

# Northern Ireland: Forging a new future post Brexit

The U.K. region pushes ahead with an ambitious, innovation-led vision to be recognized as one of the world's elite small economies

In the run up to the U.K. leaving the European Union in January, some external commentators predicted Brexit would derail the huge economic transformation Northern Ireland has achieved in recent years. In reality, it's acted as a catalyst for optimism and even greater ambitions.

Far from being an obstacle, a July survey by the Northern Ireland Chamber of Commerce and Industry found that 67 percent of its members now see Brexit as an opportunity. 100 years ago, those members would probably have been shipbuilders, textile manufacturers or involved in heavy industry. Today, they represent very different industries. "We've become a global leader and the number-one investment destination for software development, cybersecurity and fintech, for example," says Kevin Holland, CEO of investment agency Invest Northern Ireland.

The region's expertise extends to numerous other high-tech areas. For instance, the composite wings for Airbus A220s are all made in Northern Ireland, as are 30 percent of airline seats and parts for over a quarter of the world's data storage devices; more than 5 percent of the health diagnostic tests used worldwide come from Northern Irish companies; and 10 percent of the global financial market flows through Belfast every day.

Its dramatic metamorphosis from industrial powerhouse to an innovative, future-oriented economy is reflected in the extensive regeneration projects that have been taking place in some of its cities and towns over the last two decades. This is particularly visible in the region's capital, which is now a dynamic global city that is home to an iconic new waterfront at Belfast Harbour and one of Europe's largest urban mixed-use redevelopment projects, Titanic Quarter.

In May, the devolved government—the Northern Ireland Executive—set out a bold roadmap for a decade of innovation that positions the region for another step-change in inclusive and sustainable growth: the 10X Economic Vision. "We've identified our world-class strengths and are targeting specific areas where we know we will be very successful," explains Holland. The vision aims to ensure Northern Ireland is the most exciting and profitable place to do business in five priority sectoral clusters: digital, information and creative industries, agritech, fintech, advanced manufacturing and engineering, and life and health sciences. According to Minister for the Economy Gordon Lyons, "These sectors hold an important role in helping Northern Ireland become one of the leading small economies in the world."



**Kevin Holland**  
CEO  
Invest Northern  
Ireland



Derry-Londonderry's symbolic Peace Bridge opened in 2011

Both the executive and the U.K. national government have committed to substantial investment packages that will drive forward these ambitions. Together, for example, they are injecting £1.3 billion into City Deals for Belfast plus Derry-Londonderry and Strabane over the next 10 years, with additional input coming from public and private sector partners. That game-changing investment in the capital and the northwest areas will be channeled to infrastructure, regeneration, skills, innovation and digital projects. Highlights among those initiatives include the development of eight sector-specific innovation centers of excellence, which are being led by the renowned research-intensive Queen's University Belfast and Ulster University.

The new vision for the economy has been endorsed by an expanding business community that includes 1,100 international firms, many of them big-name multinationals. The region has seen a significant uptick in foreign direct investment (FDI), notes Kevin MacAllister, PwC's regional market leader for Northern Ireland. "When you compare how we did in attracting FDI to other parts of the U.K. before the pandemic, we were significantly ahead in terms of increasing the number of projects and the volume of jobs they delivered."

**"We've become a global leader and the number-one investment destination for software development, cybersecurity and fintech."**

Kevin Holland, CEO, Invest Northern Ireland

That performance has continued despite the pandemic, adds Holland. "We've had a very high level of interest in 2021. I think a lot of that is because of our response and resilience to COVID, or the fact that Northern Ireland is now unique in having dual access to both the U.K and Europe as a result of Brexit."

As well as attracting investors, Northern Ireland's revitalization has put it on the worldwide tourism map—in 2019, it received 5.3 million visitors, 7 percent more than in 2018. Major draws are *Game of Thrones* filming locations and award-winning new attractions like Titanic Belfast, but there are a plethora of other reasons to visit or live there, Holland asserts. "It's the most welcoming place in the world and the environment is stunning. I defy anyone to drive around the east coast and not be truly inspired by the views." Johnny Hanna, partner in charge at Belfast for KPMG Northern Ireland, agrees. "You can leave your office and be in beautiful countryside in minutes, you can play golf on world-class courses, visit the Mourne Mountains or vibrant cities. It's only when you spend time here that you appreciate the quality of life it offers."

# A hidden place, with undiscovered talent

The young, skilled population is a major driver of the region’s inward investment, closely followed by its technology and pro-business attitude

“Of the international brands that have invested in Northern Ireland, almost 70 percent have reinvested. People come here to test the marketplace, see the talent, and they want to reinvest,” says Kirsty McManus, national director of the Institute of Directors business association.

In 2019, Northern Ireland’s capital was the U.K.’s most important regional hub for foreign direct investment and its wealth of talent is commented on by almost all of the international companies in the country—from well-established multinationals like Citi, Baker McKenzie, Deloitte and Seagate Technology, to the latest arrivals such as Texas-based Workrise, the digital workforce management firm that announced it was opening a new technology engineering center in August. CEO Xuan Yong, notes that Northern Ireland was chosen because of its “high-quality software engineers with industry skills, along with a strong pipeline of graduates from the excellent universities.”

Its talent is nurtured from an early age in an exceptional education system. The region has the sixth-best performance in Europe for primary math, for example, while 77 percent of its young population take further or higher education courses. Those students study at outstanding universities and colleges,

**“Of the international brands that have invested in Northern Ireland, almost 70 percent have reinvested.”**

Kirsty McManus, National Director, Institute of Directors

which work with industries to develop the skills they need. According to Kevin MacAllister, PwC’s regional market leader for Northern Ireland, “This highly skilled talent pool allows the region to punch well above its weight in many respects. It means that multinationals with operations here are able to do much more than basic service delivery; instead, this is where they’re building a lot of their innovation.”

“We are quite a hidden place with a lot of undiscovered talent available at multiple levels. That’s the first driver of investment here,” confirms Kevin Holland, CEO of Invest Northern Ireland. “The second is our truly world-class technology in areas like cybersecurity, fintech, advanced composites, life sciences and clinical research. This is due in large part to close collaboration between industry, government and our research-intensive Queen’s University Belfast and Ulster University, as well as the knowledge clusters we have, such as the U.K.’s national innovation and knowledge center for cybersecurity.”

The third driver of investment is that it’s a great place to do business, McManus asserts. “For instance, operating costs are 30 percent lower than in other parts of the U.K. or the European Union (EU), our corporation tax is the



Queen’s University Belfast leads in research and innovation

second-lowest in Western Europe at 19 percent and we have an attractive patent-box tax regime for product development.” It also offers some of the most attractive financial support packages on the continent for activities including all stages of research and development. Backing that support up is excellent infrastructure: the region has the U.K.’s best superfast broadband connectivity, three international airports, and modern rail and road links into the Republic of Ireland, making it a prime location for trade with the rest of the U.K., Europe, the U.S. and further afield.



**Kirsty McManus**  
National Director  
Institute of Directors

The region is also in a singular position as a result of the signing of the Northern Ireland Protocol, which has prevented any post-Brexit hard border being established between the two countries on the island of Ireland, McManus points out. “We are now the only region across the globe with dual market access to the U.K. and the EU. That’s made us very attractive to manufacturers, distributors and e-commerce firms in particular.” Businesses across the island are already benefiting from this: in the first half of 2021, the value of goods imported from Northern Ireland to the Irish Republic rose by 77 percent year-on-year, while trade in the other direction grew by 40 percent. “Our exporters and cross-border traders consistently lead the way in growth, which is again borne out in these latest figures,” comments Margaret Hearty, CEO of InterTradeIreland, a cross-border agency that supports businesses in all parts of the island. Most importantly, in McManus’ view, “It’s a beautiful, happy, warm and friendly place to live, work and invest, which is keen to attract that investment. We are very positive about Northern Ireland.”

## Did you know?

- Northern Ireland is one of the **4** constituent nations of the U.K.
- Has a population of **1.8 million** people that is one of the youngest in Europe
- Nearly **1/5th** of its public expenditure is spent on education
- Its population is **the happiest** in the U.K., according to a recent survey

# Dual EU-U.K. access: The best of both worlds?

Johnny Hanna of KPMG Northern Ireland puts forward a compelling case for investing in a region with vast potential

With a team of over 350 people based in the heart of Belfast, KPMG Northern Ireland has been providing its public and private sector clients with expert audit, tax and advisory services since 1974. As partner in charge of the Belfast office, how would you say the region’s business and investment environment has changed in recent times?

