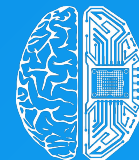




Global AI
Ecosystem



DEEP
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GROUP

AI Industry in Northern Ireland: Landscape Overview

January, 2024

www.ai-ecosystem.org

www.ai-ecosystem.org/northern-ireland
www.ai-ecosystem.org/uk

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Introduction

Artificial Intelligence Industry Analytics (AiiA) presents this summary analysis of Northern Ireland's Artificial Intelligence (AI) sector, that builds upon the analytical rigour exemplified in our previous exploration of blockchain technology in Scotland. This slide deck [and its associated platform](#) is structured to provide a comprehensive overview of Northern Ireland's AI landscape, aligning with Deep Knowledge Group's strategic focus on cutting-edge technology and its transformative impact on society. Produced by **Deep Knowledge Analytics**, it presents an updated and comprehensive overview of the entire **AI Industry across all 11 council areas**. This overview presents the first ecosystem map and landscaping analysis of AI's economic opportunities for Northern Ireland.

[The AI Industry in Northern Ireland platform](#) developed by AiiA encompasses a diverse range of sectors leveraging blockchain technology to create innovative and secure solutions and encourages collaboration and development within these sectors to foster growth in the Northern Irish AI industry.

Northern Ireland is rapidly establishing itself as a hub for AI innovation, with significant developments in key sectors such as healthcare, fintech, and cybersecurity. The region's commitment to leveraging AI mirrors the technological strides observed in our "Blockchain in Scotland" report, demonstrating a broader trend of technological excellence across the UK. This report and platform delves into the current state of AI in Northern Ireland, highlighting the technology's integration into various industries and its potential to drive economic growth. We examine the role of AI in advancing healthcare, from improving diagnostic accuracy to personalising treatment plans, a sector where AI's impact is particularly pronounced. In fintech, AI's contributions to enhancing financial services and security are explored, showcasing the technology's versatility and broad applicability.

The investment landscape in Northern Ireland's AI sector receives detailed analysis from Deep Knowledge Group, underscoring our commitment to deciphering the dynamics of emerging technology markets. Our reports and platform meticulously monitor the flow of venture capital and government incentives, aligning these findings with similar investment patterns seen in the Scottish blockchain sector. This comparative approach enhances our understanding of regional investment strategies and technology adoption rates. Furthermore, we delve into the unique challenges and opportunities within Northern Ireland's AI sector. Our analysis covers a range of issues, from skillset development to regulatory frameworks, offering comprehensive insights into the hurdles impeding AI advancement in the region. We also explore potential solutions and strategies to navigate these challenges effectively.

Our reports provide a forward-looking perspective, pinpointing emerging trends and potential growth areas within Northern Ireland's AI landscape. This outlook is crucial for various stakeholders, including entrepreneurs, investors, and policymakers, as they steer through the rapidly changing AI environment. Understanding these trends helps in making informed decisions and capitalizing on upcoming opportunities.

AI Industry in UK: Northern Ireland

Companies - 95
Investors - 45
Hubs - 3



View more:
www.ai-ecosystem.org/northern-ireland

AI Infrastructure



BuildTech



E-commerce



SocialTech



Entertainment



Finance



BioMed



Other



Source: platform.dkv.global/mind-map/ai-in-northern-ireland/2519/

AI Industry in Northern Ireland: Landscape Overview

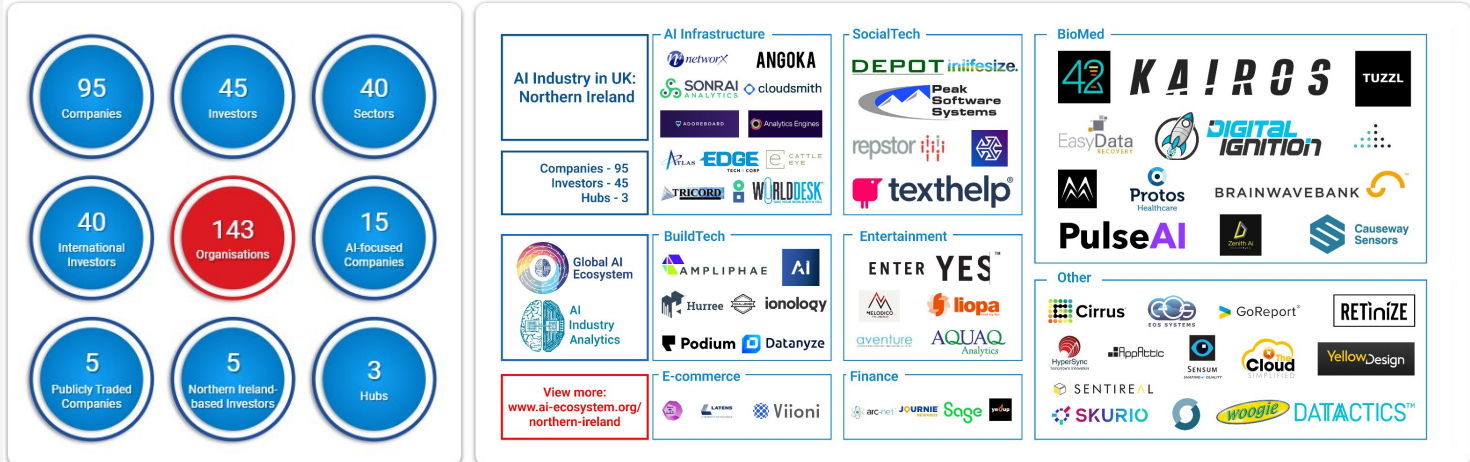
Platform

Platform: AI Industry in UK (Northern Ireland)



