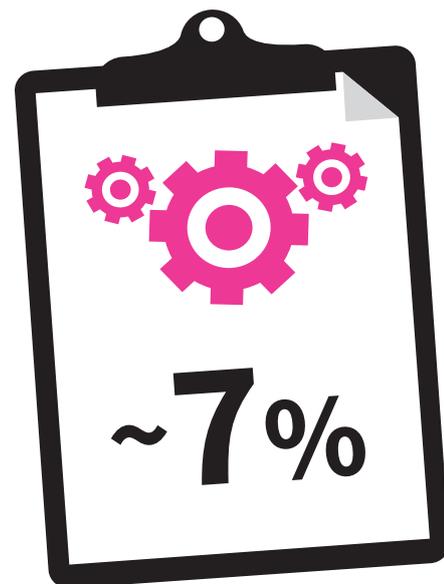
Compliance processes can therefore be fragmented and complex, requiring significant resource and time investment to rationalise. RegTechs can significantly automate areas such as pre-trade validation and investment guidelines but only if firms are able to allocate their focus.

Illustration 5 Operations investment priorities in 2021



Key:

→ Rank same as 2020
 ➔ Rank improved on 2020
 ➔ Rank lower than 2020



of UK-based FinTechs focused on RegTech solutions

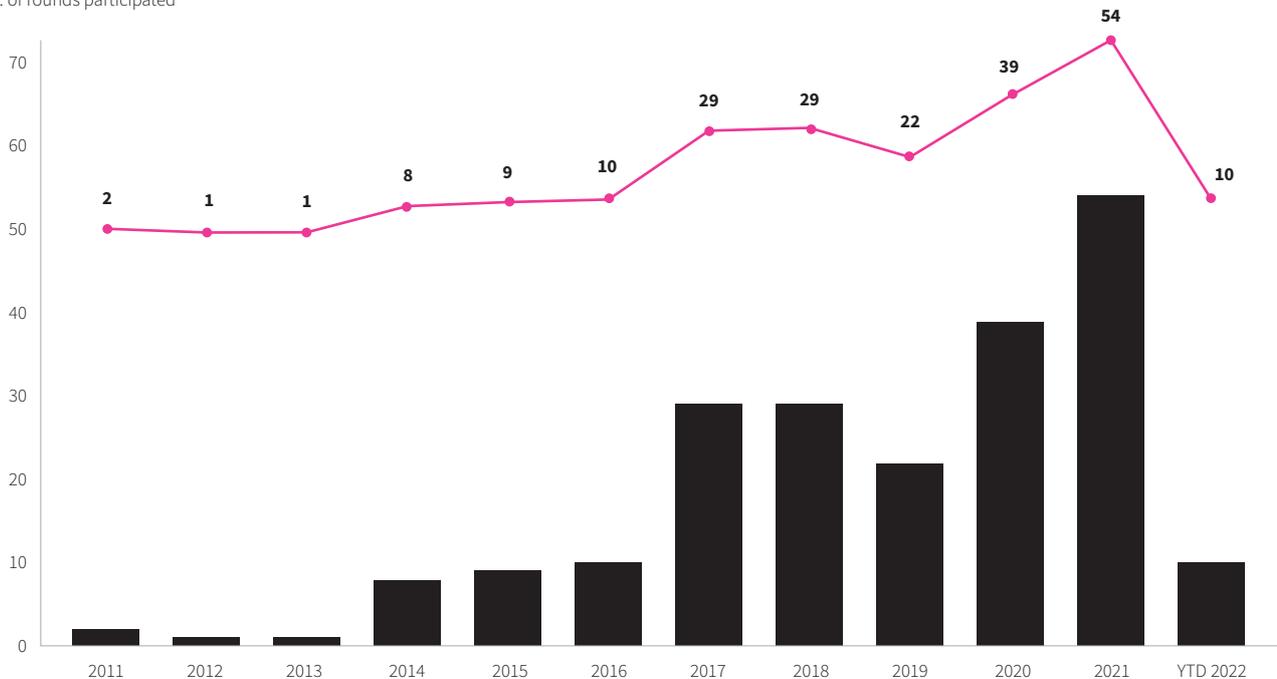


The Investibility of FinTechs as an Asset Class

Investment into FinTechs by investment managers has become increasingly prominent in recent years, with 2021 seeing a record number of funding rounds in which investment managers participated. These funding rounds totalled USD 4.5Bn and covered FinTechs with capabilities across payments, financial infrastructure, and lending.