It’s been on an upward trajectory, with an energetic startup ecosystem, a wealth of innovative small and medium-sized enterprises and a growing number of indigenous corporates competing on a global stage. That has been complimented by a hugely successful foreign direct investment campaign, which has drawn considerable investment from many blue-chip names.

**“Our big differentiator now is that businesses established here will have the unfettered ability to access both the EU market and U.K. market.”**

Johnny Hanna, Partner in Charge Belfast  
KPMG Northern Ireland

How competitive is the region’s position for future investments?

Northern Ireland has always been very resilient and will bounce back economically as the world returns to a greater degree of normality. The region has a huge amount of potential provided by a high quality of life; a range of government-funded city-deal initiatives that are set to oil the wheels when it comes to starting and scaling businesses, and, of course, its young, well educated talent—that’s one of the reasons why KPMG has reinvested here and it’s certainly one of the reasons why I expect many others to do so in the future.

However, as a result of the signing of the Northern Ireland Protocol, our big differentiator now is that businesses established here will have the unfettered ability to access both the EU market and U.K. market. That’s a unique benefit. For example, if you’re establishing a company in Northern Ireland that wants to sell into France or Germany, and you compare that landscape to a competitor based in England, Wales or Scotland, the Northern-Irish-based business should have a big advantage. Similarly, if you’re a business in France, Germany or the Republic of Ireland and you’re selling into the U.K. market, there will be lots of customs checks and other requirements because of Brexit. But, again, businesses based in Northern Ireland will be able to sell into the U.K. market unfettered. However, there is still a need to find workable, pragmatic solutions to the challenges being experienced by those importing goods from Britain.

In February, KPMG announced it was investing £14 million to open a new Digital Centre of Excellence in Belfast. Why was Northern Ireland chosen



KPMG sees Belfast as a key business location post Brexit

as the destination for this facility?

The KPMG Digital Centre of Excellence is creating 200 new jobs and will deliver a range of digital consultancy services in growing areas such as cybersecurity, applied intelligence and digital transformation. The rationale for the new center is to service the growing need from our worldwide clients for digital services. We put forward a very compelling case for it to be in Northern Ireland versus other locations. We’re exceptionally confident about its potential given the high caliber of graduates coming to us from all disciplines in the region. Northern Ireland is taking the lead on smart technologies and there’s clearly a depth of talent here already around areas like cybersecurity, artificial intelligence and digitalization.

Additionally, the support we got from the Department for the Economy and Invest Northern Ireland was hugely helpful, not just around fiscal incentives but also pre-employment training. The Assured Skills Academy initiative is a real differentiator in terms of Northern Ireland’s offer. It can take bright graduates from all disciplines and, in conjunction with employers and colleges, put together a bespoke program that quickly trains them to our needs.



**Johnny Hanna**  
Partner in Charge  
Belfast, KPMG  
Northern Ireland



# A 5-star all-inclusive resort for innovation

Northern Ireland is gaining traction as a hub for global innovators in emerging technologies

“Northern Ireland is a remarkable success story. It’s a good example to the world that, if you back the brilliance of your own people, you can achieve great results,” asserts Steve Orr, CEO of Catalyst, an independent, not-for-profit organization that has played a core role in building the region’s flourishing ecosystem of entrepreneurial innovation by capitalizing on its enduring culture of excellence in science, technology and engineering.

Catalyst was established in 1999 as the Northern Ireland Science Park to provide a base, support and connective networks for the region’s burgeoning knowledge-based sectors. “Today, Catalyst is home to 174 companies and 2,700 people across our three sites in Belfast’s Titanic Quarter, Derry-Londonderry and Ballymena. We’re also home to Queen’s University Belfast’s (QUB’s) flagship Institute of Electronics, Communications and Information Technology. Some of our companies are household names, like Microsoft, IBM, Citi and AllState, but we also have a lot of startups and scale-ups, such

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as Cumulus Neuroscience, a leader in wearable device integrations, B-Secur, a company with a revolutionary electrocardiogram technology, and Phion, a QUB biotech spin-out that will transform drug delivery for cancer therapy,” Orr states.

Its campuses offer state-of-the-art workspaces ranging from virtual or single desks to private offices and bespoke lab facilities. These are designed with agility to enable their residents to thrive within a connected community of business and research expertise. Over the last two decades, the profits from its office rental income have been ploughed back into the region’s entrepreneurial ecosystem, he says. “We’ve created a series of development programs with the involvement of about 570 experienced and successful mentors that support our entrepreneurs pro bono. In the last 12 months, we helped over 900 entrepreneurs, startups and scale-up companies.” Through this investment, a growing number of them are gaining international attention—venture capital and equity investment into Northern Ireland reached £44 million in 2019, up 53 percent on 2018, with Catalyst graduates and program participants representing 65 percent of funding raised.

The CEO is now looking forward to the next 20 years. “We are building the best place in the world to innovate. If the first phase of Catalyst was about facilitating entrepreneurship, we are now focused on facilitating innovation and integrating entrepreneurship into that.” A key enabler of this new phase has been a recent expansion of collaborations between the government and institutions in Northern Ireland, he believes. “For example, we’ve just launched Innovation City Belfast, a partnership of five innovation institutions: Belfast City Council, Queen’s University Belfast, Ulster University, Belfast Harbour and Catalyst. We have a shared vision centered around inclusivity and innovation, and have identified three sectoral clusters that we want Northern Ireland to lead the world in within the next 15 years.”

**“Some of our companies are household names, like Microsoft, IBM, Citi and AllState, but we also have a lot of startups and scale-ups.”**

Steve Orr, CEO, Catalyst

Those sectors—fintech and regtech, health and green technologies—play to the region’s current industrial and research strengths, adds Orr. “Catalyst’s role is to be facilitator and integrator. We have a physical home that co-locates big multinationals, academia and a phenomenal network of entrepreneurs. We are uniquely positioned to bring everyone together and to provide companies with easier access to the collaborations, partnerships, relationships, knowledge and resources that will give them an advantage over their competition. Companies in these sectors are going to need to be in Northern Ireland, because it’s here that the specialties which are going to be paramount to the future of those industries are going to be developed.”

To accommodate those firms, Catalyst intends to at least double its size in Belfast and the northwest of the region within five years, he reveals. “We’ve been working on developing customized solutions for some major multinationals in our key sector areas that will help them to, for example, scale, grow, establish research hubs and access talent. We aim to catalyze the genesis and growth of these sectors by being a five-star all-inclusive resort for innovation.”



Steve Orr  
CEO  
Catalyst

# A prestigious research and study ecosystem

Northern Ireland’s tertiary education system generates fierce competition for entrance and keeps attracting some of the world’s best talent

Highly qualified national and international scholars, researchers and students are all drawn to Northern Ireland. Reasons for this include an excellent quality of life, comparatively low costs of living, a new two-year post-study visa for foreign graduates and the world-class standards of its education institutions, says Paul Bartholomew, vice chancellor of Ulster University, one of two top-ranked research-intensive universities in the country.

“The Northern Irish funding system for higher education is also different, as the government makes a contribution so students don’t pay full fees. This dynamic strengthens our partnership with the government and translates into excellent alignment with its policy direction. We take the innovative nature of universities and target it to the needs of the local economy.”

Ranked in the top 50 universities in the U.K., Ulster University contributes an estimated £1.4 billion a year to the economy. It is the region’s largest university with about 27,000 students from over 100 nations studying at four campuses in Northern Ireland and two branch campuses in the English cities of London and Birmingham. It has an outstanding reputation for its teaching in areas such as pharmacology, biosciences, healthcare, art and design, education, nutrition, media and screen industries, and is grounded in an ethos of civic responsibility. “We are a regional university committed to developing solid skills in young people throughout the country. We also have a great record in widening access to education. Around 60 percent of mature students studying a degree in Northern Ireland do so with us, while just under 40 percent of our undergraduates come from the lowest two quintiles of deprivation and do just as well as students from other backgrounds,” Bartholomew states.

**“We take the innovative nature of universities and target it to the needs of the local economy.”**

Paul Bartholomew, Vice Chancellor, Ulster University

Ulster University’s strong presence across the region allows it to collaborate closely with an extensive network of industry partners, not least on cutting-edge research that puts it in the top 25 percent of U.K. universities for research power. “Among many other examples, the mobile defibrillator was invented and marketed within our institution; we are a leader in researching pancreatic cancer and its treatments from our Coleraine campus; we have expertise in education, especially as it relates to policy development; we lead research in health technologies, creative industries, advanced manufacturing, personalized medicine and artificial intelligence. Additionally, we are a front-runner in spinouts and have backed around 200 new companies,” he reveals.