AI Industry in UK Northern Ireland

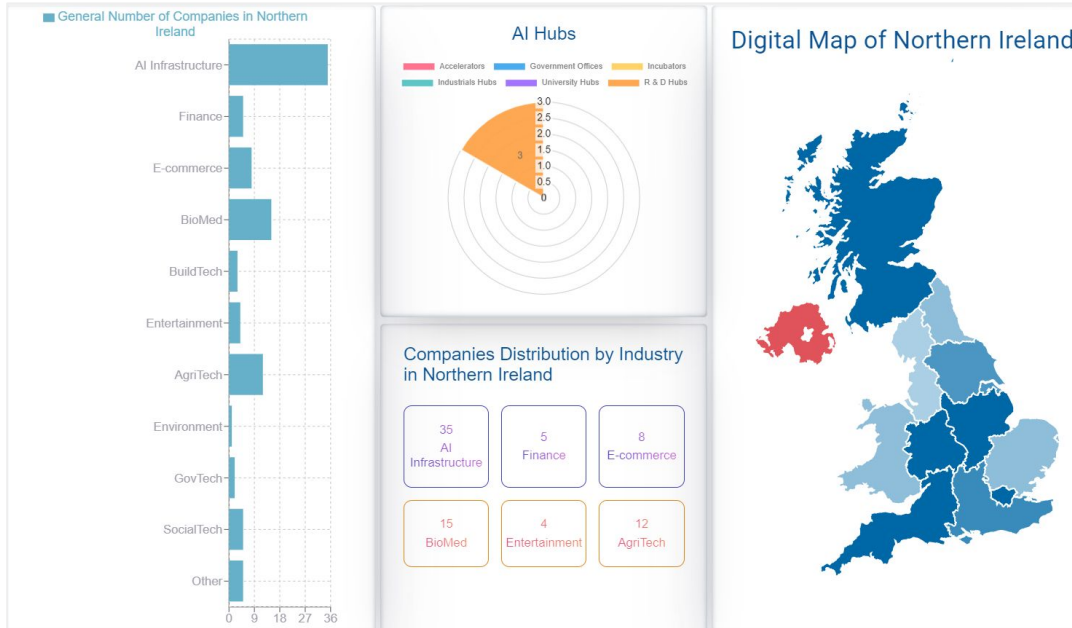
The AI Industry in Northern Ireland platform showcases the profiles of 95 companies, 45 investors, and 3 hubs actively involving AI on the local level. Entities are categorised by various sectors, including Infrastructure, BioMed, SocialTech, BuildTech, Entertainment, Finance, and more. This platform is a valuable resource for understanding and engaging with the rapidly evolving AI industry in Northern Ireland.



Source: <https://www.ai-ecosystem.org/northern-ireland>

Platform: AI Industry in UK (Northern Ireland)

The primary objective of this project is to establish a [centralized platform](#) that connects the various facets of Northern Ireland's AI industry, including companies, experts, investors, and AI hubs. By creating a cohesive digital environment, the platform aims to accelerate the growth and impact of AI development in Northern Ireland.



Key Features:

Company Directory: A comprehensive directory showcasing the 95 AI companies in Northern Ireland, providing a detailed overview of their expertise, projects, and key personnel.

Expert Network: A platform for AI professionals and experts to connect, collaborate, and share insights, fostering a culture of continuous learning and expertise enhancement.

Investor Portal: An interface for the 45 investors interested in the Northern Ireland AI landscape, offering information on investment opportunities, trends, and success stories.

AI Hub Collaboration: Facilitate communication and collaboration among the 3 AI hubs in Northern Ireland, serving as a catalyst for joint projects, research initiatives, and knowledge exchange.

AI in Northern Ireland Knowledge Hub

Scientific & IT Resources

10 AI Books

10 AI Journals

50 AI Articles

15 AI Benchmarks

10 AI Reports

10 AI Databases

5 AI Software

10 AI Models

Education & Collaboration

10 Conferences

10 Workshops

20 UK Certification Programmes

10 University AI Programs

20 Online AI Courses

10 Lectures by Leaders

10 Research Projects

10 Scholarship Funds

Media & Trends

10 AI Leaders Interviews

10 Podcasts by AI experts

20 Blogs

100 AI News

30 AI Social Networks

10 Market Trends

10 Diversity Trends in AI

10 Women Leading the Field

Rankings & Top Leads

95 Companies

100 Leaders

45 Investors

3 Hubs

18 Regions

15 Consulting Services

10 Startups

5 Universities

Online Communities

80 LinkedIn

80 Facebook

40 Reddit

40 GitHub

40 Quora

40 Twitter

40 Discord

40 Other Forums

AI Industry in Northern Ireland: Landscape Overview

AI Industry Main Principles

The Advantages of Artificial Intelligence Technology

5 Common Features of Artificial Intelligence

Learning & Adaptation

AI systems have the ability to learn from data and adapt their behavior over time. This learning process can occur through various techniques, such as machine learning, where algorithms analyze patterns in data and adjust their models to improve performance.

Problem Solving

AI is designed to solve complex problems by processing and analyzing large amounts of data. This involves making decisions, drawing conclusions, and generating solutions based on the information available to the system. Problem-solving in AI can range from simple tasks to highly intricate and specialized domains.

Automation

One of the primary goals of AI is to automate tasks that traditionally require human intelligence. This can include routine and repetitive activities, as well as more complex tasks such as decision-making, problem-solving, and natural language understanding.

