

# Blockchain

Northern  
Ireland

**The first generation of the digital revolution brought us the internet of information. Blockchain, heralded as the next paradigm shift in digital networks, promises to bring us the internet of value. Through its revolutionary protocol that transparently digitises, decentralises, secures and incentivises the validity of transactions, blockchain, like the internet before it, has the potential to radically transform business operating models across a broad spectrum of industries.**

Technology pioneers developing and leveraging blockchain solutions for a wide range of global applications are choosing Northern Ireland to establish and expand their expertise in this transformative technology such that the region is rapidly emerging as a hub of blockchain innovation.

International giants including Deloitte, PwC and Rakuten and home-grown technopreneurs such as arc-net, are tapping into Northern Ireland's world class talent in cryptography, mathematics and software engineering. The result is a broad spectrum of ground breaking blockchain innovations designed in Northern Ireland and commercialised world-wide, an impressive catalogue of diverse case use and a growing population of some of the world's foremost thought leaders in this revolutionary technology.

Northern Ireland's blockchain cluster is thriving in one of the fastest growing digital sectors in the UK that boasts deep expertise in fintech, cyber security and analytics and a growing reputation for activities in disruptive technologies including AI.

The region's capital, Belfast, is the world's number one destination for international fintech and US cyber security development investment projects. It's also the top destination city in Europe for software development investment projects. This stellar performance is fuelled by a compelling combination of talent excellence, a highly developed R&D ecosystem, competitive operating costs and world-class infrastructure all within a supportive pro-business climate.

## Did you know?

- PwC Belfast is home to the firm's largest group of Blockchain specialists in PwC worldwide and houses the firm's financial crime centre of expertise.
- Rakuten's Belfast Blockchain lab is tasked with transforming the company's many global business units with blockchain.
- A Deloitte Digital Belfast blockchain expert, won the FDM Everywoman Award for Software Engineering for the Smart ID blockchain solution.
- In a world first, the prestigious Scottish Adelphi Ardnamurchan Distillery has placed its limited edition spirit on arc-net's blockchain platform to secure its whisky from food fraud.
- Northern Ireland's globally renowned fintech sector includes highly developed clusters in trading & payments technologies, regtech and security. Talented NI engineers lead the tech operations of major financial services giants including Visa, Cayan, Citi, CME, Vela and First Derivatives to deliver ground-breaking solutions worldwide from Belfast. The pioneering work of the region's legal tech cluster is also attracting international interest and investment.
- Collaboration is actively promoted and investors are supported by a network of internationally reputed tech focus research centres including the £25m Centre for Secure IT at Queen's University and Ulster University's Legal Innovation Centre.

# Home to international firms and disruptive start-ups:



PwC's Global Blockchain Impact Centre in Belfast is the nucleus of the firm's expertise in this disruptive technology, employing the largest group of blockchain specialists in the PwC international network.

The team of 25 fintech professionals (with plans to grow to 40) has deep expertise and a proven record in delivery of insurance banking, e-commerce and Bitcoin products and services.

Driven by the scope for blockchain to catalyse change in fintech and a swath of industries, the specialist team has already delivered a significant project for the Bank of England, created a working blockchain prototype for the London Market Target Operating Model (TOM) Innovation Exchange and is currently engaged in pioneering Blockchain solutions for clients in the pharma and energy sectors.

**"Today Belfast is known as a cyber hub. In the near future it will be a blockchain hub for multiple industries."**

- Seamus Cushley, Director of Blockchain and Digital at PwC.



By 2020, Deloitte Belfast will be the firm's largest operation outside London. Deloitte began working on blockchain technology in 2014 with a team of 12 experts in Belfast developing 20 blockchain related prototypes in digital identity, digital banking, loyalty & rewards, and cross-border payments.

The Belfast team has created a **Smart ID** solution, built on blockchain, which allows people to share and update ID information easily, so specific aspects of their ID can be transferred without having to share every data berth.

This innovation won a Belfast-based Deloitte blockchain expert the FDM Everywoman award for Software Engineering.

As a pioneer in this field Deloitte has open-sourced its SmartID blockchain solution to enable developers and organisations to build and test their own use cases, encouraging universal collaboration.



Advanced Research Cryptography Ltd (arc-net) was formed in 2014 to create a defence in depth (multiple layers of security) anti-counterfeit and anti-fraud solution. arc-net developed a blockchain platform for product and supply chain authentication and security, used by major companies in the food, beverages, energy, manufacturing, luxury goods and national infrastructure sectors.

In 2017, arc-net's blockchain platform was selected as the core technology in one of the world's largest food safety projects - a Horizon 2020, Queen's University led £10m programme to secure the supply chain for pork products to and from China.

Recently, in a world-first, Scottish Ardnamurchan Distillery placed its limited-edition spirit on arc-net's blockchain platform in a move that enhances the security of the spirit from substitution and adulteration.



Japanese firm Rakuten, Inc. is a global leader in internet services that ranks in the top 30 of Forbes' annual "World's Most Innovative Companies" list. With huge brands including Ichiba (akin to the Amazon of Japan) and Viber, Rakuten owns everything from MVNOs to banks to golf websites, and has a new partnership deal with Barcelona FC.

Rakuten launched its Belfast Blockchain lab in May 2017. The Belfast operation works on a global basis to engage with clients to facilitate blockchain technology solutions. The talented Belfast engineers have delivered workshops in Japan, the US and Europe.

**"There is a very strong engineering community here in Belfast and the lab will contribute to and benefit from the ferment of creative energy that exists here,"**

- Vice President of Engineering Fergal Downey.

## The 'go to' location for Technology & Innovation

### COST EFFECTIVE

**20-30%**

Operating costs lower than in the rest of the UK and Europe.

**40%**

Reduction in typical salaries compared to London. 30% reduction compared to Dublin.

**75%**

Property costs savings compared to London. 60% when compared to Dublin.

### EXCEPTIONAL TALENT

**84%**

Of NI students achieved the top three grades in A-Level exams (77% in UK)

**70%**

Of IT professionals hold degree level qualification. (62% in UK)

**4,300**

Graduates in business and technology including over 1,100 postgraduates.

### PARTNERSHIP

Bespoke government support packages combine practical advice and financial assistance:

- Support for skills development and R&D
- Location selection intelligence
- Property search and selection
- People planning
- Business modelling & investment support
- Start-up incentives & infrastructure

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Invest Northern Ireland, the region's economic development agency, works in partnership with investors to offer advice and financial assistance to support business establishment, growth, capability development and international competitiveness.