Ulster University is number one for nursing in Ireland

Having experienced probably the highest growth of any U.K. university in recent years, Ulster University is expanding. It has strong on-line-learning credentials and is building on those through a new partnership with Pearson that will bring its career-focused courses to more students around the world. It is also about to open a School of Medicine in Magee as well as a state-of-the-art new campus in Belfast. “In many ways, Ulster University is a microcosm of the region, with incredible places for study, academic excellence and remarkable people,” Bartholomew concludes.



Paul Bartholomew  
Vice Chancellor  
Ulster University

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# When universities drive societal change

Northern Ireland's economic development is fueled by its world-class research-intensive education system

**“Northern Ireland is undergoing considerable transformation with the development of its knowledge economy. This offers great opportunities for education, for innovation, and to steer the economy and society forward,” asserts Ian Greer, vice chancellor of Queen’s University Belfast.**

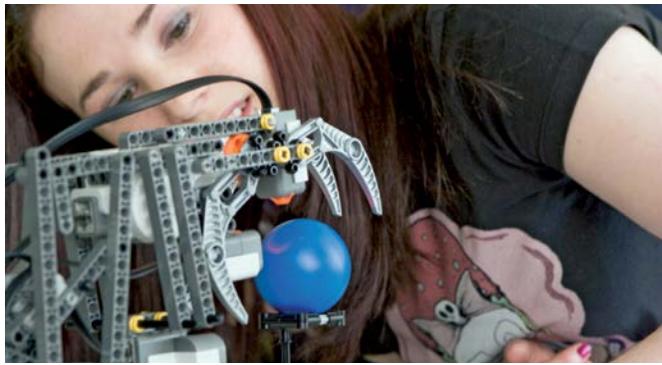
Internationally respected as one of the U.K.’s top universities, Queen’s is a pivotal anchor for this transformation and has helped turn the country into a global leader in sectors such as cybersecurity, health and life sciences, creative industries, advanced manufacturing and engineering. Originally established over 175 years ago, the university provides flexible and broad-based education to a thriving multicultural community of over 4,300 staff and 24,000 students. 3,000 of that cohort are international and from 85 different countries, notes Greer. “They are attracted because Queen’s is a high-quality university offering an excellent student experience, employability outcomes are good, and we are at an interesting time and place geopolitically.” Students also enjoy award-winning, state-of-the-art facilities at a historic campus in the heart of the capital, where they develop the transdisciplinary skill sets they need to address current or future challenges, be they local or global.

**“A key metric of a university’s performance is its economic impact, and Queen’s contributes £1.9 billion per year to Northern Ireland’s economy.”**

Ian Greer, Vice Chancellor, Queen’s University Belfast

As Greer comments, however: “Universities aren’t just about graduates and skills; they are also about driving change. A key metric of a university’s performance is its economic impact, and Queen’s contributes £1.9 billion per year to the Northern Irish economy.” One way it achieves this is by effectively commercializing research. Part of the U.K.’s elite Russell Group of research-intensive universities, the research generated by its institutes for global food security; health sciences; electronics, communications and information technology; and global peace, security and justice has impact. What makes Queen’s stand out, however, is the expertise it has in turning innovation into commercial success.

According to a report by Octopus Ventures, it has been the preeminent U.K. university for entrepreneurial impact over the last two years in terms of producing intellectual property, creating spinout companies and the exits of those spinouts. In 2020, for instance, ocular specialist Re-Vana Therapeutics raised \$3.25 million in pre-series A financing; Titan IC, a developer of network intelligence and security technology, was acquired by Mellanox Technologies; and healthtech startup Sonrai Analytics secured £700,000 in seed funding.



Queen’s ranks first in the U.K. for entrepreneurial impact

Queen’s is also the U.K.’s leading university for knowledge-transfer partnerships and prides itself in its ability to work with businesses, says Greer. “We have a strong pipeline of partnerships, which go all the way from researching and developing products and services, through to high-level apprenticeships and skills development programs.”

The university is, for instance, a key partner in the Belfast Region City Deal, a government-funded initiative that aims to accelerate inclusive economic growth. As part of this, education institutions and the private sector are collaborating on projects worth over £200 million that will establish centers of research excellence and co-innovation in the capital. “Queen’s is delivering a number of significant projects within the deal, such as the new Global Innovation Institute, which blends work in digital technologies like cybersecurity, wireless connectivity and artificial intelligence,” the vice chancellor states.

Throughout its activities, the university has embraced the United Nations Sustainable Development Goals (SDGs) and it ranks 43rd in the worldwide Times Higher Education Impact Rankings 2021, which assesses the alignment of universities’ research, stewardship, outreach and teaching to the goals. “As a university, we feel that we should not only deliver economic impact, but we also have considerable social responsibility. As an illustration, Queen’s has played a substantial role in the acute response to coronavirus, with a number of our academics becoming the go-to experts on COVID for national and international media,” he explains.

In addition to attracting a diverse community of students and staff, the fact that Secretary Hillary Rodham Clinton is currently Queen’s chancellor is testament to the global status of an institution that ranks 21st among U.K. universities for its international outlook, Greer highlights. “We have significant international reach and partnerships with, for example, the Chinese Medical University in Shenyang, the Mohammed bin Rashid University in Dubai, and others across India and the U.S.” Queen’s is in an interesting position as a result of Brexit, he believes. “We can look into Europe without losing our links to the U.K., and are well placed to interface with the U.S. We are looking to further grow our international partnerships and to continue to attract the best students. Despite a challenging year with COVID, our international student numbers have held up, because the pandemic demonstrated the university’s resilience, highlighted our world-leading research, showed our willingness to rise to challenges and underlined our unwavering commitment to students.”



**Ian Greer**  
Vice Chancellor  
Queen’s University  
Belfast

# A digital future for education

Students embrace online teaching from the pioneer in distance learning

**Universities around the world closed their campuses in response to COVID. That accelerated a global trend toward distance learning—a term that, in Northern Ireland, is synonymous with The Open University, which saw its student numbers increase by 15 percent in 2020.**

With over 163,000 students, the U.K.’s largest academic institution is cross-national and has bases in England, Scotland, Wales and Northern Ireland, with a base also in Dublin which means it serves the entire island of Ireland. It was founded in 1969 with the aim of making education accessible to all and ranks as the top university in Northern Ireland for student satisfaction. “We don’t have a traditional campus, rather we teach using online methods with personal tutor support. Our campus is within people’s homes or workplaces,” explains John D’Arcy, director of The Open University in Ireland.

There are other factors that make it unique, he adds. “We are an all-island, borderless university, which is popular with students. We also have an open entry policy in terms of qualifications and our student demographic is different: the average age is 28, and many are in work and want to upskill through undergraduate or postgraduate study. We work with business groups and the governments in Belfast and Dublin to make sure we support skills develop-

ment and widen participation.” Flexibility sets it apart as well, with students studying for over 200 qualifications at their own pace through modules. They can even build their own degrees, an option that is popular with small businesses.

With innovation rooted in its teaching and world-class academic research, the university is a global leader in the online learning revolution, D’Arcy says. “For example, we founded FutureLearn as the U.K.’s first massive open online course platform. That attracts international learners and includes content from universities across the globe.” Every day, millions of people worldwide also access free materials from The Open University via, for instance, YouTube, Amazon, Google and its own OpenLearn platform that offers over 1,000 courses. “When COVID struck, we curated a suite of free online courses for the Northern Irish Department for the Economy to support workers who had lost jobs or been furloughed. In 2020, almost 300,000 people across Ireland accessed our OpenLearn courses,” he enthuses.

D’Arcy is confident that global demand for online learning will continue to expand. “The Open University is ahead of the curve but not resting on its laurels. We have to continue to make our courses relevant and to develop technologies for delivering them.” He also believes that the university will support a bright future for Northern Ireland. “The evolving peace process needs to be nurtured and a key part of that will be education to help people create successful futures with good jobs, prosperity, health and wellbeing. I’m proud that The Open University is working at the heart of the challenges we face.”