This type of investment presents new opportunities for collaborations, investment managers who take a stake in the FinTechs they work with internally have a greater motivation to ensure that these solutions develop to become competitive offerings in the broader market. This can lead to either high-growth returns, or even the possibility of future acquisition into the investment manager.

No. of rounds participated



Commercialisation of Technology Stacks at Investment Managers

Another trend that further took hold in 2021 was a shift towards buy-side firms not only acting as investment managers but also service providers to other (often smaller) fund managers. This idea on its own is not something new, as many of the world's largest third-party administrators (TPAs) are part of groups that include investment management arms which can leverage those TPA services and platforms.

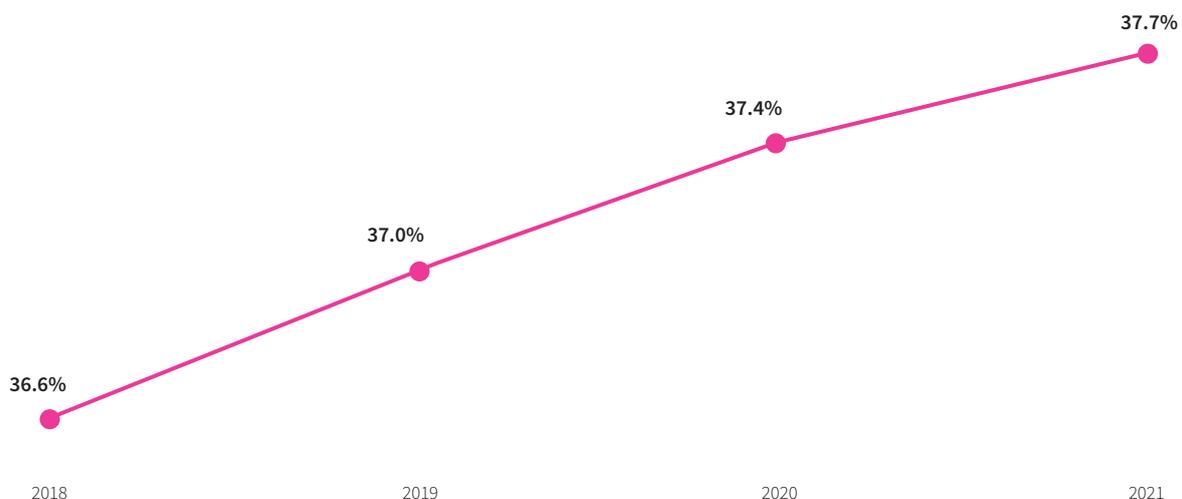
More medium-to-large investment managers are now seeing the benefit of also acting as service providers, not solely based on revenue but also on client retention. Given margin pressures and competition on rates, firms are having to find new ways to attract and retain clients. By offering a more customised suite of services, an investment manager can fulfil more needs than simple transactional fund management, these services could be both

operational (e.g. compliance processes) or technological (e.g. risk analytics capability). This type of strategic partnership allows for more integration with clients, promoting a closer working relationship and a mutually beneficial partnership.

Willingness to outsource platforms and systems has slowly been increasing as evidenced by the slow rise of outsourcing spend as a percentage of operations spend (see illustration 6)

For FinTechs this signals new competition. It means that investment managers no longer face a binary choice of buy versus build, but instead a choice between buying from a software specialist, buying from an investment specialist, or building internally. The pull of working with established brands due to higher levels of trust and reputation adds yet more obstacles for start-ups.

Illustration 6 % of total operations spend allocated to outsourcing agreements



Case Study:

Fidelity International

Fidelity International is taking a flexible approach to both service provision and engagement with FinTechs. By doing this, they are engendering deeper working relationships with both clients and service providers⁸.

