



**QUEEN'S
UNIVERSITY
BELFAST**



Head Teachers Meeting

Hosted by Professor David Jones

Pro Vice-Chancellor for Education and Students

18 May 2023



**QUEEN'S
UNIVERSITY
BELFAST**



WELCOME & INTRODUCTION



**SHAPING A
BETTER
WORLD
SINCE 1845**



**QUEEN'S
UNIVERSITY
BELFAST**

Impact and Implications of AI for Education

Professor Philip Hanna

Dean of Education, Faculty of Engineering and Physical Sciences

**SHAPING A
BETTER
WORLD
SINCE 1845**



The Future of Education in an AI Rich World

☰ FINANCIAL TIMES [Subscribe](#) [Sign In](#)

Artificial intelligence [+ Add to myFT](#)

AI breakthrough ChatGPT raises alarm over student cheating

Academics urge universities to develop new forms of assessment after launch of program that imitates essay-writing

The Washington Post
Democracy Dies in Darkness [Subscribe](#)

Education Higher education Local Education The Answer Sheet Jay Mathews

Teachers are on alert for inevitable cheating after release of ChatGPT

ChatGPT offers a glimpse at a future in which computer-generated answers may be undetectable

By [Laura Meckler](#) and [Pranshu Verma](#)
December 28, 2022 at 6:00 a.m. EST

[f](#) [t](#) [r](#) [w](#) [e](#) [s](#) [s](#) [103 Comments](#)

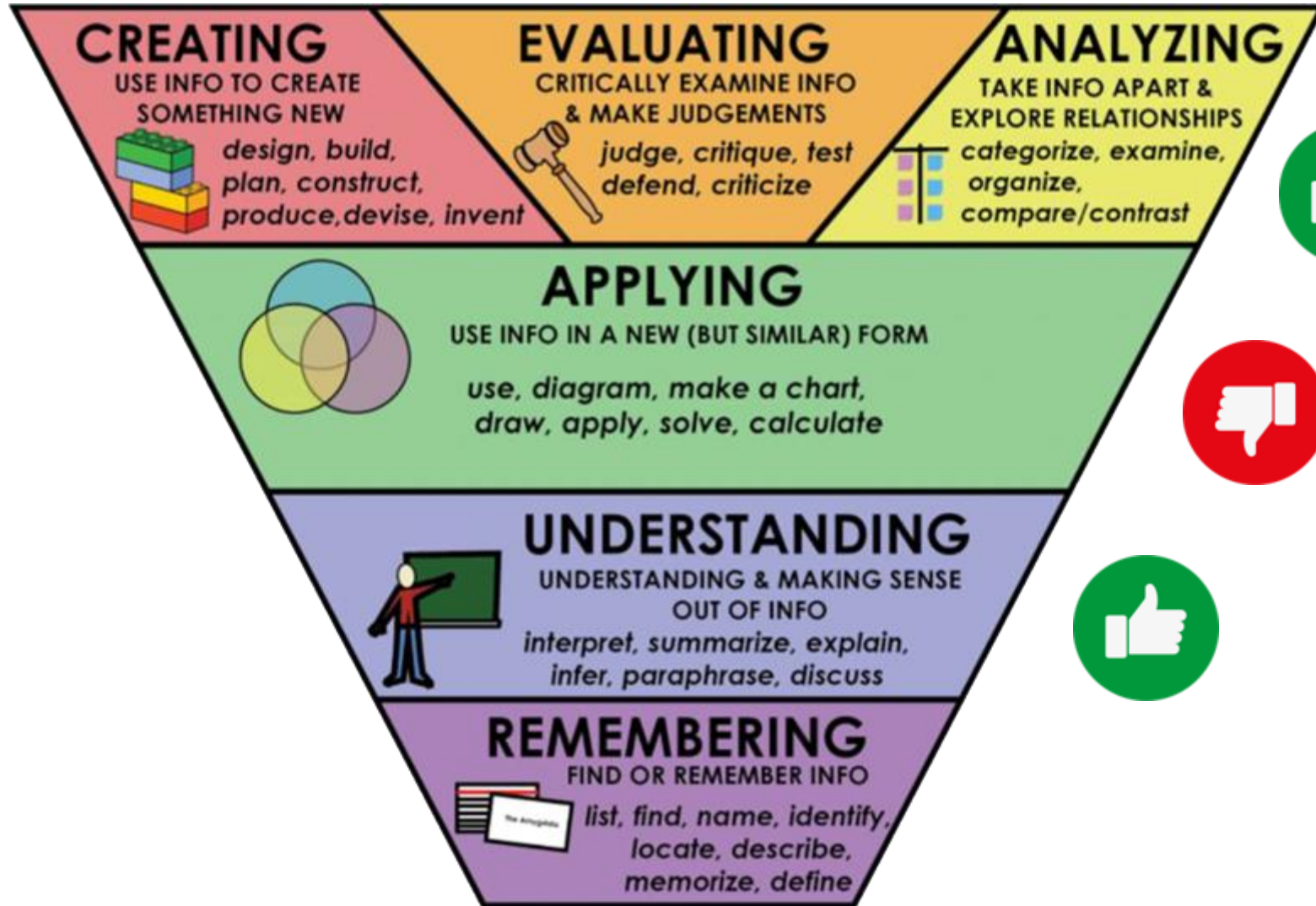
TECH

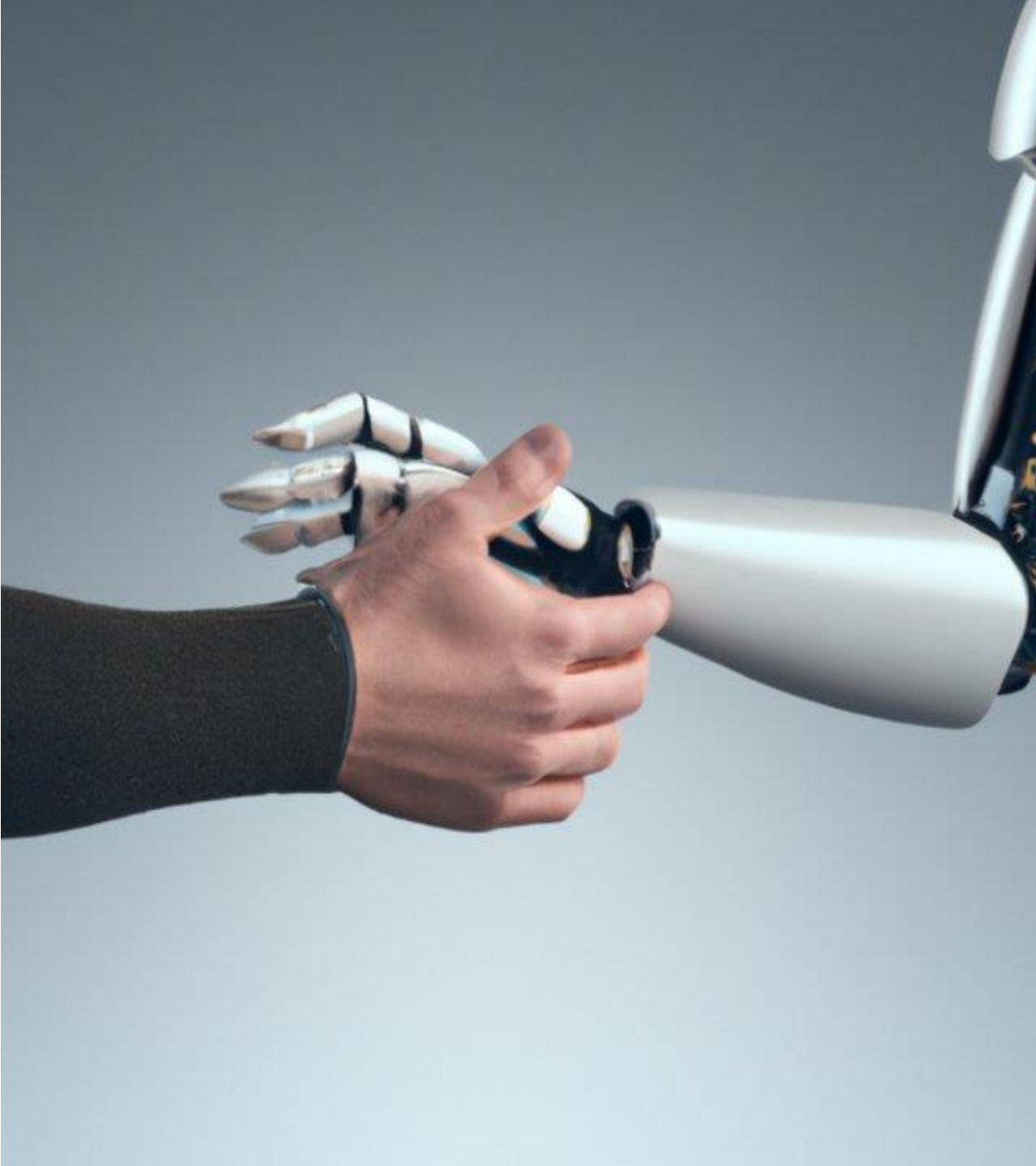
Professor catches student cheating with ChatGPT: 'I feel abject terror'