Perception and Interaction

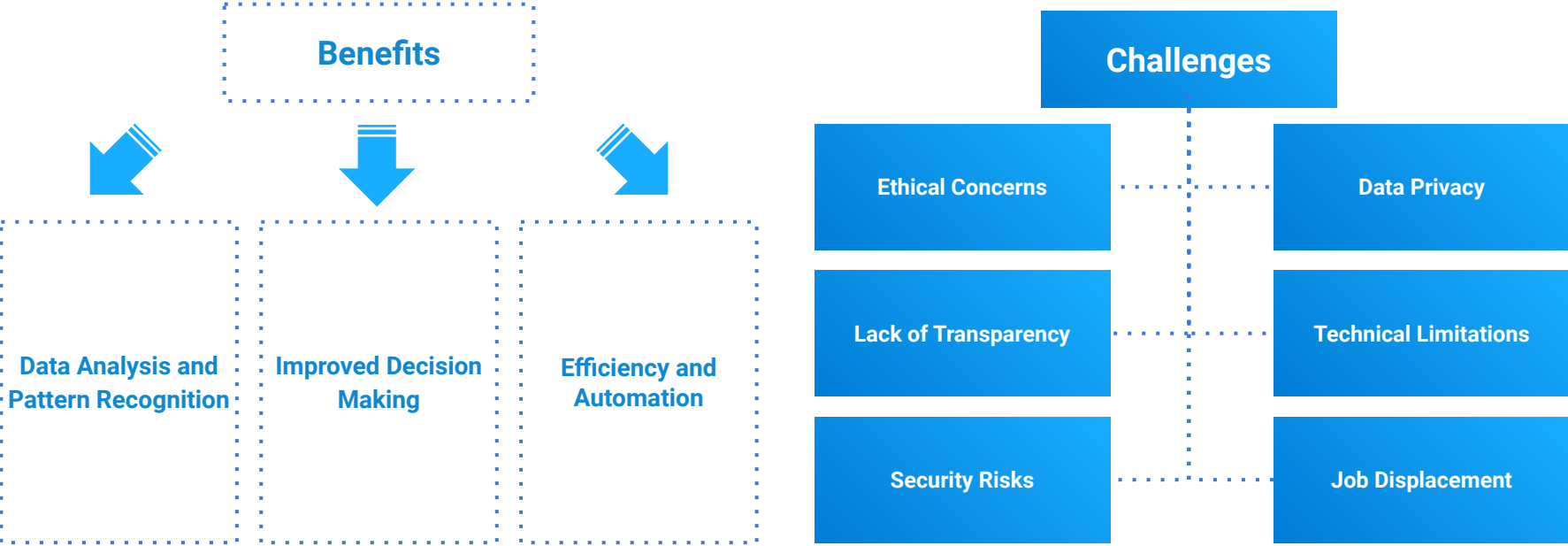
AI systems often incorporate capabilities related to perception and interaction with the environment. This can involve computer vision for image and video analysis, speech recognition for understanding spoken language, and natural language processing for comprehending and generating human language.

Adherence to Instructions

AI systems follow instructions or algorithms to perform specific tasks. The ability of AI to execute tasks based on instructions is a fundamental characteristic, whether it's in the form of rule-based systems, expert systems, or more advanced machine learning models.

The Benefits and Challenges of Artificial Intelligence

Artificial Intelligence (AI) brings a host of benefits, driving efficiency, automation, data analysis, and personalized experiences across industries. It enhances decision-making processes, improves safety and security measures, and fosters innovation. However, AI adoption is accompanied by significant challenges. Ethical considerations, such as privacy and bias concerns, require careful attention. The lack of transparency in AI decision-making, security risks, data privacy issues, and technical limitations pose additional hurdles.



Artificial Intelligence in Northern Ireland Analytical Framework

AI Infrastructure

Building robust systems to support AI workloads, optimize hardware, scalable cloud solutions, efficient data storage

SocialTech

Applications range from sentiment analysis for community well-being to AI-driven solutions addressing social challenges

BuildTech

Integrates AI in construction and real estate. Enhances project management with predictive analytics, accelerates design processes

Entertainment

Enhances user experiences. Content recommendation algorithms deep learning creates realistic animations, and chatbots engage audiences, shaping a dynamic and immersive entertainment

E-commerce

AI Optimizes business and customer experience. Algorithms provide detailed customer behavior analysis, augmented reality technologies, supplier management and many more

Finance

AI revolutionizes operations. From algorithmic trading and fraud detection to personalized financial advice, AI enhances efficiency, minimizes risks, and provides insights for decision-making

Biomed

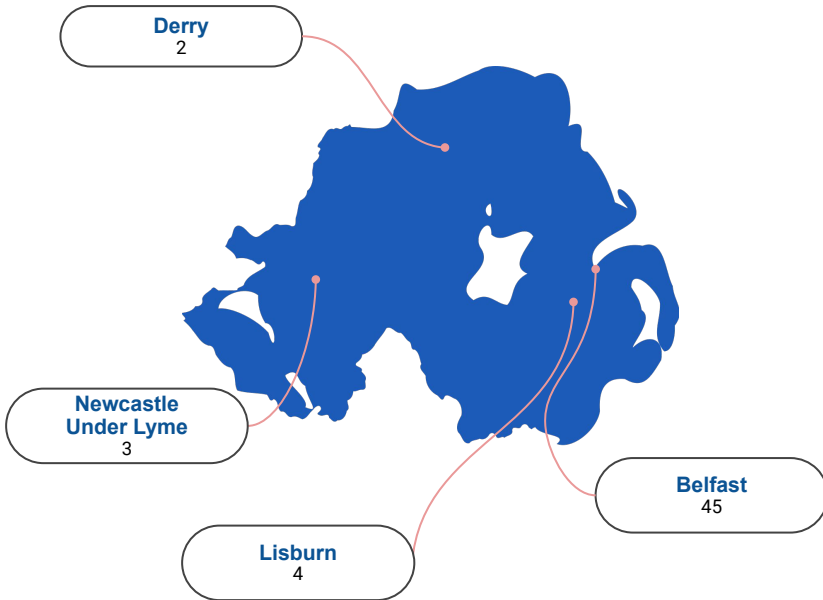
AI accelerates healthcare innovation. It aids in drug discovery, interprets medical images for diagnosis, and personalizes treatment plans through predictive analytics, ushering in a new era of precision medicine