**John D’Arcy**  
Director  
The Open University  
in Ireland

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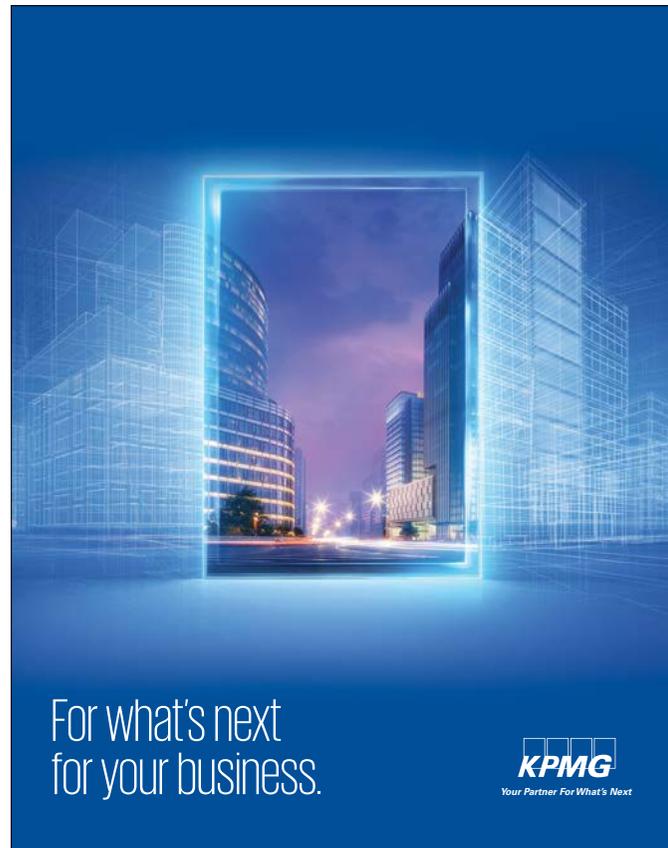
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# Serving the needs of the local economy

In alignment with government priorities, further education colleges are crafting the skills businesses require today and tomorrow

“Further education (FE) in Northern Ireland is a bit of an unsung hero that is turbocharging the engine of our economy,” states Louise Warde Hunter, principal and chief executive of the multi-award-winning Belfast Metropolitan College, the largest further and higher education college in the region and, with nearly 23,000 enrollments, the sixth-biggest in the U.K.

All six FE colleges in Northern Ireland operate under the auspices of the Department for the Economy, she reveals. “That means we are very closely involved in shaping the development and delivery of skills and employability solutions. We have a dual mandate: one is to support economic growth by providing people and employers with the skills they need. Our aim is to specialize in the key industries that can compete globally. Our second mandate relates to social inclusion.” The colleges share the same skills-building remit, but each has a distinct identity. Belfast Met, for instance, is the only metropol-



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itan one, with its state-of-the-art flagship campus being located in the capital's Titanic Quarter in Belfast. It provides quality education and training across all stages from Level 1 courses and apprenticeships to degrees and post-graduate study. The college is also highly international: 13 percent of its students come from outside the U.K. and Ireland, and it boasts a substantial number of worldwide educational and research partnerships.

One thing that distinguishes it from colleges in other parts of the U.K. is a direct involvement in supporting business development, growth and innovation, Warde Hunter adds. “We do that through a range of funded initiatives for businesses of all sizes. For example, in our Assured Skills Academy programs we work with large international and indigenous companies to co-create the skills pipeline they need. We've delivered over 100 programs in the last eight years.” Partners in those programs include Microsoft, Deloitte and PwC, and many focus on advanced technology, a specialty of Belfast Met. “We continually engage with industry in areas like data analytics, artificial intelligence, the Internet of Things and machine learning to keep abreast of new skill requirements so that we can quickly adapt our programs.”

Belfast Met's objectives for the future are clear, says Warde Hunter. “We want to be the college of choice, an employer of choice and a partner of choice. Vocational skills need to be respected more and FE colleges should not be seen as a lesser choice to university. They are about opening doors, creating pathways and helping people step up career ladders.”



**Louise Warde Hunter**  
Principal and Chief Executive, Belfast Metropolitan College

## NI's education system gets results

 <b>Top U.K. region</b> for educational attainment	 Nearly <b>20% of public spend</b> goes to education
 FE colleges deliver <b>20% of higher education</b>	 <b>132,354</b> FE college enrollments in 2020

# A thriving life and health sciences sector

Northern Irish firms have a burgeoning reputation for creating innovative high-tech solutions to global health challenges

Northern Ireland's booming life sciences industry generates an annual gross value added of over £1.1 billion and supports around 18,000 full-time jobs.

In particular, the country has fostered strengths in areas like bioscience, precision medicine, diagnostics, testing, analytics and pharmaceuticals, and amassed a cluster of more than 250 innovative companies that include international giants. There are many attractions for them, such as the high level of skills available, financial incentives for research-based investments, as well as collaborative universities and research centers. State-of-the-art infrastructure is also on offer at Belfast's new Health and Wellbeing Park development that is set to become the U.K.'s most dynamic hub for life sciences.

Local companies have also taken advantage of these benefits, says Peter Keeling, CEO of Diaceutics, an anchor tenant at the park, and a leader in data analytics and end-to-end services for the launch and commercialization of precision-medicine diagnostics. Formed in 2005, Diaceutics is a U.K.-listed high-growth healthcare technology business serving the global precision medicine diagnostics market and has a client base that includes 39 of the world's biggest pharma companies. “Being based in Northern Ireland has enhanced our ability to build a global world-class business. We've tapped into the local talent to stand shoulder-to-shoulder with the largest names in the industry. The universities have done a superb job developing young, intelligent people to advance how we use complex healthcare data sets and artificial intelligence. Both of which are core to our business mantra.”

**“Being based in Northern Ireland has enhanced our ability to build a global world-class business.”**

Peter Keeling, CEO, Diaceutics

Increasingly, cancer and other diseases are being treated by precision medicines that pharma companies tailor to patients expressing specific biomarkers, which are identified with diagnostic tests. Unfortunately, the global testing ecosystem has proved disjointed, slow and expensive, reducing patients' ability to access the right test for the right medicine when they need it. According to Diaceutics' data, up to 50 percent of them are missing out on treatment as a result. “The world has focused on treatment but there is an equivalent benefit to patients in improving the way they are tested, to get them tested faster. We set out to provide a solution,” Keeling explains. That involved heavy investment in building and expertly analyzing the world's largest repository of real-world diagnostic testing data from a growing network of 2,500 labs in 51 countries.



Diaceutics gathers testing data from 2,500 labs around the world

But with hundreds of new precision medicines expected to come on the market soon, the company wanted to scale its business to derive more value for its clients. In 2019, it was listed on the London Stock Exchange and, after seeing its shares double in value, it was named IPO of the Year at the U.K.'s Small Cap Awards in 2020.

“We then built DXRX—The Diagnostic Network, a unique and game-changing digital platform that networks our labs and connects our pharma clients directly to all of our data. It used to take 6-8 weeks for us to provide that data to them, now it's about 60 seconds,” he reveals. The speed and extent of Diaceutics' data capabilities were highlighted during the pandemic, Keeling adds. “We were one of the first to highlight COVID's impact on cancer after we saw a 20-30 percent drop-off in patients presenting for cancer testing and treatment.” The secure DXRX platform was launched in October 2020 and will enable industry-wide collaboration that unlocks the power of precision medicines, he asserts. “We have a global data supply that is second to none and believe DXRX will become ubiquitous in diagnostics.”



**Peter Keeling**  
CEO  
Diaceutics



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# Leading-edge expertise in tests and diagnostics

Northern Irish healthtech companies are masters at using disruptive innovation to help save global lives

A major factor behind some of Northern Ireland's life-science companies taking front-running positions on the worldwide stage is the investment they make in innovation, with the sector being the region's second-largest spender on research and development (R&D).



**Peter FitzGerald**  
CEO  
Randox

A prime illustration is Randox, a global leader in in-vitro diagnostics whose products are used in over 145 countries by hospitals as well as veterinary, food-testing, forensic-toxicology and life-science laboratories. "We manufacture 4-5 percent of all diagnostic tests used in the world, which we distribute through our own label and make for many other brands. Around 25 percent of our turnover is reinvested in R&D; this year, for example, we've invested £30-40 million," reveals CEO Peter FitzGerald, who founded the firm that is one of the world's fastest-growing healthcare companies, 40 years ago.

With a 2,500-strong workforce that includes 430 research scientists and engineers, Randox has more novel tests in development for illnesses such as cancer, cardiovascular disease, diabetes and Alzheimer's than any other diagnostics company worldwide. One of its most important innovations that is now recognized as the gold standard in testing is revolutionizing the global diagnostics industry: a testing platform that combines multiple photonic biosensors on a single microchip. "We've been working on this for a long time, have spent about £340 million on biochip R&D and have several large-volume manufacturing plants for them on the island of Ireland. The concept is that you can measure many things at one time with one microchip. That brings

## Randox's contribution to diagnostics

 <b>5%</b> of all diagnostic tests used globally	 <b>15%</b> of cholesterol tests used globally
 <b>Over 100,000</b> labs use Randox products	 <b>#1</b> for external quality assessment programs



Randox spends about a quarter of its annual revenues on R&D

testing costs down, and gives clinicians more information on each patient, so that they can offer accurate personalized medicine, because understanding the differences in each individual person is critical for early diagnosis and treatment of diseases," says FitzGerald.