By [Alex Mitchell](#) December 26, 2022 | 5:16pm | Updated



Professor catches student cheating with ChatGPT: 'I feel abject terror'





To succeed, we will need to embrace AI in how we educate.



**QUEEN'S
UNIVERSITY
BELFAST**

The Impact of the Belfast Region City Deal for Future Graduates

Ms Jenny McAuley

Skills Project Manager for Belfast Region City Deal at Queen's University

**SHAPING A
BETTER
WORLD
SINCE 1845**

BELFAST REGION CITY DEAL – WHAT IS IT AND WHERE WILL THE JOBS BE?

INNOVATION
FOR REAL
WORLD IMPACT

What impact will the Belfast Region City Deal will have on our local economy in relation to employment in the future?

Jenny McAuley
Skills Project Manager
Belfast Region City Deal



QUEEN'S
UNIVERSITY
BELFAST





Belfast Region City Deal

It's a big deal

Jobs in the Belfast City Region



Largest sectors:

- **Wholesale and retail trade** (85,150 jobs)
- **Human health & social work activities** (84,620 jobs)
- **Admin & Support services** (46,750 jobs)
- **Manufacturing** (46,400 jobs)
- **Education** (45,390 jobs)
- **Public administration & defence** (38,960 jobs).



The biggest job impact by 2027 is generated primarily from the following sectors; **professional scientific and technical services** (10,690 above baseline); **information and communication** (6,960 above baseline); and **health and social work** (4,230 above baseline).



Employment in the BCR Region has the **potential to grow from 552,120 in 2017 to 617,170 in 2027.**



33% of the job growth requirement will require degree level qualifications.



The sectors expected to contribute the largest increase in jobs in absolute terms over the period 2017-2027 are: **professional scientific and technical services** (15,930); **information and communication** (10,250); and **restaurants and hotels** (7,600).



The largest sectors comprising the NQF level 6+ demand in BCR are:

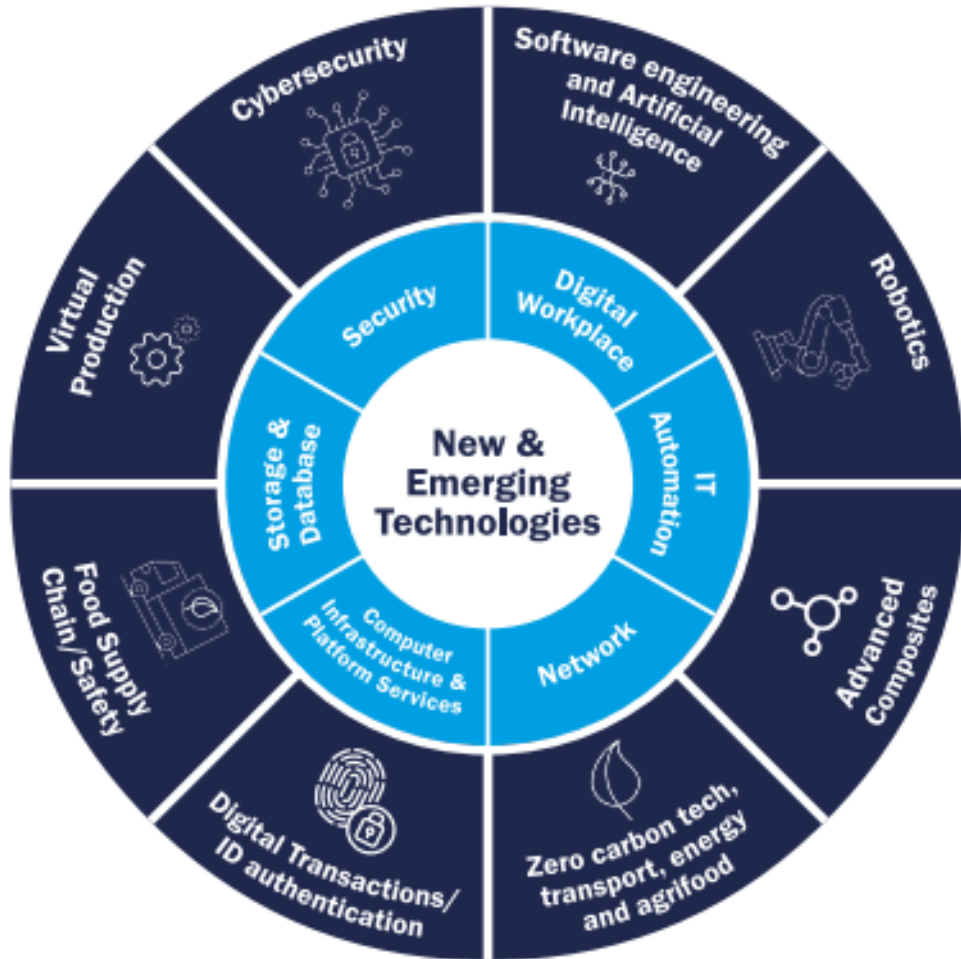
- **professional, scientific and technical** (19% net requirement)
- **information communication** (15%).
- **sub-sectors of public services (health – 13%; public administration – 5%; and education – 6%)** make up almost one quarter (24%) of the NQF level 6+ net requirement.

10X Economy: NI's Decade of Innovation



- An ambition for a tenfold increase in innovation over the next ten years which has benefits for all its people
- Measured by innovation-led economic growth, inclusive growth, and green growth
- ‘Through our City and Growth Deals we are establishing the necessary infrastructure to connect businesses at all levels to new ideas and technologies.’

DfE 10X Strategy identifies technologies that will help shape the future of Northern Ireland providing a basis for skills development.