AI Industry in Northern Ireland: Landscape Overview

Current State

Northern Ireland AI Companies - Regional Distribution

AI Companies Incorporated in Northern Ireland



Growth potential in region

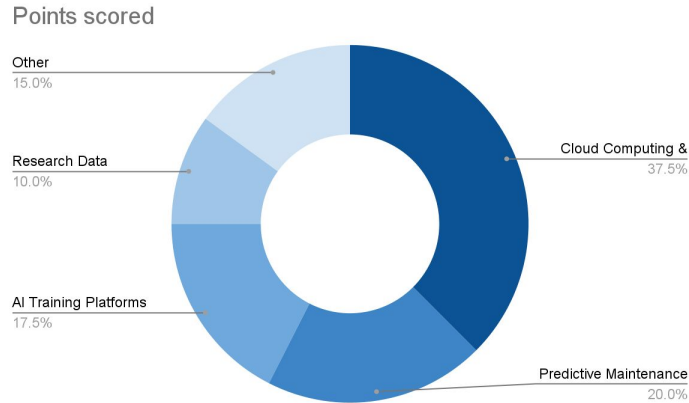
AI Industry is showing promising growth with a notable concentration in Belfast. Northern Ireland has experienced a notable rise of AI-focused companies, showcasing a distributed presence across both urban and rural areas.

While larger cities host prominent players, a positive trend is the emergence of such companies in smaller towns. The government started investing in developing of field **since 2018 by investing over £4.5 millions.**

Most AI-focused companies are located in Belfast accounting for 45 companies, which is more than a half of the total number of companies. Lisburn comes next with 4 companies, followed by Derry and Newcastle Under Lyme.

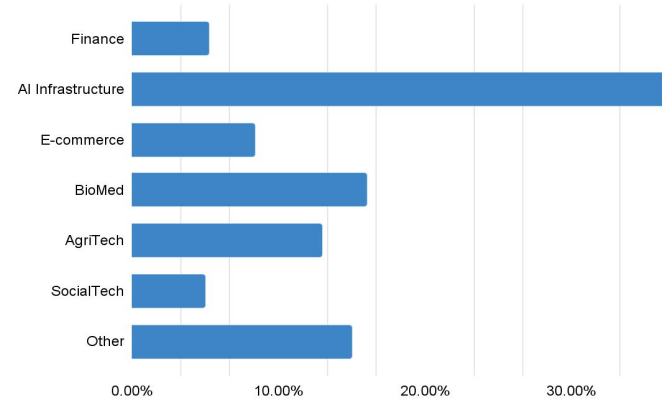
Industry Distributions

Distribution of Sectors by Number of Companies



Cloud Computing and Storage Solutions dominate in Northern Ireland's AI sectors at 37.5%. Emphasizing a strong focus on cloud technologies. Following closely in Predictive Maintenance at 20%, showcasing a commitment to operational efficiency. The remaining sectors including Training Platforms, Research Data Analysis, contribute to a diverse and innovative landscape

Distribution by Industry



The data presented in the graph above highlighting a significant emphasis on foundational AI technologies. Following closely, BioMed accounts for 16%, showcasing a notable focus on AI applications in the biomedical sector. E-commerce holds around 9%, indicating a notable but moderate focus on online commerce almost on one level with AgriTech (13%)

By focusing on the development of AI fundamentals, products and services for various industries, Northern Ireland offers an ideal trajectory for the growth and development of the latest industry relevant to all areas

AI Industry in Northern Ireland: Landscape Overview

Policy and Governance

Highlights from AI Policy Development in Northern Ireland

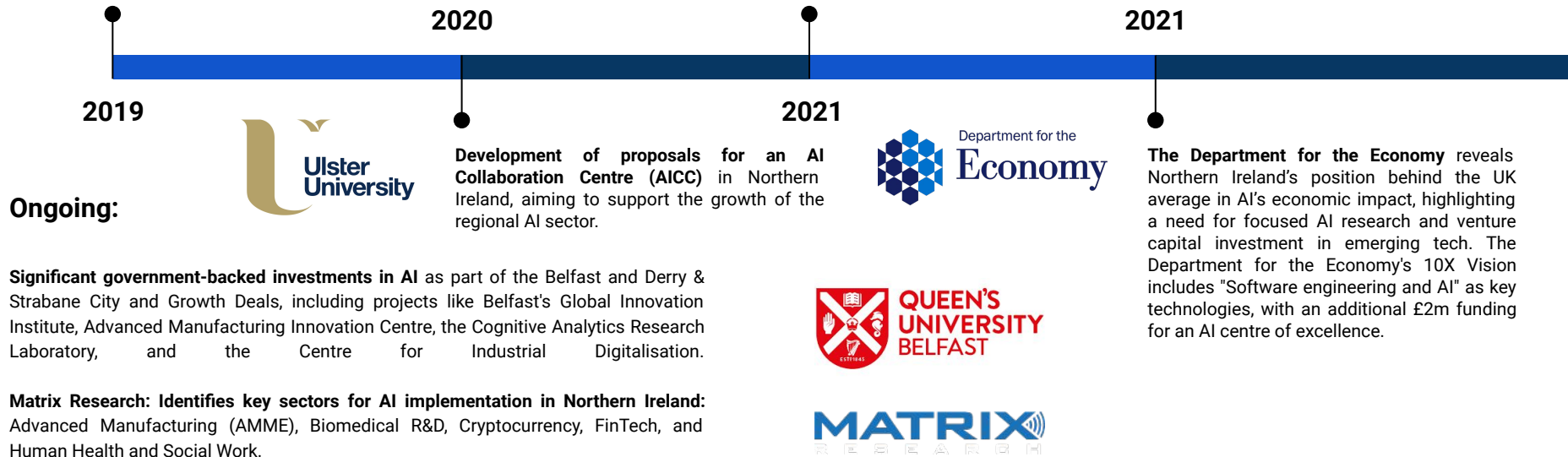
Turing Institute Report recognizes the quality of AI research at Ulster University and Queen's University Belfast, recommending the establishment of an AI Centre of Excellence in Northern Ireland for enhanced academic, industry, and government collaboration.