In 2020, this unique technology proved its worth to the U.K. and the world, he states. "We already had an effective respiratory biochip that measured 23 bacterial and viral pathogens. Once we had the genetic makeup for COVID-19, it wasn't difficult for us to develop a PCR test for it, which we did in just a few weeks. Since then, we have reported about 13.5 million tests for the U.K. government's national testing program. With a capacity of 500,000 tests per day, we are probably the largest COVID-19 testing lab in Europe. We've also developed genomic sequencing capability to analyze variants and help guide government policy."

To achieve this capacity, the company had to scale up rapidly by, among other things, investing in a new £30-million testing hub at its headquarters, the Randox Science Park in Antrim. "We've also developed mobile and static high-throughput remote testing labs called 'Cubes', which we can deploy to

**"We are probably the largest COVID-19 testing lab in Europe. We've also developed genomic sequencing capability to analyze variants."**

Peter FitzGerald, CEO, Randox

anywhere in the world, and have boosted our manufacturing capability for extraction agents, PCR reagents and quality control materials," notes FitzGerald. The pandemic has demonstrated the importance of diagnostic testing, PCR capabilities and the human immune system, he believes. "People used to ask us what we did and didn't understand when we explained. Now they do, and many other diseases and conditions will get greater focus and better understanding as a result."

As well as boosting its capacities in the U.K., Randox is increasing a global footprint that includes offices and other facilities on four continents, according to the CEO. "We are about to open a clinic and lab in California, and may set up other international labs. We certainly want to expand our technology, tests and unique quality control materials in other markets." He also intends to keep transforming diagnostics through innovation. "I see the future as being personalized medicine, but also selling and marketing directly to the public rather than through healthcare systems. We need to educate the public about the importance and usefulness of diagnostics to understand what is going on in their own bodies. I would encourage everyone to get personal and get tested!"

Irwin Armstrong, CEO of another exceptional Northern Irish diagnostics company, CIGA Healthcare, has a similar vision. "I would like everyone to be able to test themselves once a month at home using blood, urine or saliva to pick up on abnormalities early. The technology is mostly in place, it just needs to be concentrated into one small box. Northern Ireland has the background and research skills to contribute to that."



**Irwin Armstrong**  
CEO  
CIGA Healthcare

Family-owned CIGA specializes in the development and supply of highly reliable over-the-counter and professional rapid diagnostic tests and medical devices. Under its flagship Suresign brand, a wide range of pregnancy, fertility and family health tests are available in pharmacies in over 70 countries, while CIGA is also a preferred supplier for major healthcare providers, including the U.K.'s National Health Service and Ireland's Health Service Executive. Since the firm was founded in 2005, it has made a significant contribution to increasing the quality and range of the diagnostics sector in response to changing customer needs.

"One current trend is for diagnostics that give an instant result within 15 minutes. We now supply devices that enable a range of tests to be done at the point of care that would previously be carried out in a lab with expensive equipment," Armstrong comments. "On the other hand, COVID-19 has triggered a shift to remote testing. Our sales of blood pressure monitors have grown exponentially, and people are doing more home tests for blood glucose and urine analysis, for example, before transmitting the results to their doctors digitally. We are part of a whole new industry that is servicing that change."

The pandemic also highlighted CIGA's status as a trusted diagnostics innovator, with the national government calling on it to join the U.K. Rapid Test Consortium, which quickly developed an antibody test for COVID that has been rolled out across the U.K. and internationally. This is an example of how CIGA uses collaboration with peers, local universities and international research partners to push the boundaries of rapid testing, he says. "At the moment, we are introducing new types of pregnancy tests that will give more comprehensive results and support to women. We are also developing new diagnostic tests for cows' milk, as we've just moved into the veterinary sector."

The firm has recently extended its portfolio even further by launching PlasmaGuard, a revolutionary air purification device for any size of building that works harmoniously with air-conditioning systems and destroys 99.9 percent of pathogens, including coronaviruses, Armstrong claims. "PlasmaGuard has been successfully installed in many venues in the U.S. and is far more advanced than anything else on the market. There are numerous potential uses for it—we are looking at applying the technology on aircraft, for instance."

CIGA is expanding geographically as well. In particular, its subsidiary in the U.S. is gaining new clients throughout the Americas. The CEO is confident that both the company and the Northern Irish diagnostics sector will continue to flourish. "We are way ahead of most countries in diagnostics and have the talent here that is capable of leading the global industry forward."

**"We are way ahead of most countries in diagnostics and have the talent here that is capable of leading the global industry forward."**

Irwin Armstrong, CEO, CIGA Healthcare

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# The vanguard of digital transformation

Companies are using the region as a base to catapult themselves to the front of emerging sectors such as cybersecurity and streaming analytics

“Northern Ireland is responding to the growing need for digitization by taking the lead on smart technologies and building up a global reputation as a hub for everything from blockchain to cybersecurity,” states Johnny Hanna, partner in charge of the Belfast office of KPMG in Northern Ireland.

A rapid shift to knowledge-based industries has transformed the region over the last decade to the extent that the Financial Times’ fDi Intelligence has ranked Belfast as one of the world’s top 10 digital economies of the future. In addition to blockchain and cybersecurity, the country has built internationally important clusters of expertise in cutting-edge markets such as fintech, legaltech, telecommunications, software development, data analytics, healthtech, IT services, artificial intelligence, sportstech and big data.

In total, there are nearly 2,200 technology companies in Northern Ireland, according to growth platform Tech Nation, while one in every 11 workers is employed in the sector. Those businesses include multinationals such as Microsoft, Allstate, Fujitsu, SAP, Nvidia and IBM, while the region is the top destination for U.S. cybersecurity specialists like WhiteHat Security. International companies have kept pumping money in despite the pandemic. This February, for instance, the capital was chosen as the location for a new KPMG Digital Centre of Excellence. “It will deliver a range of digital consultancy services for clients globally. There was a very compelling case for the center to be here, as there is clearly a depth of technology talent,” Hanna reveals. In June,

**“With KX, we are helping clients unlock the value of insight, hindsight and foresight within data to enhance performance.”**

Séamus Keating, CEO, FD Technologies

another professional services giant, PwC, said its Belfast-based operational and process management division, Operate, was opening a £40-million advanced research and engineering center to develop innovative technology. According to Ian McConnell, partner lead for Operate, this puts Northern Ireland at the heart of PwC’s future technology strategy and is a statement of confidence in the local tech skills that have turned Operate into its fastest-growing division.

As well as attracting multinationals, the region has a thriving startup ecosystem, with its young tech companies securing a record £45.6 million in funding from the international community last year, up from £30.4 million raised from venture capital in 2019. Among its homegrown successes are two businesses that reached unicorn-level valuations. One is Kainos, which facilitates the digitalization of organizations worldwide and was the first Northern Irish tech company to appear on the FTSE 250 index.



KX is the official supplier of real-time analytics to Alpine F1® Team

Also valued at over \$1 billion is FD Technologies, previously known as First Derivatives. A pioneer of fintech, it was founded in 1996 to support the global capital markets industry in designing, developing, and implementing mission-critical-data and trading systems. While acting as consultant to the biggest global investment banks, it spotted the untapped capabilities of a software called KX, which it ultimately acquired. “In the financial sector, it powers trading decisions, manages market data, minimizes risk and ensures compliance,” explains CEO, Séamus Keating.

In addition, KX is the fastest real-time streaming analytics platform in the world, which can capture any data from any location in any format. FD Technologies had also realized it was industry agnostic and started acting on its vast potential in sectors as diverse as manufacturing, automotive, energy, utilities and telecommunications. Independent research commissioned by the group suggests that 90 percent of all enterprises plan to invest more in streaming analytics in the near term, and analyst firm Gartner predicts most business systems will feature real-time data capabilities by 2022. “Using high-speed analytics to drive intelligence around decision making is the vanguard of digital transformation and we are the best in the world at doing it,” states Keating. “With KX, we are helping clients unlock the value of insight, hindsight and foresight within data to enhance performance and provide competitive differentiation.” Whether it is deployed within a Formula 1 team, manufacturing plant, trading system or in any other situation, the powerful but simple cloud-based platform solves the same types of issues, he adds. “It takes in fast-moving data and combines it with other relevant data, allowing faster, better decisions.”