It also identifies cluster opportunities from embracing these technologies:

- Building upon Northern Ireland's world class strengths in **Cyber Security** to grow our Cyber skills base.
- Application of innovation and technologies such as **Artificial Intelligence** to the region's large **agriculture industry**
- Application of innovative technologies to the **agri-food sector**.
- Capitalising upon the UK's position as a global leader in the **Fintech Sector**
- **Taking advantage of the technological window** through our **strong manufacturing heritage**.
- Benefitting from exciting breakthroughs in technology driven by the needs of this population, **the Life and Health Sciences Sector** will be at the cutting edge of this opportunity.

INNOVATION

TOURISM

DIGITAL

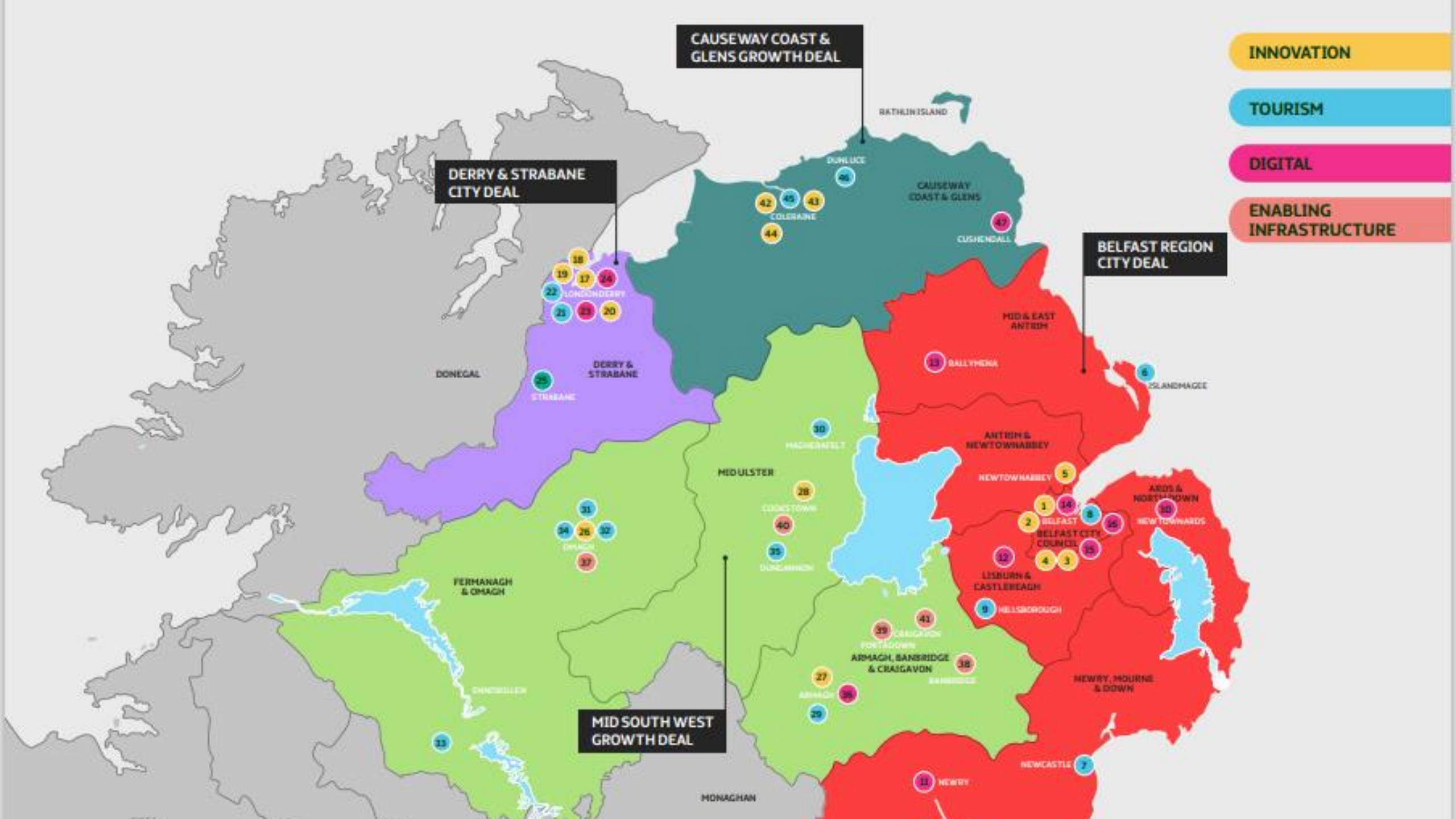
ENABLING INFRASTRUCTURE

CAUSEWAY COAST & GLENS GROWTH DEAL

DERRY & STRABANE CITY DEAL

BELFAST REGION CITY DEAL

MID SOUTH WEST GROWTH DEAL



Regional High Growth Sectors: Engines of Economic Growth

Life and Health Sciences



- ✓ Generates sales of over £800m annually
- ✓ Competitive strengths in clinical trials, medtech and digital health
- ✗ Lack of joined-up infrastructure as found in rest of the UK

Agri-food



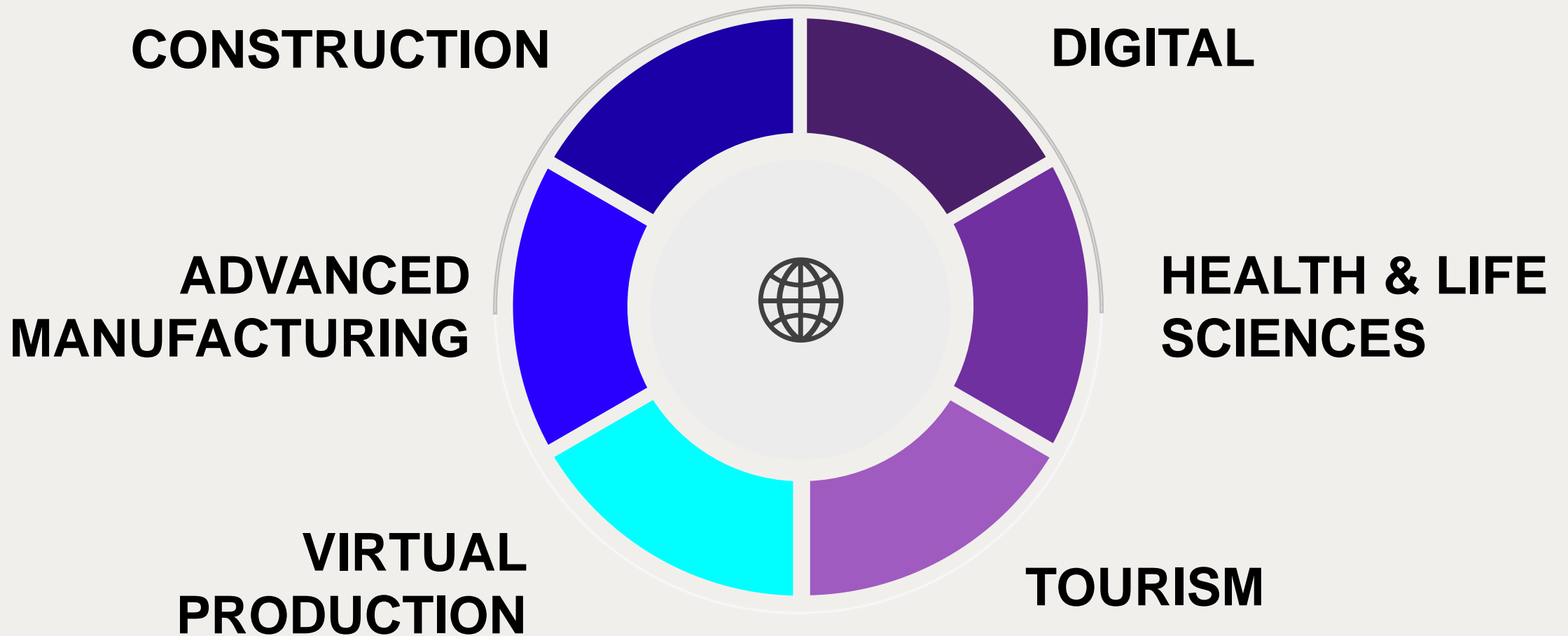
- ✓ NI's largest sector
- ✓ Key source of export sales – generated £1.26 billion in export sales in 2017
- ✗ Challenges of Brexit, carbon neutrality and industry 4.0