Flexible service provision

Fidelity is reviewing ways to improve and broaden their service provision to other investment managers. This strategy covers both operational and technology services and follows a simple decision tree: Does Fidelity have specialist expertise or a specialist platform that clients may benefit from? Are there other solutions in the market providing similar solutions? If not, then can the Fidelity service be commercialised? These services can be broad in nature, from model portfolios and ESG ratings on assets to fund analysis and oversight or even proprietary software solutions. Though it is often complex to transform an internal process into a saleable product, this open-ended approach to service provision has several benefits:

- New products and services, providing an additional margin-driving revenue stream
- Improved client integration leading to better client outcomes and retention
- Capability development teams are being challenged to generate internal processes to a standard that could be externalised in future.

The FinTech sandbox environment

Fidelity is also working more closely with FinTechs, as demonstrated by their FinTech pledge. This is an active attempt to boost innovation in the industry by:

- Providing guidance and clarity to technology firms on procurement and onboarding processes
- Providing a space for initial assessments and proof of concepts to develop before full scale is implemented
- Providing a consistent point of contact and feedback process throughout.

A prominent example of Fidelity's support for FinTechs is their recent investment into Finbourne. Fidelity is utilizing technology from Finbourne to drive its data strategy in a deal that sees the asset manager make a strategic investment in the start-up. The firm's Lusid platform is a cloud-native, API-centric architecture, specialising in simplifying complex data hierarchies.

For Fidelity, this is as an investment both from a portfolio return perspective but also as a strategic internal partner to the Technology division. Alokik Advani, Managing Partner at Fidelity International Strategic Venture talks about the archaic, legacy infrastructure that most investment managers grapple with, which is often a combination of in-house systems built on top of legacy third party applications. Platforms like Finbourne can support in bridging between these legacy systems, specialising in interoperability.

“... organizations are running with a lot of technical debt, and have been using a bunch of plaster, sticky tape and Band-Aids to solve some of that to get ready for the next generation.”

Alokik Advani, MP at Fidelity International Strategic Ventures talking to WatersTechnology⁹.

The Future for FinTechs in Investment Management

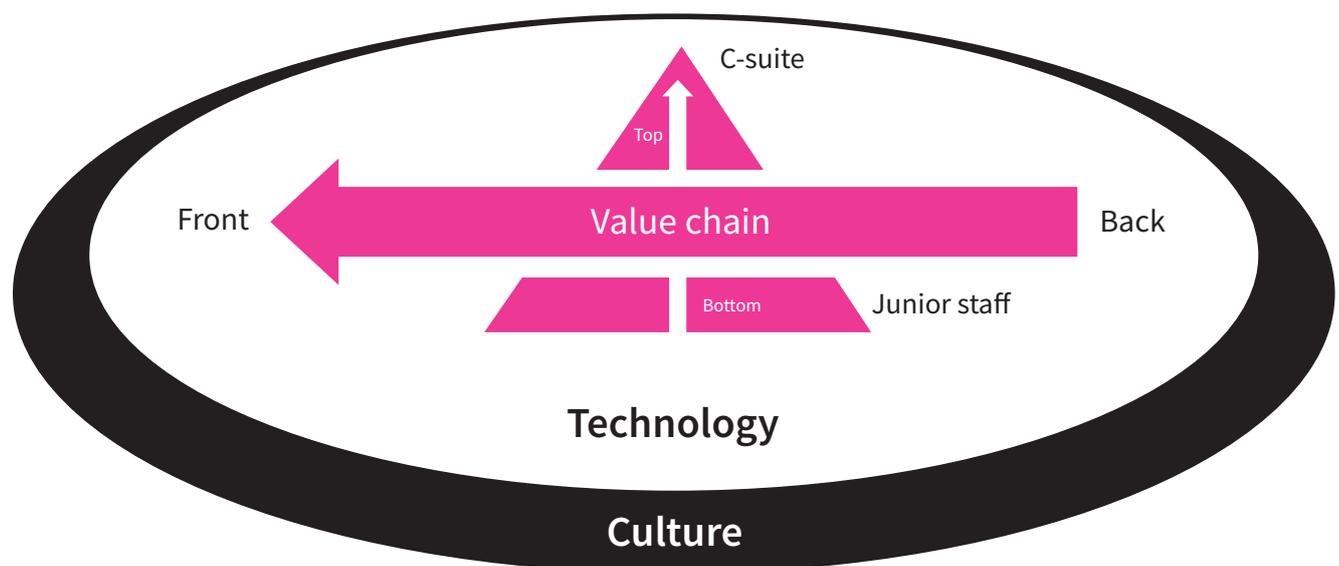
Investment management is finally starting to enact change. Not just change in platforms, systems, and organisational structure, but also in culture. For any firm to succeed in investment management in the 21st century, it must be willing to embed technology firmly into its culture, from front-to-back (in the value chain) but also top-to-bottom (in its hierarchy and roles).