The Alan Turing Institute

The UK Government publishes a 10-year AI strategy as part of the UK Science and Technology Framework, targeting the UK to become a global AI superpower. Northern Ireland aligns with this vision, focusing on AI ecosystem support, sector-wide benefits, and AI governance.



Department for
Science, Innovation
& Technology



3 Common AI Policy Challenges

Resource Allocation and Investment

One of the primary challenges is the disparity in investment and resource allocation. The 2021 Leading Innovation report highlighted that Northern Ireland lags behind the UK average in the attainable economic impact of AI. This is indicative of a need for more focused investment, particularly in venture capital for emerging tech and AI-specific ventures. The comparatively lower investment in AI and related technologies suggests a critical need for policy intervention to attract and secure more significant funding.

Focused AI Research and Development

AI research in Northern Ireland, though present, lacks the tightly focused or differentiated approach observed in other UK clusters. There's a necessity for policies that not only encourage AI research but also guide it towards specific niches or sectors where Northern Ireland can develop a competitive edge. This involves identifying key areas of strength and potential within the regional context, such as advanced manufacturing or cyber security, and tailoring research initiatives accordingly.

Skill Development and Talent Acquisition

The high proportion of tech vacancies compared to other regions highlights a gap in AI-focused human resources. Addressing this requires educational and vocational policies aimed at skill development and talent retention. The policy framework must focus on building a skilled workforce capable of supporting and advancing the AI sector. This includes enhancing AI literacy across various levels of education and professional training.

3 Common Policy Opportunities

Harnessing Government-Backed Initiatives

The Belfast and Derry & Strabane City and Growth Deals present significant opportunities.

Such deals, with substantial funding for AI-focused projects, provide a foundation upon which comprehensive AI policies can be built. Government-backed initiatives like the Cognitive Analytics Research Laboratory and the Centre for Industrial Digitalisation can serve as models for integrating AI into various sectors.

Sectoral Expansion and Integration

According to the Matrix research, Northern Ireland shows significant potential in sectors like AMME, biomedical R&D, cryptocurrency, FinTech, and human health and social work with regards to AI implementation. Policies that support and streamline AI integration in these sectors can lead to diverse growth and innovation. This includes leveraging the existing cyber security cluster and expanding AI applications in finance and healthcare.

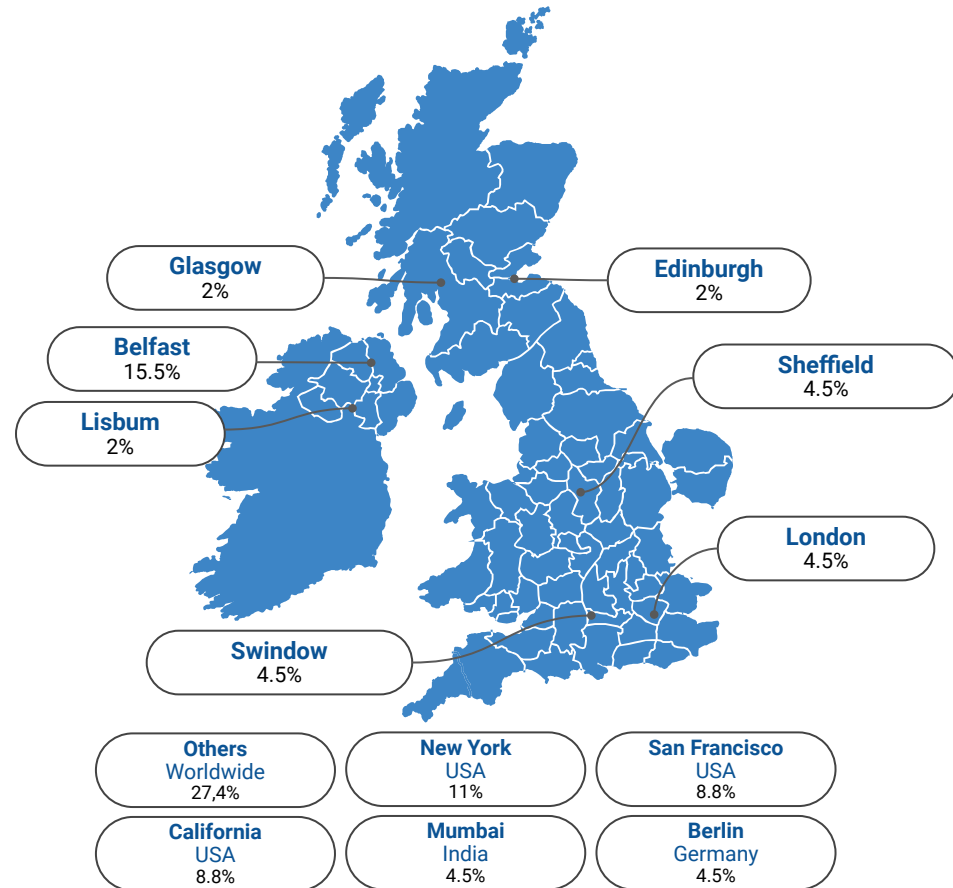
Long-term Strategic Planning

The UK Government's 10-year AI strategy offers a strategic direction that can be localized and adapted for Northern Ireland. Aligning regional AI policies with this broader national vision can facilitate a more cohesive and comprehensive approach to AI development. This strategy underscores the importance of an ecosystem that supports AI, equitable benefits across sectors and regions, and robust AI governance and regulation.