Advanced Manufacturing



- ✓ Represents over 30% of total NI employment
- ✓ Almost 40% of sales occur outside of Northern Ireland
- ✗ Increasing automation and pace of change

KEY SECTORS



Advanced Manufacturing Innovation Centre

Future-focused
Manufacturing

Global Innovation Institute

Digital Innovation
across the One
Health spectrum

Institute of Research Excellence for Advanced Clinical Healthcare

A Crucible for
Healthcare
Innovation

Studio Ulster

Creatively Led,
Technologically Driven
R&D in Virtual
Production

Centre for Digital Healthcare Technology

Co-created health tech
innovation for socio-
economic benefit

ADVANCED MANUFACTURING INNOVATION CENTRE

INNOVATION
FOR REAL
WORLD IMPACT

SMART DESIGN

SUSTAINABLE
COMPOSITES AND
POLYMERS

DIGITALISATION OF
MANUFACTURING
PROCESSES

SMART NANO

AREAS OF CAPABILITY OF THE ADVANCED MANUFACTURING
CENTRE.



QUEEN'S
UNIVERSITY
BELFAST

BELFAST
REGION
CITY DEAL



Lightweight Structures and components

- Lightweight structures and components
- Manufacture and assembly of high-performance materials

Connected, Integrated Products and Supply Chain

- Sectoral Leadership
- Connected Supply Chain

Manufacturing Decarbonisation

- New manufacturing power sources (e.g., hydrogen/biofuel/electric)
- Circular economy
- Renewables including hydrogen

Testing and Simulation Services

- Digital simulation of design, manufacturing, and installation
- Digitisation/capture of test data
- Materials evaluation and testing
- Data handling for testing and analytics services

Robotics, Automation & Digital Manufacturing

- Robotics, digital innovation, automation – strategic network
- Digital manufacturing test bed
- Supply chain digitalisation
- Intelligent automation including robotics and alternative energy vehicles (AEVs)

Food and Drink Processing

- Lightweight sustainable packaging, processes, and components for agile, lean waste reduction
- Digital innovation support ecosystem
- Automation and digital integration with easy-to-use data analytics for decision making

Composites

- Aerospace
- Energy
- Construction & Infrastructure
- Defence & Space
- Surface Transport

Technology Roadmap Areas of Focus from a Skills Perspective

Software roles

Solutions architects

Software engineers

Engineers

Python experts

Network engineers

Data scientists

Data analytics

Cloud computing expertise

Cyber security skills

IoT engineers

Edge engineers

Machine learning/AI

Digital manufacturing expertise

Digital Engineers/Digital Skills

Materials

Automation Engineers

Manufacturing automation

Real-time control and optimization

Processing/ packaging technologies,

Raw materials & best practice processing

Factory of the future

Modelling and analytics skills

Digital thread design – planning

AR/VR

Digital twin technologies

Shared service skills (tech, data, SME)

Supply chain

Purchasing expertise

Business skills: business case development

Business development – technical sales

Business development skills

Business strategy

Public affairs and communications

Good communicators → marketing

Strategic partnership building skills, including finance

Factory of the Future

Support Systems

Advanced Manufacturing – The Jobs

- Spray Painters (Manual)
- Supervisors
- Trained maintenance
- Skilled electricians
- Electromechanical skilled tradespeople
- Tradespeople Maintenance/dye maintenance
- People with high-level of technical knowledge
- Hardware/Software
- Systems Analyst
- Systems Development
- Data Scientists
- Software Engineers
- Cybersecurity Experts
- Coding
- Planning
- Digital Transformation
- Digital Manufacturing
- Project Managers
- Design Engineers
- Sustainability Engineers
- Programming
- Quality Engineers
- Robotics
- Mechatronics
- Semi-conductor and photonics
- Welders
- Robotic Welders
- Fabrication
- Operators
- CNC Operators
- Assembly Operative
- Production (moulding/trimming/painting/assembly)
- Spray Painters (Robotic)

MOMENTUM

ONE

ZERO

INNOVATION
FOR REAL
WORLD IMPACT

A unique combination of expertise in secure connected intelligence, combined with a ground breaking partnership approach to delivering scalable computing solutions, in an exciting new physical co-creation environment.

