

TRAVEL

THE INSIDE STORY FOR BUSINESS TRAVELLERS

Cities of innovation

Alexander Garrett focuses on three British Airways destinations in the UK that are making a name for themselves when it comes to new thinking

Giant leap
The iconic Titanic
Belfast visitor
attraction

WHERE NEXT?

BELFAST: TITANIC IDEAS

Northern Ireland's capital is one of the UK's fastest growing tech hubs

The Paint Hall in Belfast's Titanic Quarter was once used to prepare vessels in the Harland & Wolff shipyard for a life crossing the world's oceans, among them the most famous liner of all. Today it's used to paint pictures: the building is at the heart of the Titanic Studios complex, and in the last few years its four massive spaces, each 16,000 square feet in size and 90 feet high, have hosted *Game of Thrones*, *City of Ember*, *Your Highness* and other epic productions – with entire city sets created within its walls.

The studios are among the largest in Europe and have become the cornerstone of the Titanic Quarter's media campus, as well as being the catalyst for an emerging digital and creative sector in Belfast. Where ships were once launched to sail to distant continents, today animation, audio technology, mobile content, e-learning and music are exported around the world.

For a city that went through decades of sectarian strife, the emergence of a *GoT*- and *Titanic*-fuelled tourism industry has been nothing short of a miracle. But it's innovation across the knowledge economy – which is now responsible for one in 11 jobs in Northern Ireland – that's the most exciting prospect.

And leading the charge is cyber security, with an inflow of investment that has seen Belfast dubbed as the cyber security capital of Europe. In 2008 Queen's University Belfast was chosen to host The Centre for Secure Information Technologies (CSIT), one of only seven Innovation and Knowledge Centres officially designated in the UK.

"It was set up as a partnership between business, academia and Government," says Steve Harper, Invest Northern Ireland's executive director of international business. "And since then it's acted as a catalyst for some of the biggest companies in the sector to come to Belfast." Among the key names to arrive are Rapid7, Black Duck, WhiteHat and Alert Logic. In December they were joined by Silicon Valley-based Imperva, which is setting up a European support centre that will employ 220, the biggest investment in the sector so far.

Among the attributes Belfast plays to its advantage is its relative compactness as a city, which makes it easy to foster very close links between business, public sector and the universities. "It's a continuous feedback loop," says Harper. "Businesses are able to communicate what graduates they want, and the city's two universities – Queen's and Ulster – can respond quickly. For example, a few years ago we were able to double the

output of IT graduates in a short time."

Belfast's population of 340,000 is exceptionally young, with 41.6 per cent under 30 years old, and highly educated, with almost 50,000 students enrolled at the two universities. And the city has a special trick up its sleeve for potential investors: it will create an Assured Skills Academy, training up the requisite number of candidates to their specific requirements.

The region has also been burnishing its entrepreneurial credentials. UK-wide research by the Enterprise Research Centre showed that Northern Ireland-based startups are best at surpassing a £1m turnover in their first three years – nearly three per cent succeed, compared to 1.9 per cent nationally.

Belfast has seen notable success in nurturing innovation across a range of technology disciplines. Fintech and legaltech are two areas showing great promise. US firm Axiom set up a Centre of Excellence in 2017, and is working with both Belfast universities to apply machine learning and AI techniques to the automation of document review processes.

Health technology is another exciting area. TriMedika, founded by local entrepreneurs Julie Brien and Dr Roisin Molloy, has developed zero-touch thermometers that are transforming healthcare around the world.

And innovation extends into an eclectic range of industries, even touching on Belfast's heritage in marine engineering. Artemis Technologies has its origins in Sweden's bid to win sailing's America's Cup. Today the company, based in Belfast Harbour, is applying advanced composite design in its mission to build autonomous sailing vessels. From the building of the *Titanic* a century ago, it's a vision that shows just how far the city has come.



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INSIDE

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GLASGOW: HIGH INTELLIGENCE

With a proud history of innovation, the dynamic Scottish city is full of good ideas

If there's one thing Glasgow's innovation community prides itself upon, it's partnering. In 2016, the city was shortlisted in the competition to become European City of Innovation. It didn't win, but nevertheless created a 'knowledge exchange and ideas' network, iKEN, that has become a valuable online resource linking all the finalist cities, from Hamburg to Athens.

"Partnership is the thing we do really well," says Dr Susie Mitchell, director of Glasgow City of Science and Innovation. "We were awarded European Entrepreneurial Region in 2016 on the strength of the collaboration between our different agencies and support bodies spanning public and private sectors, academia and the third sector."

It is also about convergence, she says – teams from completely different sectors working together to innovate. To pick one example, the simulation and visualisation team at Glasgow's world-famous School of Art, an institution better known for its fine art and architecture, is working with pharmaceutical companies to design new medicines. The same team has developed an immersive simulation of the human body that is used to train medical students.

Glasgow's economic strategy, developed in 2016, set a challenge: how could the city use its rich R&D assets to tackle challenges that would create socio-economic change for good? Glasgow has a remarkable history of discovery and invention, from James Watt's steam engine to beta-blockers, ultrasound and the Glasgow coma scale. Today that heritage has bestowed an equally outstanding infrastructure of science and learning. Alongside the depth and breadth of expertise in its four universities, it is home to six of Scotland's eight nationally funded, industry-led innovation centres.