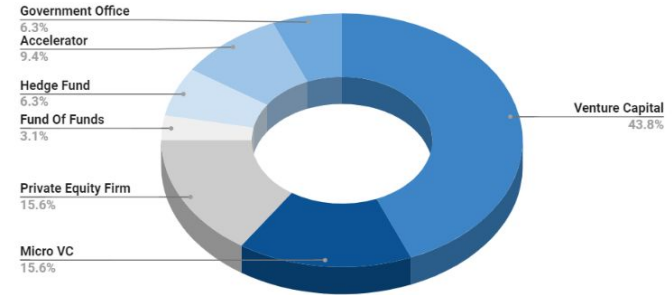
AI Industry in Northern Ireland: Landscape Overview

Investment

Overview of Investors in Northern Ireland AI-Centric Companies



Distribution of Investors Type



The surge in investment into Belfast is to be expected. Belfast, positioned as a leading hub for AI in Northern Ireland, is poised for a transformative shift in the second quarter of the 21st century. The city's thriving AI community is strategically situated near essential financial support, fostering an environment conducive to its growth and development.

The UK and in particular Belfast are becoming a true innovation and investors epicentre for everything around AI.





Overview of UK Investors

The thriving tech scene in Northern Ireland, particularly in the artificial intelligence sector, has caught the eye of UK investors. In recent years, Northern Ireland has emerged as a hotbed for innovation in AI, drawing attention from major investment firms across the United Kingdom. This surge in interest is driven by the region's growing reputation for cutting-edge research, a talent pool enriched by top universities, and a supportive government policy environment. UK investors are increasingly recognizing the potential in Northern Ireland's AI ventures, ranging from startups focusing on machine learning solutions to established companies pioneering in AI-driven analytics. These investments are not just financial; they represent a belief in the region's capacity to be at the forefront of the AI revolution. This influx of capital is enabling local AI companies to scale up, expand their global reach, and accelerate innovation.

Investor	Investor Type	City Location	Typical Funding Round	Investments in Northern Ireland AI Company
83North	Technology - oriented Investor with Venture Investment Focus	Swindon	Grant	83North is a global venture capital firm with more than \$1.8B million under management.
LifeArc	Venture Capital	London	Seed	BrainWaveBank advances CNS disorder diagnosis and treatment tracking through accessible, accurate cognitive health assessments performed conveniently at home.
Balderton Capital	Venture Capital	London	Early Stage Venture	Automated Intelligence is a data management solution provider.
Northstar Ventures	Micro VC, Venture Capital	Newcastle Upon Tyne	Seed	Atlas Cloud are a leading provider of cloud IT services.

Overview of Northern Ireland-based Investors



In Northern Ireland, the landscape for AI companies is supported by a diverse array of financing options, catering to various stages of business growth. The region's dynamic investment environment offers everything from seed funding for emerging startups to more substantial financing for mature AI enterprises. One of the prominent features of this ecosystem is the Northern Ireland Growth Loan Fund, which provides loans ranging from £100,000 to £1.5 million to promising businesses focused on expansion. Moreover, Northern Ireland boasts a vibrant community of angel investors who are particularly interested in the burgeoning AI sector. Networks such as the Northern Ireland Angel Network and Belfast-based Tech Angels actively engage in funding and nurturing early-stage AI companies. These angel investors typically infuse smaller amounts of capital compared to larger institutional investors, but their hands-on approach and industry insights are invaluable for startups navigating the complexities of AI technology and markets.

Investor	Investor Type	City Location	Typical Funding Round	Investments in Northern Ireland AI Company
Clarendon Fund Managers 	Micro VC	Belfast	Early Stage Venture	RETiniZE is a VR technology start-up.
Invest Northern Ireland 	Venture Capital	Belfast	Early Stage Venture	Liopa is LipRead deciphers speech from lip movements. It uses AI and deep learning for automated lip reading.
QUBIS 	Venture Capital	Belfast	Early Stage Venture	Liopa is LipRead deciphers speech from lip movements. It uses AI and deep learning for automated lip reading.
Techstart Ventures 	Venture Capital	Belfast	Early Stage Venture, Seed	BrainWaveBank improves early diagnosis and measurement of treatment response at an individual level in central nervous system disorders

Overview of USA Investors

US investors, including notable firms like Andreessen Horowitz, Bain Capital Ventures, and Y Combinator, are increasingly focusing on Northern Ireland's burgeoning artificial intelligence sector. Attracted by the region's dynamic tech ecosystem and innovative AI companies, these American investment giants are providing both financial resources and valuable expertise. This surge in US investment is catalyzing growth and global competitiveness in Northern Ireland's AI ventures.

Specialized investors such as Left Lane Capital and The Chainsmokers, alongside broader firms like General Atlantic and Insight Partners, are drawn to Northern Ireland's rich talent pool and supportive tech environment. Their involvement is not only bolstering local AI companies but also positioning Northern Ireland as a key player in the global AI industry. This transatlantic partnership signifies a major step forward in Northern Ireland's tech evolution, heralding a new era of international technological innovation and collaboration.