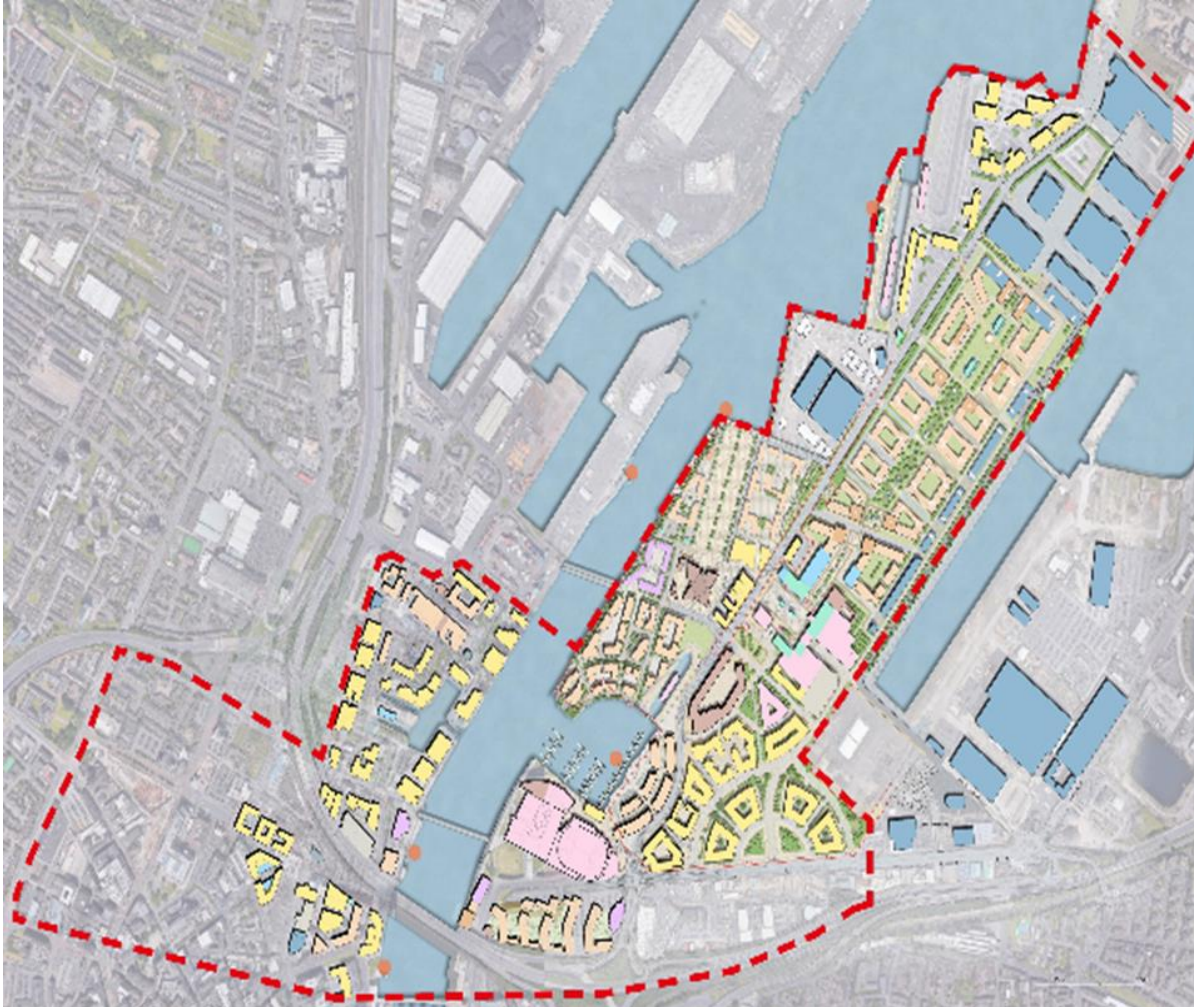


QUEEN'S
UNIVERSITY
BELFAST

BELFAST
REGION
CITY DEAL



Close alignment between Innovation proposals and the proposed Belfast Innovation District



- Master planning underway for Innovation District to maximise return on collective investment
- District extending from Ulster University campus at York Street through the Titanic Quarter, including the current ECIT site
- Cluster-building focus in healthcare and fintech
- Aim to grow employment in the area to over 20,000 people and the number of companies to 500 by 2035.

DIGITALLY DRIVEN INNOVATION

Derry City & Strabane City Deal

Centre for Industrial Digitalisation,
Robotics & Automation
Cognitive Analytics Research Lab
The Transformation of Healthcare
Research Innovation & Value Based Eco-
system
SMART City

Mid South West Growth Deal

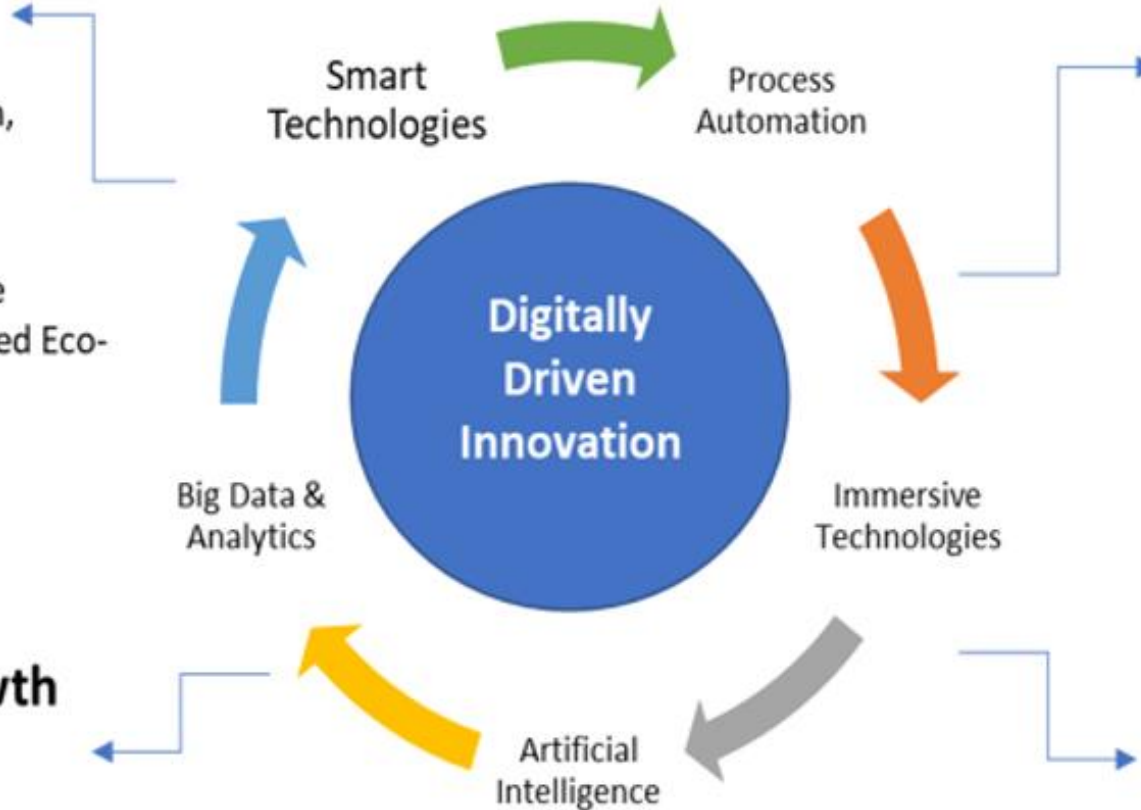
Agri-food Robotics Centre
Health & Life Sciences Health Hub
Centre for Agri-Tech Innovation Hub
Agri Food incubation

Belfast Region City Deal

Advanced Manufacturing
Momentum One Zero
I-REACH
Centre for Healthcare & Digital Technology
Studio Ulster
Digital Challenge Funds
Regional Innovation Hubs, i4C, SHED 1.0
Digital Twin

Causeway Coast & Glens Growth Deal

Rural Digital Hubs
Business Innovation Hub

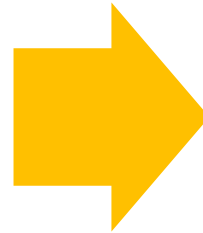


DIGITALLY DRIVEN INNOVATION

Foundational Digital Skills

Underpinning digital sector; and skills requirements aligned to enabling technologies such as:

- Artificial Intelligence (Machine Learning),
- Big Data & Analytics
- Cyber Security
- Process Automation
- Immersive Technology
- Smart Technologies/Internet of Things & Simulation



Connected Sectors Digital Skills

Sectors which interface with digital technology include:

Creative Industries

- Health & Life Sciences (Med Tech)
- Agri-food, Financial Services (Fin Tech)
- Clean Tech & Energy
- Maritime, Aerospace & Defence
- Advanced Manufacturing

iREACH HEALTH

INNOVATION
FOR REAL
WORLD IMPACT

We want to help people live healthier lives. iREACH Health will drive continuous improvement in patient care and outcomes through **innovation**.

How?

By integrating the activities of clinicians, life scientists and data scientists with industry partners to identify and develop new diagnostic tests, treatments, and health related technologies.

We are building state-of-the-art clinical research space beside Belfast City Hospital to support the setup and delivery of clinical trials: one that will advance life-saving health innovations and enable companies to access the clinical market faster.



QUEEN'S
UNIVERSITY
BELFAST

BELFAST
REGION
CITY DEAL



iREACH HEALTH

Preparing graduate students and postdoctoral fellows for a breadth of careers in the biomedical research enterprise requires Government, the Life Science industry, educational institutions and the NHS to work together to develop new ways to create a sustainable skills pipeline and an innovation-ready workforce. iREACH will provide the ideal environment for this to happen.

