Science Foundation Ireland **Sfi** For what's next

FINTECHNEXT:
Next-generation financial-services technology

FINTECHNEXT
SCIENTIFIC EXCELLENCE
INDUSTRY IMPACT

Innovation has revolutionised how companies deliver financial services and products to consumers, whether online banking, frictionless commerce, parametric insurance and new investment opportunities like cryptocurrencies. FINTECHNEXT brings together expertise from academia and industry in information systems, finance and computer science to innovate financial services.

The FINTECHNEXT team is researching next-generation products and services intending to deliver a financial technology toolset that informs excellence in science and creates new intellectual property (IP) for potential commercialisation. By doing so, they are dedicated to disrupting three principal domains of the fintech industry:

1. digital transactions,
2. treasury and foreign exchange and
3. corporate asset administration.

The FINTECHNEXT consortium is part-funded by Science Foundation Ireland under their Strategic Partnership Programme and is coordinated by University College Cork (UCC).

What is Fintech?

Fintech, or financial technology, is the application of emerging technologies, such as AI (artificial intelligence), blockchain, data science and the Cloud, to the creation of new products, services and business models within financial services. These technologies also drive cost reduction through automation by enabling operational excellence and improved customer experience.

What is the challenge, and how is FINTECHNEXT meeting it?

Fintech is a fast-moving and dynamic field, with new developments happening all the time. This dynamism presents unique challenges and opportunities for research and industry. To leverage emerging opportunities, maximise competitive advantage, produce timely academic contributions and anticipate the societal impact, FINTECHNEXT works closely with industry stakeholders to respond to these challenges.

Who is involved in FINTECHNEXT?

FINTECHNEXT is a collaborative research programme between UCC and Fexco. Fexco is an Irish multinational financial and business solutions provider founded and headquartered in Killorglin, Co. Kerry. The FINTECHNEXT collaboration between UCC and Fexco is a well-structured, outcome-driven research programme combining academic research, market investigation, solution ideation and initial product design. The combined funding commitment from industry and Science Foundation Ireland is €2.9 million over the four years of the programme, which launched in 2019.

Science Foundation Ireland — For what's next

What kind of research is the FINTECHNEXT team working on?

The FINTECHNEXT team are researching next-generation products and services in the financial services sector to deliver on two key objectives:

1. **Creating new scientific knowledge.**

2. **Delivering validated IP for commercialisation.**

The FINTECHNEXT team consists of high-calibre Ph.D.-qualified researchers with backgrounds across a spectrum of disciplines, including computer science, finance, information systems, innovation and mathematics, all brought together to enable accelerated learning and delivery. The partnership team has specific areas of expertise, including innovation, cloud computing, blockchain, big data, risk modelling, digital assets, business models and technology integration, enabling the research and development of Fintech solutions.

The FINTECHNEXT team are delighted to be undertaking ground-breaking research in areas such as sustainable Fintech and digital assets, helping to move the dial forward, both informing and creating the next generation of fintech services and disseminating knowledge to the broader stakeholder community.

In their projects, the FINTECHNEXT team are focused on building a toolset of new fintech IP consisting of techniques, methods, platforms, APIs, value propositions and business models. Projects focus on a range of topics from innovating and reimagining the corporate treasury function and management of currencies; to predicting future CO_2 emissions, enabling organisations to make informed decisions about their carbon footprint, to developing a next-generation tokenisation platform that enables the issuance and exchange of trusted digital assets. Individually and collectively, these projects advance research and understanding of Fintech, enabling multiple unique value propositions through combining cloud computing, blockchain, risk modelling, service innovation, machine learning and big data breakthroughs with new state-of-the-art business models.

Can you give me an example of some projects?

The FINTECHNEXT team has developed the CALM FX technology platform, which reimagines the corporate treasury function and management of currency flows through shared liquidity pools. Despite the range of service providers and many services offered, FX treasury services remain an ecosystem characterised by friction, cost and risk. The CALM FX platform encapsulates and integrates technical advancements, value propositions and business model innovation, and innovative algorithms to empower the next generation of FX products and treasury services. The platform incorporates built-in real-time automated risk control mechanisms, and the API-first approach enables seamless integration with third-party systems.

Accordingly, CALM FX is a ground-breaking tool that incorporates multiple features not available to market participants in any commercial offering and enables a breadth of value propositions across a multitude of channels. Successful next-generation FX products and treasury services will exploit transparency, trust and efficiency to drive adoption levels. These are enabled by CALM FX.

The FINTECHNEXT Digital Assets Engine is a sustainable trusted platform for tokenisation. The Digital Assets platform enables the creation and secure trading of digital tokens in just a few clicks. Unlike many typical offerings in the Digital Assets space, the Digital Assets platform is not a blockchain-based service which requires expensive transaction fees, implementation of smart contracts and energy-demanding consensus mechanisms to ensure integrity in a decentralised environment.

The FINTECHNEXT Digital Assets platform is simple and inexpensive to integrate with other systems, as it extensively uses the REST API protocol. The FINTECHNEXT Digital Assets Engine supports a broad range of tokenisation capabilities, from basic market functions such as buying and selling tokens to advanced functionality pertaining to risk and portfolio management.

The FINTECHNEXT Forecasting Engine is characterised by rapid data ingestion, analysis and reporting to increase forecasting accuracy and speed. In June 2021, Fexco signed an IP evaluation licence with UCC to explore the utility of the Forecasting Engine within Fexco's Platform for Analysing Carbon Emissions (PACE).