Investor	Investor Type	City Location	Typical Funding Round	Investments in Northern Ireland AI Company
Foundation Capital	 Venture Capital	Palo Alto	Early Stage Venture, Late Stage Venture	CropSafe is a simple online platform utilizing satellite imagery to accurately detect and predict diseases within your crops
Coatue	COATUE Hedge Fund	New York	Early Stage Venture, Late Stage Venture	Texthelp provides literacy software solutions for individuals, K-12 and higher education students, and publishers.
ICONIQ Capital	ICONIQ Venture Capital	San Francisco	Early Stage Venture, Late Stage Venture	Skurio is a cybersecurity company that gives every organization the ability to reveal their spectrum of digital risk.
Insight Partners	 Private Equity Firm	New York	Debt, Early Stage Venture	Analytics Engines provides customers with fast and efficient processing of business and application data.

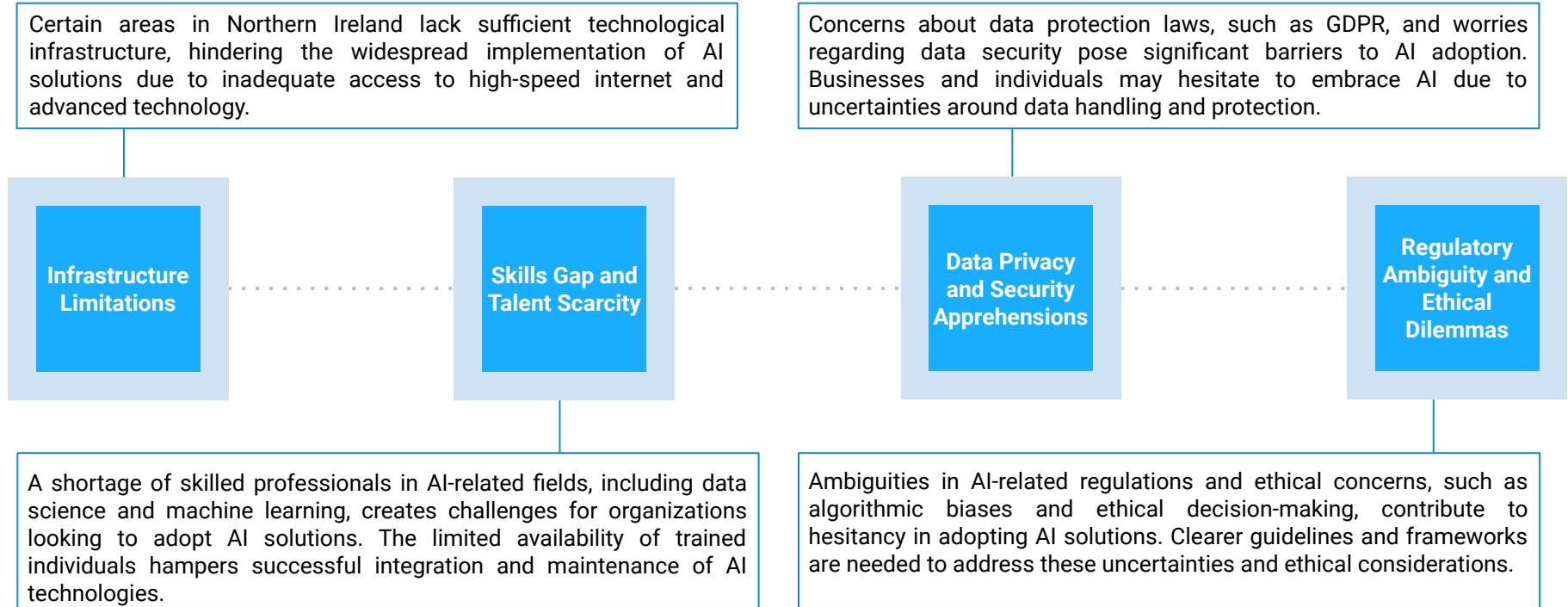
Overview of Major Funding Deals in 2021-2023

Company	Sector	Money Raised, million USD	Pre-Money Valuation, million USD	Funding Type	Announced Date	Lead Investors	Number of Investors
Causeway Sensors	Medical BioTech	\$4,4m		Grant	2022	UK Research and Innovation	1
CropSafe	Precision Farming	\$3m		Seed	2022	Elefund	8
Angoka	Urban Planning & Smart City Solutions	\$2.7m		Seed	2022	24 Haymarket	3
Sonrai Analytics	Research Data Analysis	\$2.5m		Seed	2022	Forward Partners	4
Causeway Sensors	Medical BioTech	\$1.9m	\$20.9m	Venture	2022	Kernel Capital	2
42 Genetics	Medical BioTech	\$1.2m		Equity Crowdfunding	2021	Crowdcube	1

AI Industry in Northern Ireland: Landscape Overview

Summary

Obstacles to AI Solutions Adoption in Northern Ireland



Routes to AI Adoption in Northern Ireland

Deep Knowledge Group advocates for strategic public-private partnerships to upgrade and modernize infrastructure. Investment in state-of-the-art facilities and technology parks, with a focus on high-speed connectivity and robust data centers, is essential. This approach includes leveraging international expertise in infrastructure development, tailored to support advanced AI applications.

**Infrastructure
Limitations**

**Skills Gap and
Talent Scarcity**

To bridge the skills gap, Deep Knowledge Group recommends a comprehensive revamp of educational curricula, integrating AI and data science at all levels. Collaborations with universities and global tech companies for internship and apprenticeship programs can provide practical exposure. Additionally, incentive schemes for AI research and development roles can attract global talent, further enriching the local AI ecosystem.