HEALTH DRIVEN
INNOVATION
FOR REAL
WORLD IMPACT

The feedback from extensive industry engagement has identified a number of skills requirements for iREACH to deliver on its full potential. In summary, industry feedback has focused on the following key required skillsets:

- Statistical analyses and health economic evaluations;
- Drug formulation and manufacturing (including GMP), Study design, PK/PD, GCP, Project management, Trial logistics, Data management/reporting, Regulatory compliance;
- Software design/management;
- Clinical scientists experienced/state registered in molecular testing;
- Analytics specifically focused on clinical research and health care improvement science.



QUEEN'S
UNIVERSITY
BELFAST

BELFAST
REGION
CITY DEAL



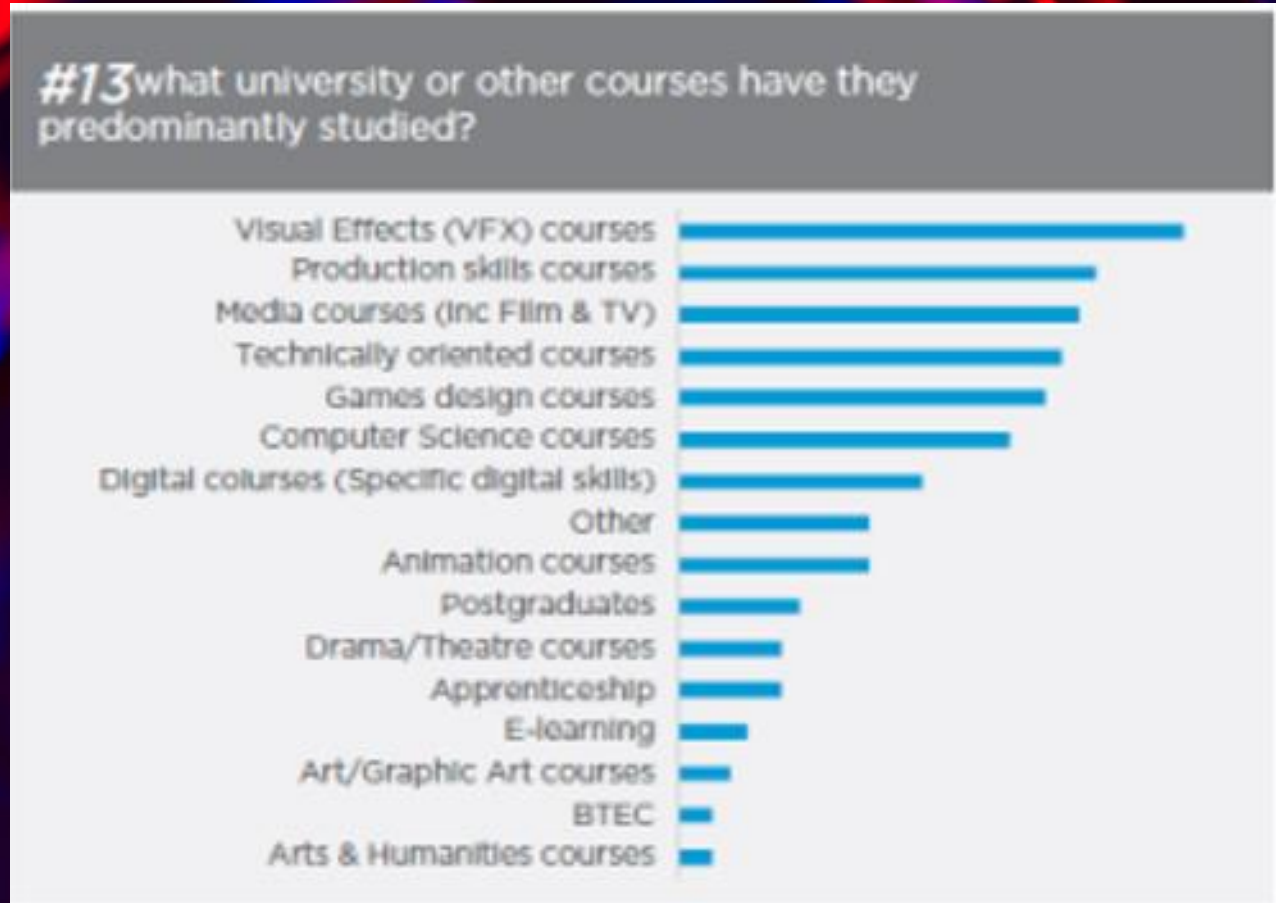


INNOVATION
FOR REAL
WORLD IMPACT

CREATIVE INDUSTRIES VIRTUAL PRODUCTION

- Digital Art & Animation
- Creative media
- Immersive technologies
- Virtual Effects
- Game design
- Film & TV
- Software Engineering

SKILLS PATHWAYS



TOURISM

Belfast Region City Deal

The Gobbins / Gateway to the Mourne / Belfast Stories / Destination Royal Hillsborough / Bangor Waterfront / Carrickergus Regen / Newry City Centre Regen

Derry and Strabane City & Growth Deal

DNA Maritime Museum / Walled City Tourism (Economic Project) / Derry Central Riverfront / Strabane Town Centre Regen

Mid-South West Growth Deal

Armagh Gaol Development / Sperrins Slieve Gallion Experience / Ulster American Folk Park / Omagh & South Sperrins Visitor Experience Development / Cuilcagh Lakelands Landscape Project / O'Neill Tourism Proposition

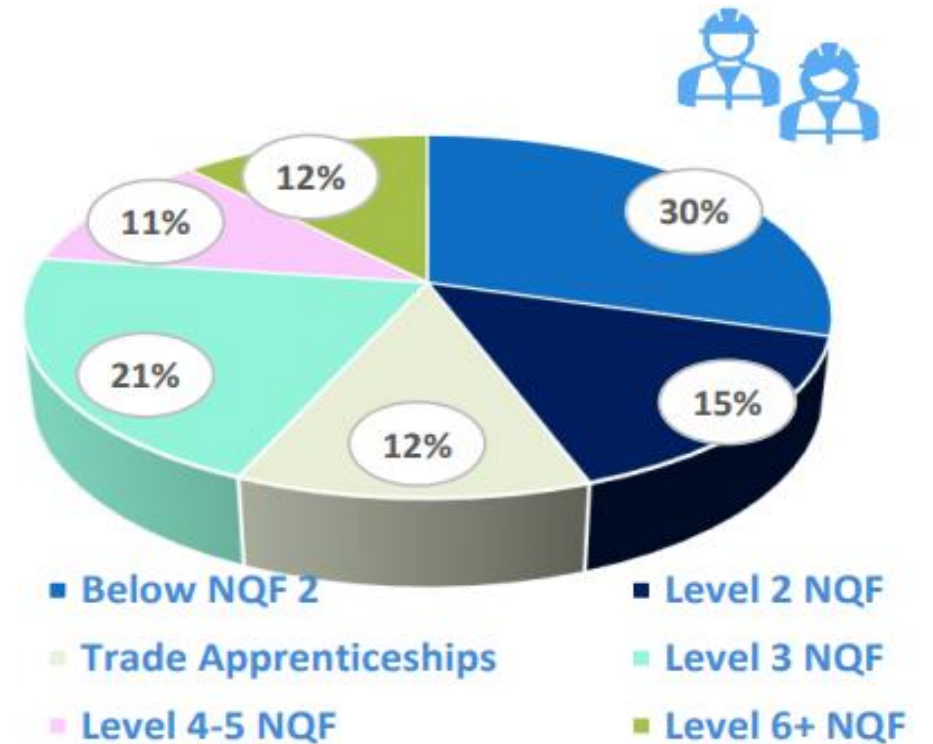
Causeway Coast and Glens

Mountsandel Tourism Project / Dunluce Castle Tourism Project

CONSTRUCTION



Projected Skill Level - Direct Jobs %



A DECADE OF OPPORTUNITY STARTS NOW



To find out more about the Belfast Region City Deal? Visit:

