



Introduction

Belfast is a city of creators and inventors. Innovation is in our DNA.

In the early 20th century, the city was home to the world's largest shipyard, building the biggest ocean liners in the world.

Today, Northern Ireland's capital city is a world-leading hub of discovery in digital technology and research excellence, with a thriving knowledge economy ecosystem and a vibrant and engaged community of innovators, businesses, researchers, and start-ups. Together, city partners have made Belfast a great place to nurture new ideas, to grow a business, to solve urban challenges, and to impress the world.

Over the next decade, innovative technologies will have a profound impact on our economy and on society. With Belfast's proud history of innovators and significant investment on the horizon, the city is perfectly positioned to make the most of opportunities presented by innovation – not least by creating more and better jobs, regenerating our city and improving quality of life for our citizens and visitors.

The city is developing long-term plans that will put in place the investments required to address the challenges generated by the wider global economic transformation and the need to respond to climate change. Digital innovation has an increasingly dominant role to play in social, economic and environmental policy. Our ambition is to find ways to harness this innovation to better support Belfast's transformation into a more productive and sustainable city.

The city's port, Belfast Harbour, has equally ambitious plans. It aims to become a world-leading regional port and create an iconic waterfront for Belfast that is an attractive place for people to live, work, invest and visit as well as a hub for inward investment, innovation and tourism. Increased collaboration and partnerships with city stakeholders are key to driving this growth and regeneration and maximising the impact across the wider city.

The city has taken steps to drive forward Belfast's collective innovation ambitions by

forming an innovation partnership of city leaders and developing an urban innovation framework to support the city's innovation ecosystem.

Three areas in the city have also been strategically selected – the Belfast Smart District, Belfast Innovation District and Belfast Smart Port – that offer particularly rich environments for our innovation community to collaborate on research; for businesses to form and scale; for investments to flourish; and for next generation urban services to emerge.

City Leadership

Collaborative leadership is key to maximising the opportunities that innovation presents. The leaders of seven of the city's key institutions – Belfast City Council, Belfast Harbour, Belfast Metropolitan College (<https://www.belfastmet.ac.uk/>), Catalyst (<https://wearecatalyst.org/>), Queen's University Belfast (<https://www.qub.ac.uk/>) and Ulster University (<https://www.ulster.ac.uk/>), with Invest Northern Ireland (<https://www.investni.com/>) as an advisory partner – have formed a partnership to drive a shared digital innovation ambition for the city.

The Innovation City Belfast [1] partnership aims to establish Belfast as a globally significant destination for innovation and is committed to delivering an ambitious long-term plan that will maximise the impact of investment and regeneration in the city including in the city centre, Belfast Harbour Estate and waterfront area.

The partnership's role is to:

- influence Northern Ireland and UK policy;
- attract substantial new public and private sector investment in innovation;
- support the rapid growth of high potential knowledge economy clusters;
- support the development of skills for new and better jobs in the digital economy;
- develop place-based innovation ecosystems; and
- maximise the economic and social impact of the Belfast Region City Deal [2] – a £1 billion co-investment package for economic growth – which includes an investment of £230 million in university research centres and £120 million in digital innovation projects.

Some of the major projects being delivered by the partners include:

- a Smart Port at Belfast Harbour, with ambitions to be a world-leading regional port;
- an Innovation District along Belfast's waterfront area to drive economic growth;
- a city-centre focused Smart District to drive collaborative innovation to tackle Belfast's major urban challenges; and
- £450 million of investments funded through the Belfast Region City Deal:
 - £45 million Centre for Digital Healthcare Technologies and associated living labs [3];
 - £52.4 million Global Innovation Institute [4], a nexus for co-innovation between researchers and industry in data security, connectivity and analytics;
 - £100 million cultural visitor destination, Belfast Stories [5];
 - £30 million investment in advanced wireless infrastructure to support enhanced innovation, productivity and competitiveness;
 - £34 million mission-orientated Innovation for Societal Impact Fund; and
 - £20 million Digital Innovation Venture Fund.