Today, FD Technologies has 2,500 employees, a global client base, annual revenues of about £240 million and three distinct data-driven business units: KX; First Derivative, through which it continues to offer consultancy that navigates the seismic digital shifts being felt in the financial sector; and MRP, the only enterprise-class platform for predictive account-based marketing. Powered by KX, MRP helps businesses in 110 countries make informed decisions about where to spend marketing and sales budgets with measurable results. The group is well positioned for another 25 years of success, says Keating. “Our businesses are strongly positioned for growth and we have just announced increased investment in research and development, marketing and sales for KX, so that we can bring the benefits of real-time data to a much wider population of customers around the globe.”



**Séamus Keating**  
CEO  
FD Technologies

# Maximizing the potential of the datasphere

Leading-edge nano-manufacturing enables frictionless storage, management and movement of the world’s data

“Everything in our personal and professional lives—how we connect with people, consume entertainment, bank and so on—everything creates an environment of data and that datasphere is growing exponentially,” says Jeff Nygaard, executive vice president of operations and technology at Seagate Technology.

For over 40 years, Seagate has enabled the world to securely and efficiently preserve and access this ever-expanding datasphere as a leader in data storage technology and solutions that is best known for its pioneering hard disk drives (HDDs). “Approximately 40 percent of global data is entrusted to the products we make,” Nygaard states. Seagate’s 200mm wafer fabrication facility in Northern Ireland, the largest of its type worldwide, has been central to the company’s accomplishments, notes plant manager Fergus O’Donnell. “Our Springtown facility in Derry-Londonderry was established in 1993 and the industry-leading innovation it has delivered has been at the heart of Seagate’s business strategy for the last 27 years. Over a quarter of the world’s thin-film read-write transducers for storage devices originate in this facility. It’s a very complex and high-tech nano-manufacturing process with between 1,500 and 1,800 processing steps.”

Set up as a manufacturing-only facility, Seagate has since made capital investments of over \$1.5 billion in Springtown and its remit has expanded to include a substantial proportion of the company’s recording-head research and development. “We’ve been able to do that because we have a highly educated and talented team of 1,600 employees that includes operators, technicians, scientists and engineers who can build the technologies and innovations that are needed for all our functions,” O’Donnell explains.

“With the talent we have here, the future for our Northern Ireland facility and Seagate is bright,” asserts Nygaard. His optimism is backed up by a 2020 *Rethink Data* survey carried out for the company by independent research firm IDC that analyses trends in data creation and management in major economies. The results suggest that the enterprise datasphere is currently growing by 42.2 percent a year on average. Driven by increased use of Internet of Things devices, data analytics and software-as-a-service, the increase is even higher in North America at nearly 50 percent. IDC also predicts that enterprises will be managing 12,600 exabytes of storage capacity by 2025, up from the 800 exabytes they used in 2015.

By 2025, cloud services could be handling 51 percent of that storage and Seagate’s sales reflect the move away from a reliance on in-house storage. In 2020, it shipped 442 exabytes of HDD capacity, with about 70 percent of its revenues



**Jeff Nygaard**  
Executive VP of  
Operations and  
Technology  
Seagate Technology



Wafer fabrication takes place in a vast cleanroom environment



**Fergus O’Donnell**  
Plant Manager  
Seagate Technology

coming from mass-storage solutions, says Nygaard. “As the environment has grown from a client-based one toward a multi-cloud one, our mix has shifted. In five years, probably over 90 percent of sales will be mass capacity.”

Seagate’s mix has also shifted with its expansion into data services. For example, its Lyve Cloud storage as-a-service platform addresses the fact that 68 percent of enterprise data is unleveraged, according to IDC, often due to complexities and costs associated with moving data in distributed organizations. Lyve’s infrastructure is located in data centers close to users’ operations, comments Nygaard. “It provides the most economical path to store and

access data without egress fees. We’re not aiming to take share away from other cloud providers; rather, we’re enabling a new storage environment between them and users for speed of interaction and data management. For Seagate, ongoing innovation is critical in every area of our business.”

Within Northern Ireland, Seagate has always fostered strong local academic, industrial and governmental partnerships to help drive this innovation. The latest evidence of this came in July, when the U.K. government announced that the

**“Approximately 40 percent of global data is entrusted to the products we make.”**

Jeff Nygaard, Executive Vice President of Operations and Technology, Seagate Technology

Smart Nano NI consortium led by Seagate had been awarded £42.4 million in funding from its Strength in Places initiative. “The consortium is collaborating to develop game-changing electronic prototyping and smart manufacturing methods that deliver new technologies for sectors like data storage, diagnostics, optical communications and data analytics. It’s about developing and leveraging Northern Ireland’s ecosystem to make a positive difference, and we are proud to be partnering Analytics Engines, Causeway Sensors, Cirdan Imaging, Digital Catapult NI, North West Regional College, Queen’s University Belfast, Ulster University and Yelo in this,” says O’Donnell.

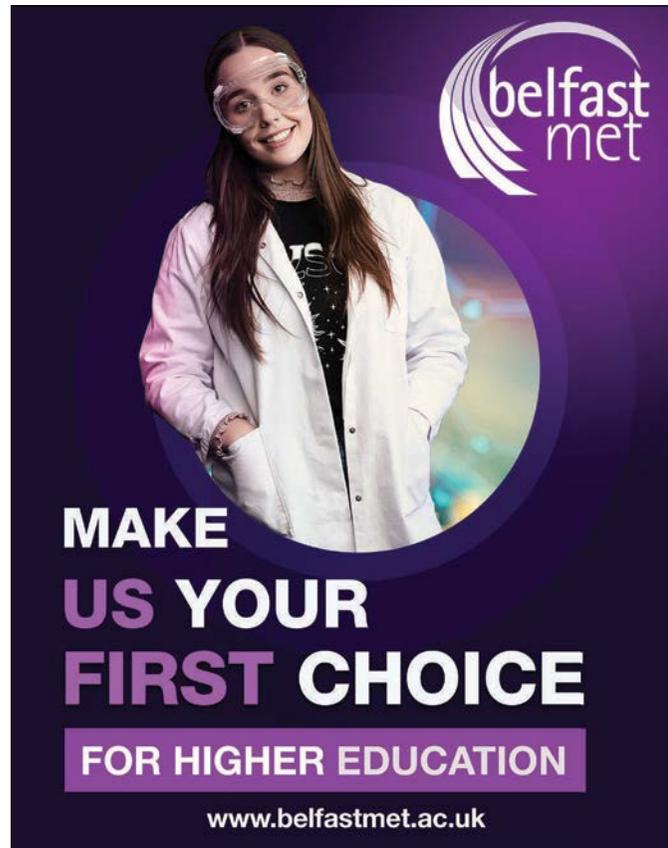
“How we interact with the community in Northern Ireland has been one of the keys to Seagate’s success,” adds Nygaard. “Data storage, whether served through devices or services, is a great industry to be in and we look forward to its continued growth.”

# A vibrant hotspot for global screen productions

*Game of Thrones* is one of many productions to choose attractive, easy and professional Northern Ireland as its stage

Ten years ago, audiences around the world were first introduced to what is now the most watched TV drama series of all time: *Game of Thrones*. To bring the epic tales of Westeros to life, HBO chose Belfast's Titanic Studios as its principal production site, with filming also taking place at other locations in the region, including Castle Ward, a historic estate by Strangford Lough that was the perfect setting for Winterfell, home of House Stark.

"Hosting the world's premier drama was huge for us and extremely influential in attracting other large-scale TV and film projects," says Richard Williams, CEO of Northern Ireland Screen (NI Screen), the national agency that has been key to the region's rapid development of a dynamic creative industry. Over the last decade, the country has become a hotspot for international filmmakers, providing the backdrop for productions as diverse as Channel 4's hit comedy *Derry Girls*, the BBC's crime drama *Line of Duty*



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James Nesbitt on location for the BBC's *Bloodlands* in 2020

and Robert Eggers' upcoming Viking thriller *The Northman*. It's an impressive portfolio but, for Williams, the most exciting projects are the ones his agency is currently expediting. "I'm excited by the range of major players in Northern Ireland at the moment. Paramount has just finished shooting an adaptation of the *Dungeons and Dragons* role-playing game, while Netflix is also here with *The School for Good and Evil*. Alongside that, we are very excited about our work on interactive and videogame projects, particularly the investment by the U.S.'s Riot Games in Hypixel Studios and its establishment of a new headquarters in Derry."