belfastcity.gov.uk/belfastregioncitydeal

To discover more about Queen's role in the Belfast Region City Deal, visit:

qub.ac.uk/about/belfast-region-city-deal



**QUEEN'S
UNIVERSITY
BELFAST**



Careers, Employability & Skills



Mr Trevor Johnston
Head of Careers, Employability and Skills

**SHAPING A
BETTER
WORLD
SINCE 1845**

LABOUR MARKET REQUIREMENTS 2020 - 2030

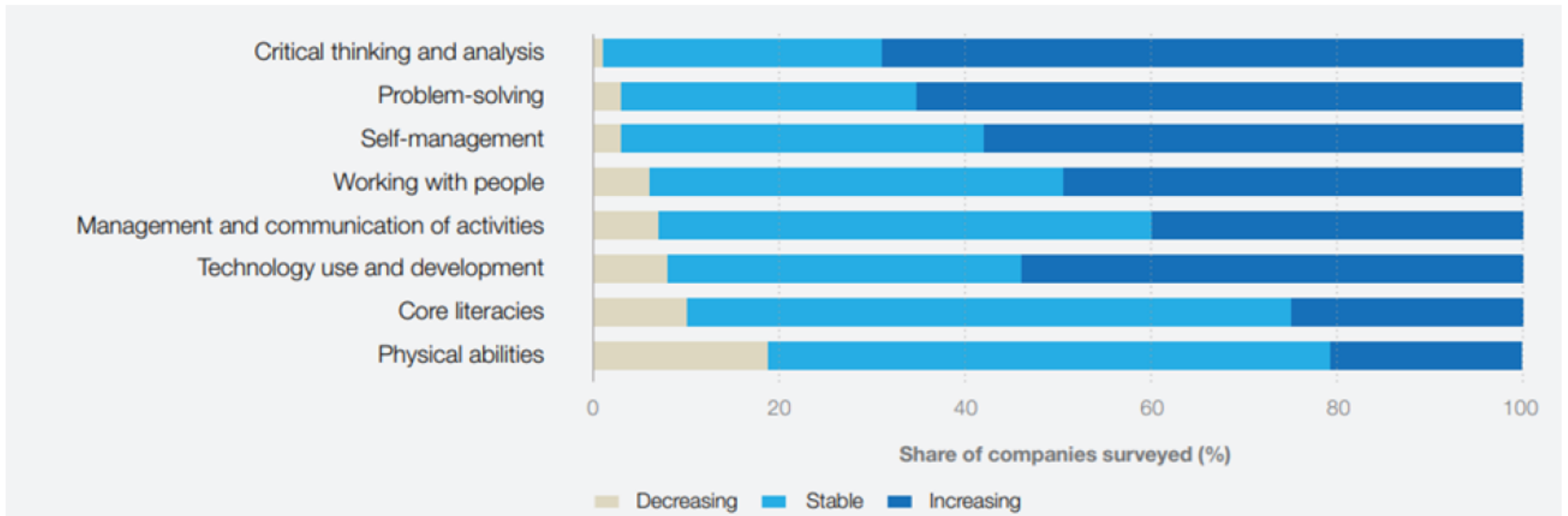
- Skills Barometer - net requirement of 26,000 people
- Higher qualifications = better jobs
- Qualifications significantly enhance employment prospects.
- 2021 fastest recovery ever experienced
- 2022 Cost of Living Crisis and potential impact on recruitment and retention

FACTORS INFLUENCING EARLY TALENT

- Demographics – people living longer yet births have declined 14% over last 10 years
- Employers face a shortfall of 2.5m highly skilled workers by 2030
- UK skills mismatch – 14% over qualified and 27.7% underqualified
- New technologies changing the structure of work which may lead to greater polarisation between high and low paid work
- Changing values, motivations and behaviours of those entering the workforce are changing the employer value proposition

Employer's future skills requirements

(source: The Future of Jobs, World Economic Forum)



STRATEGY 2030 - FUTURE READY GRADUATES

- A student experience that incorporates inter disciplinary learning, tackling real life issues, global challenges and work experience
- A skill set that combines degree specific or technical skills, soft skills and leaderships skills
- Strong digital literacy skills
- Develop students academically, attitudinally and socially to be active and engaged citizens
- A world class bespoke educational experience

DELIVERING A DIGITAL EXPERIENCE

- MyFuture Careers Management System – graduate jobs, placements, appointments, mock interviews,
- In person Careers Fairs are back with online pre engagement with students
- VMOCK CV check and instant feedback using AI; Social Media a key way to connect with students.

FUTURE-READY ROADMAP

The Future-Ready Roadmap can help you develop new skills, explore the right opportunities, build your support network and gain the confidence to realise your ambitions. It's designed to help you progress your employability throughout your time at Queen's. Everything we offer is clearly linked to the Future-Ready Roadmap so you can see where your gaps are, chart your progress and plan your future.

UNDERSTAND YOURSELF

Identify your strengths and areas for development.



DISCOVER



EXPLORE



REALISE



PREPARE

GET INSPIRED

Try new things, meet new people and build confidence through experience.

RECOGNISE YOUR POTENTIAL

Learn how to promote yourself and your skills.



QUEEN'S
UNIVERSITY
BELFAST

CAREERS,
EMPLOYABILITY
AND SKILLS



QUEEN'S
UNIVERSITY
BELFAST

SHAPING THE DEVELOPMENT OF FUTURE-READY GRADUATES

FUTURE-READY

Future-Ready Skills Bitesize Series
Future-Ready Skills: Employer Hotseat
Future-Ready Skills Programme
Future-Ready Award
Future-Ready Skills
for International Students
Future-Ready Skills for Leaders

MAKE IT HAPPEN

Careers Fairs
Internships
Placements



REAL WORLD EXPERIENCE

Spotlight On... [Industry]
Spotlight On Law City Tour
Real World Projects
Real World Challenges
Stock Market Challenge
Work Shadowing

GO GLOBAL

Go Global: Study Abroad
Go Global: Work Local
Go Global: Work Abroad
Go Global: Bitesized Sessions
Go Global Week
Future Ready Skills: Go Global