Belfast's Urban Innovation Ecosystem

Cities that have been most successful in adopting innovation to support their wider strategic ambitions have established an enabling environment that encourages a culture of collaboration between many institutions and individuals.

The Smart Belfast Urban Innovation Framework [6], published by Belfast City Council in December 2022, aims to nurture a collaborative environment in which innovators from across industry, academia and the public sector can work together with our citizens and communities to find new ways to address Belfast's major urban and economic challenges, and maximise the positive impact of technologies in our city.

We have identified eight pillars which will support Belfast's urban innovation ecosystem and make the city better equipped to develop and deploy novel solutions to complex urban challenges, while at the same time make Belfast one of the world's most attractive locations for innovation investment:

- **Collaborative leadership** – Effective partnerships that foster collaboration across industry, academia and the public sector.
- **Urban challenges** – A challenge-led, mission-oriented approach to finding innovative solutions to city challenges.
- **A focus on the citizen** – Placing the needs of the citizen at the heart of our approach to

digital innovation.

- **A vibrant innovation economy** – A successful, growing urban economy to drive digital innovation.
- **Data environment** – Unlocking data to support collaboration and digital transformation to drive forward Belfast's innovation economy.
- **Financing, procurement and adoption** – Investment in innovative procurement approaches, supporting routes to commercialisation and adoption of innovative solutions in the public sector.
- **Technology infrastructure** – Accessible, world-class digital connectivity and data infrastructure.
- **Place-making** – A whole-place approach that recognises Belfast's unique historical and geographical characteristics and the role they play in supporting our innovation ambitions.

Place-Based Innovation

Belfast Smart Port

Belfast Harbour is an important gateway to trade and a significant contributor to the Northern Ireland economy. Every year, more than 1.5 million people and over half a million freight vehicles arrive and depart through the Port, whilst almost 246 million tonnes of goods are managed and carried by ferries, container ships and general cargo vessels.

It is the second largest port on the island of Ireland and the 2,000 acre Harbour Estate is the largest such port estate in the UK. It's home to businesses from across a vibrant sectoral mix and also includes a number of leading tourist attractions and one of the largest film studio campuses in the UK, outside of Pinewood Studios near London.

Creating a Smart Port by investing in 5G connectivity and digital technologies supports Belfast Harbour's aim of becoming a world-leading regional port and a key economic hub for green growth. It aims to engage more creatively and effectively with customers, visitors and employees.

Paul Murnaghan, Regional Director at BT and Joe O'Neill, Chief Executive of Belfast Harbour.



In 2021, Belfast Harbour partnered with BT to build the UK and Ireland's first 5G private network for ports [7] and is delivering a series of 5G-led innovations to accelerate Belfast Harbour's digital transformation.

The partnership is examining how 5G and other emerging technologies such as Artificial Intelligence, Internet of Things, Augmented Reality, Virtual Reality and drones can be used together to enhance public safety, physical security and address climate change across the Port and wider region.

For example, the two organisations are working on improved productivity and safety measures by enabling 5G remote controlled inspection technology to reduce the need for staff to work at height. Meanwhile, the roll out of 5G enabled sensors to monitor air quality and other environmental factors is supporting Belfast Harbour and the wider city in achieving its sustainability ambitions.

Belfast Smart District

Belfast's city centre is undergoing a generational transformation as partners look to create an integrated cultural, retail and living environment for the coming decade. Major new investments are planned by both the private and public sectors to meet this ambition. We have plans to greatly increase the area's residential population, grow new businesses and deliver new forms of urban services.

Our city centre based Smart District, led by Belfast City Council's City Innovation Office as part of their Smart Belfast programme [8], fosters the conditions for collaborative innovation focused on Belfast's major urban challenges such as climate change, sustainable urban mobility, the future of the high street and healthy urban neighbourhoods.