**Richard Williams**  
CEO  
Northern Ireland Screen

One reason producers are drawn to Northern Ireland is its diminutive size, with numerous stunning natural, rural and urban landscapes all within easy reach of each other, he comments. "You can get from studios to the mountains, sea or city in an hour or less, which is a great advantage. The fact that we are a small region also facilitates the strong public-private partnerships that screen and creative industries need to thrive. That's where NI Screen comes into play: we are the pivot between public and private. The public sector is very open to supporting the sector, we have close relationships all the way up

**"The fact that we are a small region facilitates the strong public-private partnerships that screen and creative industries need to thrive."**

Richard Williams, CEO, Northern Ireland Screen

to ministerial level and are energetic about addressing challenges. As a result, we have built a reputation for being film-friendly."

Underpinning this ease of doing business are financial incentives. The generosity of the U.K. government's tax-relief schemes for screen projects ranks in the top quartile worldwide, while NI Screen offers various funding programs that target a range of activities, including the development and production of commercially viable films, TV programs, animation and interactive content.

Another aspect of the region's value proposition for filmmakers is phenomenal infrastructure. "The vast majority of global destinations don't have the studios for large-scale productions and they are hard to get financed. One of the things that *Game of Thrones* did for us was drive confidence that delivered investment in film-studio infrastructure at Titanic and Belfast Harbour Studios," Williams explains. Both of these extensive 8-acre complexes are in the



A third season of *Derry Girls* should start filming soon

capital and contain state-of-the-art purpose-built studios, offices, workshops and other facilities. Both are also in high demand, with Netflix currently filming from Belfast Harbour Studios, while Paramount opted for Titanic Studios for its 20-week *Dungeons and Dragons* shoot.

Production companies also benefit from a wealth of local skills and talent—around 500 Northern Irish crew members worked on *Dungeons and Dragons*, for example. That expertise is fostered by NI Screen, which has helped assemble one of the best education and training systems in Europe for creative industries, he asserts. "For us, education starts at primary school and we run a large program of activities with partners for all age groups. Northern Ireland also offers a fabulous qualification at A-level and GCSE for digital film making, and NI Screen is a facilitating partner in Ulster University's Screen and Media Innovation Lab, which may be globally unique in its scale and



Paramount's *Dungeons and Dragons* was based at Titanic Studios

integration of academia, research and industrial application, and guarantees our ongoing strength in skills development." In addition, NI Screen is wedded to the apprenticeship model for introducing talent into all parts of the industry and invests over £1 million a year on programs based around that model.

As well as creating enticing opportunities for employment, film and TV productions contribute much more to the wider economy. *Game of Thrones* alone is estimated to have brought in over £250 million to date and one-sixth of the region's tourists in 2019. According to Williams, *The School for Good and Evil* and *Dungeons and Dragons* have been responsible for a further £60 million being spent on goods and services in Northern Ireland over the last year. "Having projects like this here during the pandemic is making a strong contribution to our economic recovery and they pack a bigger punch by delivering fun and optimism at a time when everyone can do with that."



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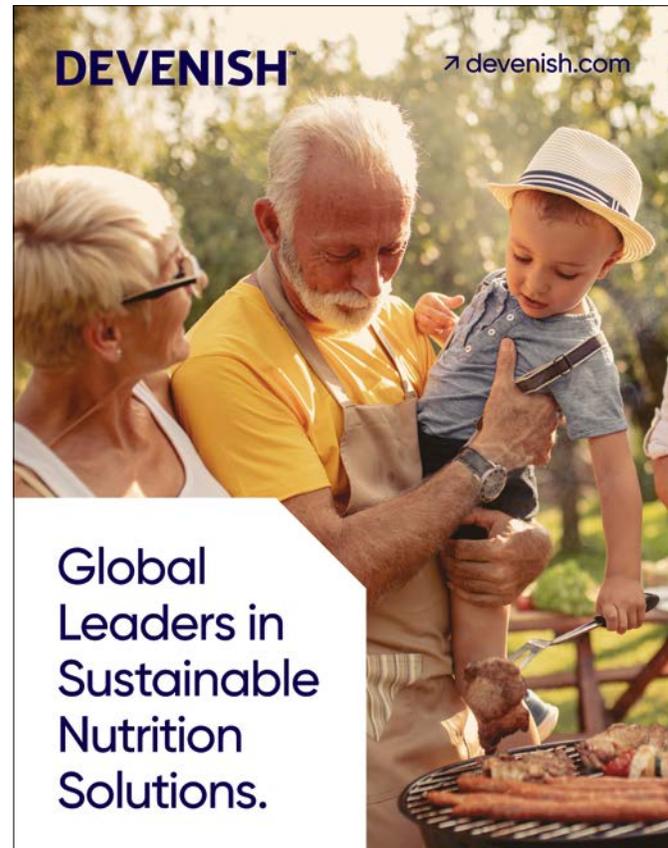
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# From troubles to transformation: The tale of Belfast

The capital has metamorphosed into a vibrant, modern, future-oriented city that is a magnet for international businesses and tourists

“Many people who don’t know Belfast associate it with a legacy of the Troubles, but the reality is quite the opposite; it’s a compassionate, warm, inclusive, resilient city and it’s forward thinking,” states Belfast’s Lord Mayor Kate Nicholl.

Now ranked as one of the U.K.’s most livable cities, the small capital with a population of just 343,000 has undergone an extraordinary transformation since she moved there in 2000, she says. “Just in the last five years, over 2.5-million square feet of office accommodation has been completed or is under construction: that’s really exciting and shows the direction we are going in.” Much of that space is snapped up the minute it hits the market by young entrepreneurial local firms and international businesses, which are flocking to a city that is among the U.K.’s fastest growing technology hubs where full 5G services are available but operating costs are much lower than in other major



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Titanic Belfast is recognized as a world-leading tourist attraction

U.K. destinations. As Nicholl points out, “The 2020 EY attractiveness survey cited Belfast as the U.K.’s most important regional foreign investment hub in 2019. 900 international companies have chosen to set up and grow here so far, 75 percent of which have said they would reinvest.”

Many of those firms have settled in acclaimed landmark developments that have redefined Belfast’s image. A major contributor to that process has been Harcourt Developments, an award-winning family-owned Irish property company that began to redevelop the waterfront area around the historic Harland & Wolff shipyard in 2005.

“The Titanic Quarter was a desolate 200-acres of former shipbuilding land at that point,” explains Harcourt director John Doherty. “It’s now one of Europe’s largest urban regeneration projects; more than £500 million has been invested so far with approximately 1.5 million square feet of office, leisure and residential space already completed. Dozens of companies are based here, including multinationals like Amazon and Citi,” he notes. “As the birthplace of RMS Titanic, there are lots of maritime tourist attractions in the area, but the jewel is Titanic Belfast, which was named the World’s Leading Tourist Attraction at the World Travel Awards in 2016 and has positioned Titanic Quarter as a ‘must-see’ tourist destination. It has also created a net secondary spend to the Northern Irish economy of £35 million a year,” he adds.

**“The 2020 EY attractiveness survey cited Belfast as the U.K.’s most important regional foreign investment hub in 2019.”**

Kate Nicholl, Lord Mayor of Belfast

“Prior to COVID, our tourism performance had been phenomenal. We want to accelerate that and have plans for a £100-million investment in key attractions in the city center. This will complement our publicly funded Belfast Region City Deal, a £1-billion package that aims to further grow and stimulate the economy by investing in infrastructure, regeneration, innovation, employment and skills,” enthuses Nicholl. With Dublin just 2 hours from Belfast by road and rail, the two capitals are also collaborating on developing globally competitive industry clusters along the Dublin-Belfast corridor, she states. “We’re really ambitious to be viewed as a global city with strong sustainable development. As everyone who visits says, there really is no better city.”



Kate Nicholl  
Lord Mayor of Belfast

# Belfast Harbour: A port for everyone

The region’s main maritime gateway aspires to be the ultimate place to live, work or visit in the city

Nothing is more emblematic of the huge transformation that has taken place in Northern Ireland’s capital city than the extraordinary regeneration of the Belfast Harbour maritime port and the area around it.

Founded in 1613, the multi-modal port handles around 70 percent of Northern Ireland’s trade with worldwide markets and has always played a vital role in its social and economic development. Running alongside the River Lagan from the seaport toward the city center, Belfast Harbour’s wider estate covers over 2,000 acres and, until recent times, it offered up a largely uninspiring industrial landscape. Today, however, Belfast Harbour is the region’s primary gateway not just for trade, but also for tourism, services and entertainment, as well as being the location of choice for those looking to live or work in the capital. “We are creating a sense of place and a port for everyone that all of the city can enjoy. Our vision for 2035 is to be a world-leading regional port and to have developed an iconic waterfront that is a standout destination for residents and visitors,” states Belfast Harbour’s chief executive, Joe O’Neill.