CAREERS AROUND CAMPUS

Tailored Careers Workshops
Pop up Careers Events
Peer to Peer Pop Up Events



QUEEN'S
UNIVERSITY
BELFAST

CAREERS,
EMPLOYABILITY
AND SKILLS

CAREERS SUPPORT

Careers Consultations
CV Support
Pre-Interview Coaching

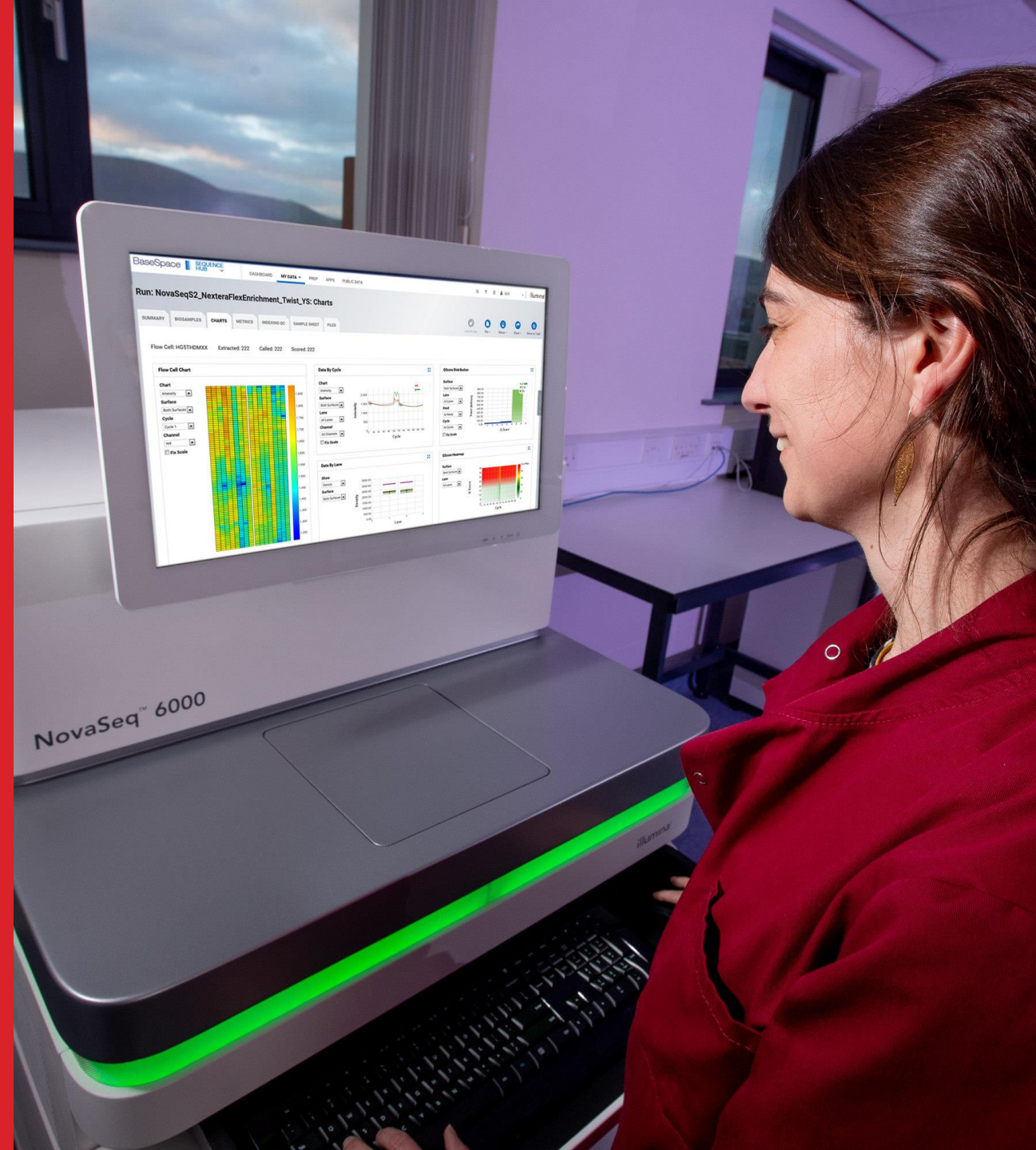
Interview Simulator
Tailored Careers Support
Personal Career Mentoring
Pop Up Careers Support (Fairs)



QUEEN'S
UNIVERSITY
BELFAST

FUTURE READY SKILLS PROGRAMME

To support students to embrace a growth mindset and develop personal and professional skills that will support them both at University and beyond, with a strong focus on initiative, innovation and creativity.



FUTURE READY SKILLS PROGRAMME – WHATS INVOLVED

- Introductory module – explains the programme
- Professional Skills self assessment – students assess their level of confidence and competence against bench mark statements
- Professional Skills modules selected and completed – Level 1 at least 2 skills; progress through Level 2 and Level 3
- Retake Self assessment exercise for that skill and write reflective piece in e-portfolio / journal

The Graduate Labour Market 2023

Table 2.8 Analysis of Graduate Vacancies in 2022, by Industry or Business Sector

Industry or Business Sector	Recruitment target for 2022, as published in Sept 2021	Recruitment target for 2022, as revised in Jan 2022	% change from recruitment in 2021	Vacancies added (cut), compared with 2021
Accounting & professional services	5,800	7,424	▲ 25.9%	1,528
Armed Forces	1,100	1,100	▲ 1.9%	20
Banking & finance	1,525	1,654	▲ 18.9%	263
Charity & voluntary sector	112	95	▲ 4.0%	3
Chemicals & pharmaceuticals	190	144	▲ 14.3%	18
Consulting	380	310	▲ 27.0%	66
Consumer goods	270	273	▲ 11.4%	28
Engineering & industrial	1,925	2,410	▲ 19.0%	385
Investment banking	1,980	2,005	▲ 2.9%	57
Law	866	892	▲ 1.4%	12
Media	855	920	▲ 15.3%	122
Oil & energy	140	138	▲ 38.0%	38
Public sector	4,690	4,748	▲ 2.5%	118
Retailing	1,310	1,617	▲ 12.3%	177
Technology	2,355	2,944	▲ 38.9%	825
ALL SECTORS	24,378	28,411	▲ 15.7%	3,865

Source - The Graduate Market in 2022

Table 2.8 Analysis of Graduate Vacancies in 2023, by Industry or Business Sector

Industry or Business Sector	Recruitment target for 2023, as published in Sept 2022	Recruitment target for 2023, as revised in Jan 2023	% change from recruitment in 2022	Vacancies added (cut), compared with 2022
Accounting & professional services	6,075	7,610	▲ 6.0%	428
Armed Forces	1,100	1,100	NO CHANGE	-
Banking & finance	1,790	1,666	▼ 9.6%	(177)
Chemicals & pharmaceuticals	145	105	▲ 5.0%	5
Consulting	485	500	▲ 3.7%	18
Consumer goods	190	168	NO CHANGE	-
Engineering & industrial	2,510	3,555	▲ 33.7%	897
Investment banking	2,320	2,412	▲ 2.6%	60
Law	1,037	1,020	▼ 5.3%	(57)
Media	920	681	▼ 4.9%	(35)
Oil & energy	170	241	▲ 56.5%	87
Property	150	160	NO CHANGE	0
Public sector	3,720	4,822	▲ 11.3%	491
Retailing	1,916	1,406	▼ 3.6%	(52)
Technology	3,100	3,004	NO CHANGE	-
ALL SECTORS	26,428	29,800	▲ 6.3%	1,745

Source - The Graduate Market in 2023

PREPARING STUDENTS FOR A CHANGING WORLD OF WORK

- Virtual delivery including careers fairs with University wide collaboration
- Strengthening Employer partnerships
- Offering an online Careers Service, real world challenges and skills programmes
- Embedding employability in the curriculum
- 84.5% Graduate Prospects (Sunday Times Good University Guide 2023)



QUEEN'S
UNIVERSITY
BELFAST

CAREERS,
EMPLOYABILITY
AND SKILLS



QUEEN'S
UNIVERSITY
BELFAST



**QUEEN'S
UNIVERSITY
BELFAST**

Admissions & Current National Policy

Mrs Roisin McEvoy

Director of Global Marketing, Recruitment and Admissions (Acting)

**SHAPING A
BETTER
WORLD
SINCE 1845**



**QUEEN'S
UNIVERSITY
BELFAST**



ANY QUESTIONS?



**SHAPING A
BETTER
WORLD
SINCE 1845**



**QUEEN'S
UNIVERSITY
BELFAST**