The Smart District is a unique opportunity for companies to design, develop, test and deploy innovative urban services and new technologies in a supportive real-world environment; a testbed that offers an 'urban sandbox' that reduces the complex barriers to in situ innovation.

Belfast City Hall in the Belfast Smart District. (© Tourism Ireland).

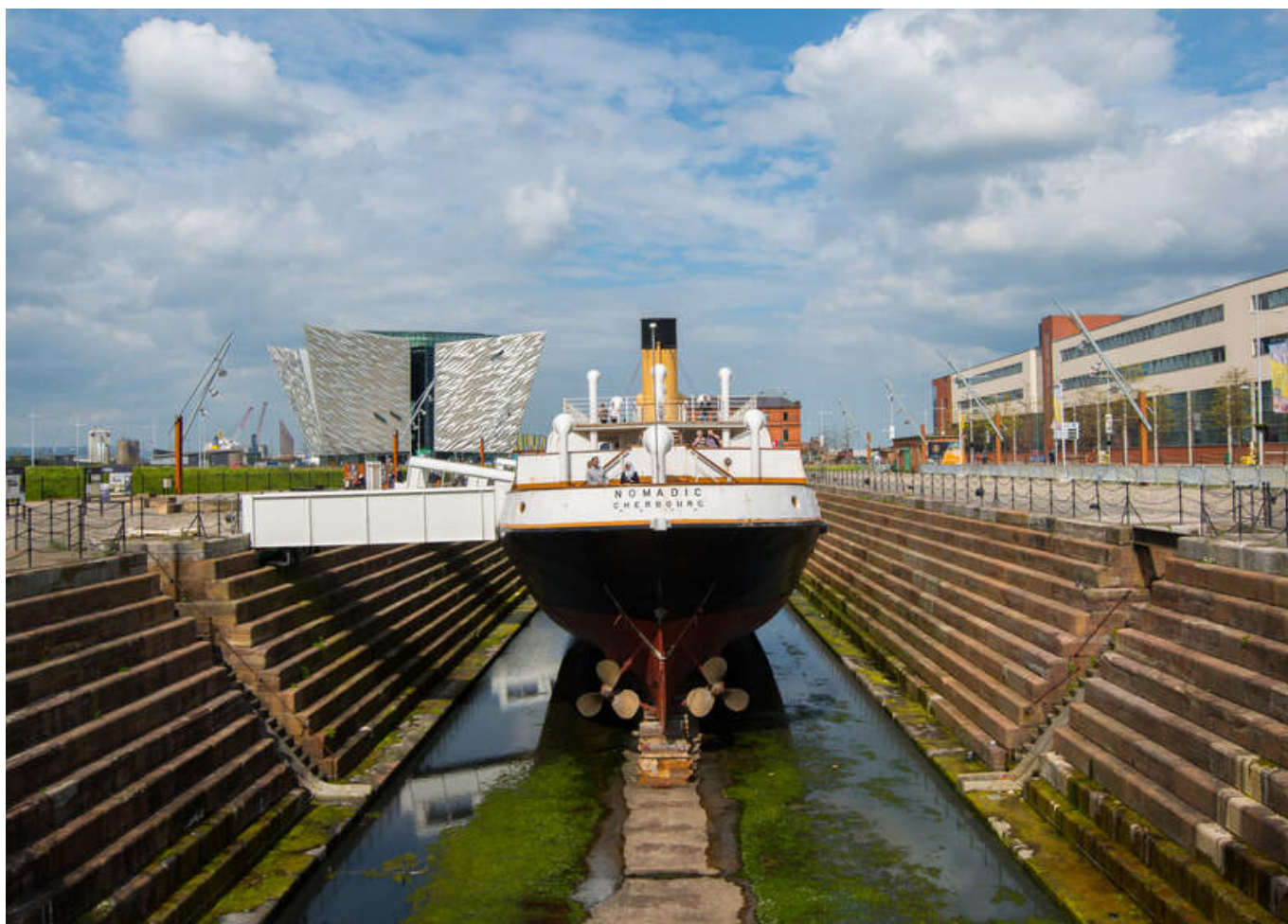


We apply the Quadruple Helix Model of Innovation to our projects which means we bring together government, industry, academia and citizens to work together to identify local challenges and co-create innovative solutions.