Many would say that the organization has already achieved those things. “We are about two-thirds of the way through a once-in-a-generation investment program that commits more than £250 million to the development of our marine and estate infrastructure and facilities,” he reveals. In terms of the port—which is the island of Ireland’s second-largest cruise port in addition to being the region’s main center for logistics and distribution—investment is focused on growing its activities through, for example, a £40-million upgrade of a container terminal, as well as adopting innovative technologies, he says. “Developing a technologically smart, clean, green port is core to the delivery of our strategic vision. We aim to use technology to improve efficiencies, safety and productivity. As an illustration, we’ve formed a partnership with BT to develop one of the first private 5G telecommunications networks within a port. We also intend to be net carbon neutral by 2030.”

Substantial investment in the development of its extensive lands, on the other hand, has created a vibrant and diverse waterfront community that is home to 1,500 residents and over 760 businesses, with around 27,000 people working or studying in the estate. “Belfast Harbour is fast becoming a key economic hub as the heart of the city’s new Innovation District. Leading companies in sectors like IT, engineering, aerospace, research and development are based here, as are organizations like Catalyst, the science and technology park, and Belfast Metropolitan College. We’ve also helped put Northern Ireland on the map for creative and media industries, particularly as a leading European



Joe O’Neill  
Chief Executive  
Belfast Harbour



City Quays 3 is the capital’s largest office development

hub for film production; Belfast Harbour Studios opened in 2017 and has already hosted global brands like Netflix and Warner Bros.,” notes O’Neill.

Far from being an isolated community, investment in sustainable travel networks to improve the estate’s connections to other parts of the city means that over 5 million local and international visitors a year are now enjoying its riverside walkways, cycle paths and bustling restaurants, as well as some of the capital’s most important heritage assets, tourist attractions and infrastructure, including Titanic Belfast, a 4-star Marriott hotel, George Best Belfast City Airport and the 10,000-seater SSE Arena. According to O’Neill, “A key development driving the transformation of the waterfront landscape is City Quays, a 2.2-million square foot mixed-use project that is regenerating 20 acres of ex-shipping land.” 70 percent of this development is allocated to grade-A environment-friendly office accommodation, he adds. “Currently, we are building City Quays 3, the largest office development in Belfast. It’s a 16-storey, 250,000-square-foot property due for completion in November that will accommodate about 1,800 people, which has contactless COVID-secure technology built in to its design and BREEAM Excellent certification. Because of the high standard of our construction, we’ve attracted companies to fill all the space we have built to date.”

**“Belfast Harbour is fast becoming a key economic hub as the heart of the city’s new Innovation District.”**

Joe O’Neill, Chief Executive, Belfast Harbour

Belfast Harbour’s trust-port status allows it to be innovative, and responsive to market demands when taking investment decisions, O’Neill asserts. “It was set up by statute to operate, maintain and develop Belfast Harbour for the benefit of its customers and the people of Northern Ireland. That model means every penny of our net earnings is reinvested into development and it has enabled us to continue investing throughout the pandemic.” Upcoming projects in its investment program include 3,500 new apartments, public gardens and a potential £45-million expansion of Belfast Harbour Studios that would quadruple its film production space, he says. “It’s a genuinely exciting time. All the key stakeholders in the city and region have ambitious and well-aligned strategic plans. Working in partnership, we’re embracing new opportunities, particularly around innovation, and collaborating to deliver something where the sum of the parts are much greater than the individual elements.”

# Transforming traditional industries

From agriculture to textiles, manufacturing and shipbuilding, heritage sectors are still revolutionizing the world

While other parts of the world have chosen or been forced to abandon their traditional industries, Northern Ireland has successfully transformed them for the 21st century by amalgamating its vast experience in various sectors with its renowned capacity for innovation.

The region has built on its industrial heritage, for example, to create a diverse advanced manufacturing and engineering sector that accounts for over 15 percent of gross value added. One speciality is high-tech aerospace, an industry headed by Spirit AeroSystems, which produces the wings for all Airbus A220 aircraft at its plant in Belfast.



**Gillian McLean**  
Managing Director  
Ulster Weavers



Ulster Carpets manufactures its famous products in Portadown



**Richard Kennedy**  
Chief Executive  
Devenish

Northern Ireland also has a long tradition in shipbuilding. 110 years after it built Titanic, Harland & Wolff's iconic gantry cranes tower over a shipyard fitted with robotic technology. But the modern face of the sector is best illustrated by Artemis Technologies. Led by Olympic-gold-medal yachtsman Iain Percy, it is developing high-speed zero-emission maritime vessels based on an electric hydrofoil propulsion system. According to Percy, "No matter who we meet, the excitement when we talk about combining Belfast's shipbuilding heritage with its incredible talent in aerospace, composite engineering and world-class research, development and innovation (RD&I) capabilities is clear to see."

Traditional textile industries have also evolved to fit modern demands. Over nearly 75 years, for instance, family-owned Ulster Carpets has kept its position as the premier global supplier of Axminster and Wilton carpets, a feat managing director Nick Coburn puts down to long-term investment in innovative, efficient and sustainable processes that don't compromise on performance and luxury. The region's reputation for fine linen goes back even further to the 18th century and lives on in players like Ulster Weavers, which was established in 1880 and produces homewares, apparel, upholstery and drapery textiles that are sold globally. "We supply prestigious retailers with private label and branded products, while our linen fabrics are also used by designers such as Valentino, Dolce & Gabbana and JW Anderson, to name a few. There is strong recognition of our linen heritage, creativity, quality and sustainability," says managing director Gillian McLean. "We're now entering an exciting period of growth and ecommerce has become a key driver for us; our vision is to bring inspiration and craftsmanship to every home in the world."

### Agriculture: Innovative, transparent and sustainable

As a largely rural country, agriculture is still a very important sector, states Richard Kennedy, chief executive of Devenish, a pioneering agritech company. "Northern Ireland is recognized as producing exceptional food for consumers across the world, as well as for developing technologies that can be applied throughout the world. Being headquartered here has been fundamental to our success." Devenish began life in 1952 as a small animal-feed trading company, but the current management team acquired the business in 1997 and initiated a major transformation. Today, it provides science-based nutrition and other specialized solutions to livestock farmers in 40 countries; enjoys annual revenues of over £225 million; and employs almost 600 people directly at sites

in Europe, the Americas, Africa and Asia. 90 percent of its products are now researched, developed and manufactured in house, with the game-changing strategy behind its RD&I being applauded by organizations such as the European Investment Bank, which has invested around €30 million to date in its R&D program.

"Sustainability is at the core of our 'One health from soil to society' strategy. The nutrients we supply to animals flow on throughout the food production value chain. Devenish's ethos is to develop solutions that ensure the most effective and efficient utilization of nutrients to deliver better animal, human, soil and environmental health. We do that by focusing on RD&I to provide leading-edge, commercially and critically applicable products," explains Kennedy. Through this focus, the firm has created a portfolio of technologies that respond to growing consumer demand for safe and nutritious food that is sustainably and transparently produced.

He reveals that, while Devenish has always been at the forefront of antibiotic-free food, it is now also at the cutting-edge of proactive health. "For example, we've developed a unique algae-based technology that, when fed to chicken, delivers increased Omega-3 polyunsaturated fatty acids (PFAs) to the consumer via meat or eggs. A study by the Royal College of Surgeons in Ireland has proved it has a significant positive impact on health." Normally sourced from fatty fish, 80 percent of the world's population is deficient in Omega-3 PFAs, mainly due to the cost or scarcity of fish, or because people don't want it in their diet. "Our technology has huge benefits, particularly for those with low incomes, so we've formed a joint venture with Canada's Mara Renewables Corporation—Humanativ—to globally commercialize it," he states.

To demonstrate the breadth of Devenish's innovation, in collaboration with professional services firm Accenture it has also recently launched Agrinewal, a



Natural enrichment of chicken diets offers huge health benefits

cloud-based initiative that helps decarbonize agriculture, notes Kennedy. "It's a management system that measures how much carbon a farm emits and how much it sequesters, giving farmers a carbon balance. They can then tweak their practices to quickly reach net-zero carbon."

Partnerships are central to Devenish's philosophy; working with farmers allows it to bring emerging technology to market in real time, while forming synergistic relationships with businesses worldwide means it can globalize them more rapidly. Its ongoing geographical expansion is also helping to achieve this: by the end of this year, it will have grown from two to four U.S. manufacturing plants, plus one in Mexico, he comments. "We think our solutions can only become more relevant and the U.S. is one of the big opportunities for us. However, we see it not just as an opportunity; we feel that we have an absolute responsibility to deliver one health, from soil to society."



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