Only the firms who embrace this more pervasive 'technology-first' mantra will be able to maintain sufficiently low spend and high efficiency to resist margin pressures.

For FinTechs this industry movement presents a significant opportunity, as this is the type of culture that they often already engender. By forging strategic partnerships with investment managers, they can become an important part of the enterprise in terms of their service provision but also their culture and skillsets, helping lead the charge to this more technologically integrated future. For this reason, FinTechs should see their platforms and software as more than just a service offering but also as an opportunity to show investment managers the way.

For investment management firms, there are several key requirements to unlock this opportunity:

- 1. Understand the problem** – How are client expectations evolving? What solutions will be needed, e.g. digitisation, operations automation, client experience tools and advanced analytics? Which processes and systems should be delivered internally versus through strategic partners?
- 2. Reframe innovation** – Treat innovation as a 'value-add' area, ensuring sufficient investment is provided which is not eroded by the more pressing need to enact simplification and deliver mandatory change.
- 3. Build a progressive culture** – Develop internal skillsets and technology awareness, review procurement processes and onboarding for start-ups to provide a more friendly environment for innovation.
- 4. Avoid risk-adversity restricting innovation** – Working with FinTechs and start-ups has risks and rewards which must be weighed to the firm's appetite – total avoidance of risk can be as harmful to innovation as too much risk.





Methodology

The BCG FinTech Control Tower analyses FinTech equity funding data which is curated from interviews with FinTech founders, primary research and from data providers Crunchbase, Dealroom and Venture Capital Insights. FinTech companies are defined as those that offer financial services directly or provide enabling technologies to financial institutions, facilitating the provisioning of financial services.

About the BCG FinTech Control Tower FinTech Control Tower (bcg.com)

The BCG FinTech Control Tower (FCT) is the FinTech-focused business unit at the Boston Consulting Group (BCG). We help financial institutions, investors, regulators, innovators and other industry stakeholders to understand innovation across the financial services. Through our customised insights platform (launching in 2022) and consulting services, we provide clients with actionable insights so that they can understand and act upon their FinTech agenda.

References

1. The Investment Association | INVESTMENT MANAGEMENT IN THE UK 2020-2021 <https://www.theia.org/sites/default/files/2021-11/IA%20-%20Investment%20Management%20Survey%202020-2021.pdf>
2. gov.uk | Kalifa Review of UK FinTech https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/971371/KalifaFintechReview_ExecSumm.pdf
3. TIME | How London Became a Global Center for FinTech and What U.S. Tech Hubs Can Learn from It <https://time.com/6102902/london-fintech/>
4. dealroom.co | 2021: the year London tech reached new heights <https://dealroom.co/uploaded/2022/01/Dealroom-London-report-2022-Jan.pdf>
5. Whitecap Consulting | Regional FinTech Analysis Reports <https://www.whitecapconsulting.co.uk/articles/whitecap-consultings-fintech-ecosystem-reports/>
6. BBC | Goldmans backs office life with Birmingham tech hub <https://www.bbc.co.uk/news/business-56717374>
7. FinTech Scotland | Why Scotland? <https://www.fintechscotland.com/why-scotland/>
8. Fidelity International | Our FinTech Pledge <https://www.fidelityinternational.com/fintech-pledge/>
9. One view to rule them all: Buy side firms seek to unify their data | WatersTechnology <https://www.watertechnology.com/emerging-technologies/7928511/one-view-to-rule-them-all-buy-side-firms-seek-to-unify-their-data>

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info@theIAEngine.com