Some of our Smart Belfast projects include:

Maritime Mile Innovation Hub [9]

Belfast is a leading city in a €7.9 million European project that aims to transform historic urban areas through innovation. Belfast City Council has partnered with the Maritime Belfast Trust to deliver an exciting Hub of Innovation and work with local communities to create opportunities for innovative entrepreneurship. The project focuses on the Maritime Mile along the city's waterfront in the city's historic Titanic Quarter, which encourages people to explore Belfast's maritime and industrial heritage.



Titanic Belfast and SS Nomadic, part of Belfast's Maritime Mile. (© Tourism Ireland).

Amplify: Connected Innovation

Belfast is one the most connected cities in Europe. It already has state-of-the-art fibre connectivity, but we also recognise the strategic importance of next generation wireless connectivity to the city and its economy over the coming decade. Within the Smart District, partners are planning to invest £30 million in advanced wireless networking to support research, business innovation and the creation of new city services. Integrated within the urban form, and building on work within the city's Port, the Amplify project will encourage the exploitation of wireless networking to support innovation in mobility, digital inclusion

and Internet of Things based urban services.

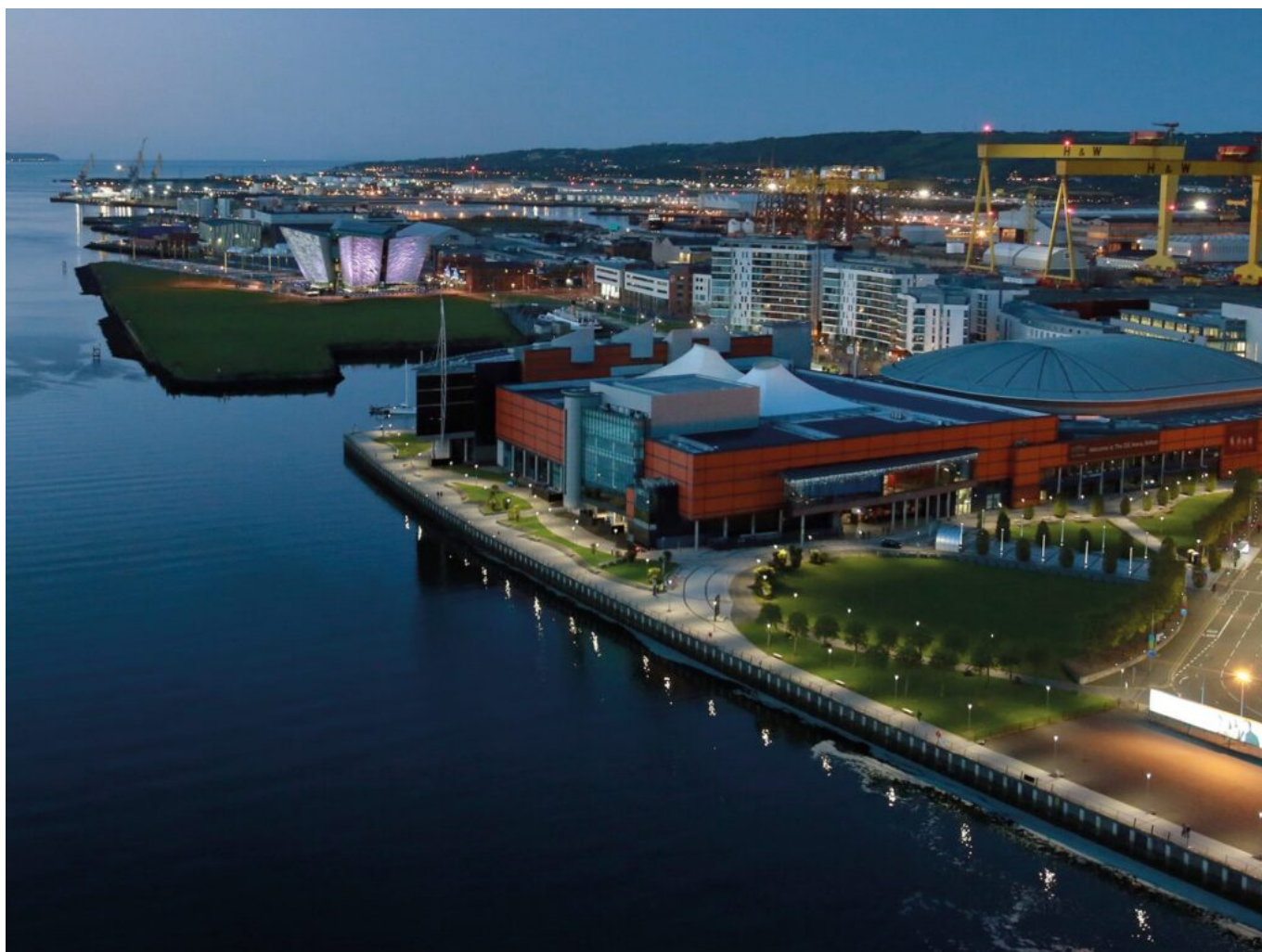
Citizen Opportunities for Digital Innovation