In this context, the FINTECHNEXT Forecasting Engine uses machine learning and AI to predict future CO_2 utilisation and performance of approximately 30,000 commercial aircraft flying globally. The Forecasting Engine predicts future performance and future financial exposures to ensure that CO_2 performance aligns with international, national and regional reduction targets. Therefore, the state-of-the-art IP developed by the FINTECHNEXT team is being explored towards enabling sustainable global travel and helping global organisations make informed decisions about their future carbon footprint.

Catherine Evans, Collaboration Manager at Fexco:

'In a time when we have seen up to five years' innovation happen in months globally, the FINTECHNEXT research initiative is critical to the digital transformation of Fexco and its services. In response to COVID-19, Fexco seeks to ensure long-term diversification from reliance on the core businesses through continued investment in new businesses and spending on innovation. FINTECHNEXT research is allowing us to make these strategic decisions on the execution of innovation investments while still maintaining focus on the main business. The co-location of the researchers with the Fexco Drive team in year one has had the desired added value in that it now allows us to innovate faster, collaborate efficiently and deliver more value with less effort.'

Karl Aherne, Chief Operating Officer, Fexco:

'As the Fexco business sponsor for the FINTECHNEXT research programme, it is critically important that we achieve a return on our multi-year financial and human capital investment in this research programme. The partnership between academia and industry is important for Ireland's economic development, and the FINTECHNEXT programme is an excellent example of how a well-managed, structured programme between two committed partners can deliver both commercial returns and a knowledge dividend.'

FINTECHNEXT's principal investigator,

Prof. Philip O'Reilly, Professor of Financial Technologies and Information Systems at Cork University Business School, UCC:

'I think these engagements illustrate the team's efforts to support and inform the future of global international financial services. I'm extremely proud of the FINTECHNEXT team, the quality of our research and the work that the team undertake daily, researching emerging topics, including digital assets and sustainable fintech. Publishing research in world-leading scientific journals, informing key stakeholders, and creating groundbreaking validated IP for commercialisation are key pillars for me as we look to the future of cutting-edge fintech R&D.'

How do industry partners benefit from the partnership?

Developing outside-in perspectives, expertise and capacity are important for industry partners operating in dynamic, fast-changing markets. Access to talent is crucial, and this programme provides a level of domain expertise that is often not readily available outside of academia. Industry partners benefit from the domain expertise that the academic scientists bring to the partnership, and leading academics from a broad range of areas bring new data and insights into the company's development processes, supporting the sustainability and diversification of their product portfolio. Additionally, the partnership supports knowledge exchange and the development of a pipeline of fintech talent.

How do academic partners benefit from the partnership?

FINTECHNEXT has had a significant impact on UCC. It has significantly enhanced the university's global reputation for R&D in fintech, and it has provided staff with the opportunity to engage with leading global organisations and to engage and collaborate with academics from leading universities worldwide. It has provided staff with the opportunity to create new IPs and to learn from colleagues in Fexco who are immersed within industry.

Through collaborating directly with industry, academic partners get direct insight into the complexities of real-world fintech integration. As a result, they can better design and develop their research to maximise the impact of their work. The initiative has enabled the team to share their expertise and knowledge with both national and global policymakers and key stakeholders.

What will the impact of FINTECHNEXT be?

Ireland is already a global leader in Fintech R&D. Working together, the FINTECHNEXT partners are breaking new ground in the Fintech components of the digital economy, with a vision to contribute to regional development in Ireland by establishing the region as the 'Silicon Valley' of Fintech'. In *Ireland for Finance: The Strategy for the Development of Ireland's International Financial Services Sector to 2025*, prepared by the Department of Finance, FINTECHNEXT was spotlighted as an exemplary case study.

At the FINTECHNEXT International Symposium, held virtually in March 2022 with more than 100 participants from across the globe, **the Minister for Finance and Eurogroup President Paschal Donohoe, TD,** stated in his opening address,

'An important benefit of the FINTECHNEXT initiative is that the reputation of the Munster region as a destination for Fintech innovation will continue to strengthen.'

Accordingly, FINTECHNEXT has built one of the largest and most diverse dedicated university research teams globally focused on Fintech.

The talented people who have joined FINTECHNEXT from different countries, attracted by the opportunity to join what they identified as a world-leading research team, have brought knowledge and access to a global network and contributed to the local economy.

In the scientific context, the FINTECHNEXT team's research will continue to be presented at the world's top conferences and published in world-leading scientific journals. These breakthroughs and contributions will serve as the basis for future Fintech R&D globally.

The suite of IP developed by the FINTECHNEXT team has the potential to underpin future commercial Fintech successes, facilitating job creation and new opportunities. The CALM FX platform can potentially reduce FX transaction costs by up to 50%. Further benefits of the research include helping to create a more sustainable future. The FINTECHNEXT Digital Assets Engine only generates an estimated 0.001gCO2 for each transaction executed. The FINTECHNEXT Forecasting Engine can predict future CO_2 performance and associated financial exposures. This would enable organisations to make decisions to ensure that their future CO2 performance aligns with future international, national and regional reduction targets and also enable management to make informed decisions about their future carbon footprint, promoting sustainability and creating better futures for all.