Addressing data privacy and security concerns requires implementing stringent data governance frameworks. Deep Knowledge Group suggests adopting international data protection standards and developing bespoke encryption and cybersecurity protocols. Regular audits, certification programs on data privacy can help build trust and ensure compliance with global best practices.

**Data Privacy
and Security
Apprehensions**

**Regulatory
Ambiguity and
Ethical
Dilemmas**

To navigate regulatory ambiguity and ethical challenges, a multi-stakeholder approach is key. Deep Knowledge Group proposes the establishment of an AI ethics board comprising government, industry leaders, academia, and civil society. This board should work on developing clear regulatory guidelines and ethical codes of conduct for AI applications, ensuring transparent and responsible AI development and deployment.

Key Takeaways



Growing AI Hub: Northern Ireland is rapidly emerging as a significant hub for AI innovation, particularly in sectors like healthcare, fintech, and cybersecurity. This growth mirrors broader technological trends across the UK and positions the region as a key player in the AI landscape.



Investment and Economic Potential: The AI sector in Northern Ireland has seen substantial investment, both from local and international sources, underlining its potential for economic growth. This influx of capital is enabling AI companies in the region to scale up and broaden their global impact.



Educational and Skill Development: There's a recognized need for enhanced AI education and skill development to address the current talent scarcity. Deep Knowledge Group suggests comprehensive educational reform and partnerships with global tech companies to build a robust talent pool for the AI sector.

Key Takeaways



Policy and Regulatory Environment: The AI ecosystem in Northern Ireland is shaped by a dynamic policy and regulatory environment. Deep Knowledge Group emphasizes the importance of clear regulatory guidelines and ethical standards to navigate the complexities of AI adoption and ensure responsible development. As AI adoption increases, so does the need for stringent data governance. Adopting international standards and developing robust cybersecurity protocols are essential to address data privacy and security concerns.



Sectoral Integration and Innovation: The integration of AI across diverse sectors presents numerous opportunities for innovation. Northern Ireland shows significant potential in integrating AI into sectors like advanced manufacturing, biomedical R&D, and social work, suggesting a diversified and innovative AI landscape.



Infrastructure Development: Addressing infrastructure limitations is key to supporting the AI sector's growth. Investment in state-of-the-art facilities and technology, with a focus on high-speed connectivity and data centers, is crucial for fostering an environment conducive to AI innovation.



Global AI Ecosystem

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info@ai-ecosystem.org

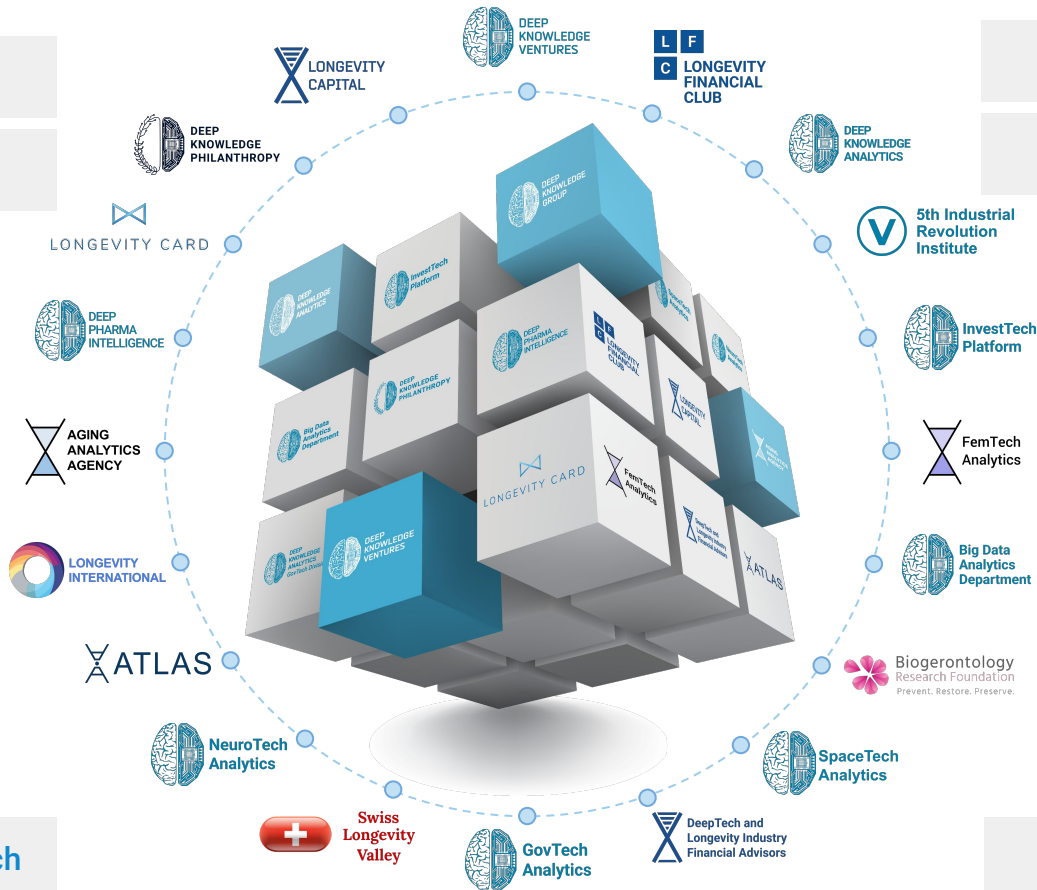
Deep Knowledge Group



AI Industry Analytics

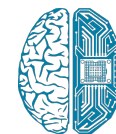
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