Citizens have an important role to play in urban innovation and the Citizen Opportunities for Digital Innovation initiative is supporting Belfast residents to better understand the role and impact of data and digital technologies on urban life, enabling them to actively participate in the co-design of digital innovation projects to address issues which are important to them.

Belfast Innovation District

Built on the foundations of Belfast's engineering excellence, resiliency and creativity, the Belfast Innovation District aims to be a flourishing world-class hub for research, innovation and entrepreneurialism.

Spanning 400 acres, the Innovation District includes the city's historic Titanic Quarter and City Quays area on the Belfast Harbour Estate, located adjacent to Belfast's city centre.



Belfast Innovation District. (© Belfast City Council).

It is home to over 760 international and indigenous companies, world-class university research centres, Northern Ireland's largest college campus and over 30,000 students, a diverse residential population, and major tourism attractions and entertainment venues including the world-famous Titanic Belfast and SSE Arena.

Led by Belfast Harbour, Queen's University and Belfast City Council, the Innovation District will build on the city's strengths in FinTech, GreenTech and HealthTech. It aims to attract high quality investment and provide an environment where the latest research from our universities can be rapidly translated into world-class businesses.

As well as substantial digital innovation investments through the Belfast Region City Deal, partners have ambitious plans to locate a digital twin centre in the Innovation District. These investments will deepen Belfast's capability and capacity, a city where innovation thrives.



Titanic Belfast. (© Tourism Ireland).

The Innovation District is already a hub for GreenTech and low carbon manufacturing based on a long history of high value manufacturing, research centres and proven technology from start-ups and university spin-outs. It plans to become a place to champion sustainability and be a demonstrator for net zero technology. GreenTech companies such as Artemis Technologies, which is developing the world's most advanced 100% electric passenger ferry [10], and Catagen [11], which specialises in emissions data and is developing new net zero

technologies in green hydrogen, are great examples of the ground-breaking technology being developed in the Innovation District.

Geographically, the Innovation District provides large swathes of land which can readily support pilots and testing of cross-sectoral technological advancements in areas such as mobility and sustainability, both major urban challenges.

HEAD IMAGE | *Belfast Harbour Estate. (Photo courtesy of Visit Belfast).*



References

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[10] Artemis Technologies unveils world's most advanced 100% electric passenger ferry:

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