Last year, that resulted in a blueprint to develop three innovation districts in and around the city – each with a distinct identity. The Glasgow University Innovation District, anchored on the university and nearby Queen Elizabeth University Hospital, includes zones for biomedical and interdisciplinary innovation, allowing business to work alongside researchers from both institutions, and nurturing startups.

The Glasgow City Innovation District, which includes Strathclyde University and the Merchant Quarter, is already home to 18 major research centres and innovation organisations and more than 30 innovation companies and SMEs. It includes the UK's only Fraunhofer site, focusing on applied photonics, as well as covering energy and enabling technologies, and hosting three of the national Innovation Centres.



Glasgow has strength in a range of emerging sectors, including, satellites and quantum technology

And six miles west of the city, next to Glasgow Airport, is the Advanced Manufacturing Innovation District. It already features a

£9m Lightweight Manufacturing Centre, and an Advanced Forming Research Centre. Renowned

urbanist Professor Greg Clark says: "Glasgow knows how to build specialist districts. Together, these three districts have the scope to lead a new cycle of reinvestment and expansion in Glasgow's knowledge driven sectors and places."

Glasgow has strength in a range of exciting emerging sectors, including biomedical, satellites and quantum technology. What attracts so many companies to the city, says Mitchell, is the huge talent pipeline. Glasgow has the UK's biggest academic community outside London, with 185,000 higher education students from 140 countries – and 44 per cent of the working population is educated to degree level, placing it in the top ten cities in Europe. It's also a city of art, culture, music, football and Charles Rennie Mackintosh. In 1983, Glasgow became one of the first UK cities to undergo a post-industrial renaissance, under the slogan 'Glasgow's Miles Better'. Today it's looking to a future fuelled by technology and ideas.



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Building bridges
View of the changing face of the Glasgow waterfront

MANCHESTER: ALWAYS ON IT

With a host of significant new investments, the city continues its thirst for reinvention

Last September, Manchester had a poignant moment in its history of invention. The world's first locomotive, Stephenson's *Rocket*, was exhibited at the city's Science and Industry Museum, its first return to the city in 180 years. In 1829 it won a competition that initiated the first passenger train service and paved the way for modern railways.

Manchester has an extraordinary record in ground-breaking innovation. It's where the atom was split, the world's first test tube baby was born, the first programmable computer was built and, more recently, the super-material graphene was identified. Little wonder that Tim Newns, CEO of MIDAS, Manchester's investment and development agency, says: "Wherever you look, this city oozes innovation. It's in our genes."

For the last two decades Manchester has been enjoying a powerful resurgence from its post WWII decline, with innovation at the 'front and centre' of its economic strategy. It recently jumped 11 places in the global ranking of innovation cities to number 34. Newns says the target is to reach the top 20.

It certainly has momentum: in the last 12 months, Manchester has seen a string of significant investments. GCHQ is opening a new site here that will employ hundreds and put the city at the heart of the UK's security. Amazon is taking the plunge with its first corporate office outside London, which will provide 600 jobs. And Jaguar Land Rover has announced plans to open a new software, IT and engineering centre in Manchester that will support its strategy to introduce connected technologies in vehicles.

Last year also saw the opening of the £60m Graphene Engineering Innovation Centre (GEIC) – an international research and technology facility that will play a key role in bringing graphene applications to the market. And plans were announced for a world-leading genomics campus, to be developed in conjunction with German diagnostics firm QIAGEN, which is expected to create and support up to 1,500 new jobs.

Key to Manchester's innovation success, says Newns, is talent: "That's a combination of talent that's already here and talent that can be attracted from around the world." Manchester University, he points out, has been home to 25 Nobel Prize winners, and currently has more on its staff than Oxford and Cambridge universities combined.

Manchester also has a highly developed infrastructure, with numerous institutes, particularly in the health and science sectors. The Henry Royce Institute, the UK national centre for R&I in advanced materials, will be completed in 2020. Major technology players such as Cisco, ARM and IBM have established

R&D centres in Manchester, and the forthcoming arrival of GCHQ has encouraged data security companies such as Raytheon and Northrop Grumman to set up shop. The city has world-leading expertise in e-commerce, with the likes of The Hut Group, ao.com and Boohoo, and Media City in Salford provides yet another string to the city's bow.

Here 6,000 are employed, with the BBC, ITV and Ericsson complemented by 250 smaller firms.

Innovation also percolates out to Greater Manchester's industrial heartlands. Kratos Analytical is developing the next generation of mass spectrometry products at its HQ in Trafford Park. And the city's investment agency is working with Rochdale and

Oldham on developing materials for the aeronautical and automotive sectors. Manchester was once an important shipping port, and it's been famous as a financial centre, the birthplace of the trade union movement and the home of the 'Madchester' music scene. Above all, it's a place that reinvents itself, and the next incarnation is sure to be interesting. ■

"Wherever you look, this city oozes innovation. It's in our genes"

A new dawn

Once an industrial dock, The Quays are now a modern cultural hub



HOW TO GET THERE

BA flies from Manchester to Heathrow and London City, as well as destinations in Spain, Greece, France and Denmark



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