



Healthcare Innovation Consortium

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Healthcare Innovation Consortium – Northern Ireland Research and Innovation Network – Discovery Phase As Is Landscape

April 2024

Introduction

This report provides an overview of the current research and innovation landscape in Northern Ireland. It includes details on existing innovation initiatives and organisations, ongoing work, as well as the available resources in the region. Additionally, it explores the potential for pooling resources in research, quality improvement, and digital innovation. Drawing from publicly available information and insights gathered from project stakeholder engagement, the report presents a comprehensive outline of the current system landscape alongside other pertinent information.

A Healthcare Innovation Ecosystem

In the context of healthcare, a research and innovation ecosystem represents the interconnected framework comprising various stakeholders, resources, and processes aimed at advancing scientific knowledge and technological solutions to enhance health outcomes and patient care. This intricate network involves researchers, clinicians, policymakers, industry partners, funding agencies, and patients collaborating across diverse domains to drive innovation from discovery through to implementation. Through a culture of continuous learning, experimentation, and collaboration, this ecosystem leverages expertise, infrastructure, and funding mechanisms to address healthcare challenges, develop novel interventions, and translate research findings into practical applications. Essential components include research institutions, funding mechanisms, collaborative networks, technological infrastructure, regulatory frameworks, and supportive policies, all working harmoniously to stimulate innovation and foster the adoption of evidence-based practices for the improvement of individuals and communities. Northern Ireland has a strong foundation built upon ambitious digital strategies, collaborative initiatives, and a well-developed system of research and development, which are explored in this section.

Organisations

DHCNI - Digital Health and Care NI

- DHCNI focuses on harnessing digital technologies to transform health and social care delivery in Northern Ireland. They develop and implement digital solutions to improve patient care, enhance efficiency, and promote innovation in healthcare services.
- DHCNI collaborates with healthcare providers, technology vendors, government agencies, and research institutions to drive digital health initiatives.
- Projects and programmes include:
 - Encompass
 - CoreLIMS
 - NIPACS+
 - Cyber
- **Role in the Ecosystem:** DHCNI serves as a central hub for digital health innovation, driving collaboration and adoption of technology-enabled solutions across the healthcare ecosystem.

Stakeholder Perceptions

- Stakeholders within DHCNI express a desire for “more action and less talk”, suggesting a need for tangible progress in innovation efforts. They also note a lack of resources dedicated to digital initiatives. Additionally, concerns are highlighted about the perceived siloed nature of DHCNI internally.
- **HSC Stakeholder Perceptions:** Stakeholders express a desire for “more action and less talk”, suggesting a need for tangible progress in innovation efforts. They also note a lack of resources dedicated to digital initiatives. Additionally, concerns are highlighted about the perceived siloed nature of DHCNI internally.

- **External Stakeholder Perceptions:** Stakeholders emphasise the role of DHCNI in enhancing collaborations that lead to improvements in the quality of care. 23% of HSC stakeholders have never heard of DHCNI, while 39% work with them regularly.

HIRANI - Health Innovation Research Alliance Northern Ireland

- HIRANI is a collaborative network of healthcare professionals, researchers, and industry partners focused on advancing health innovation in Northern Ireland. They facilitate interdisciplinary research projects, knowledge exchange, and technology transfer to address healthcare challenges and improve patient outcomes.
- HIRANI fosters partnerships between academia, industry, healthcare providers, and government agencies to support innovation in health research and service delivery.
- Projects and initiatives include:
 - NHS Clinical Entrepreneurs Programme
 - All-Ireland Medtech
- **Role in the Ecosystem:** HIRANI plays a vital role in promoting collaboration and innovation in health research, driving translational efforts to translate scientific discoveries into clinical practice.

Stakeholder Perceptions

- Stakeholders within HIRANI express feelings of being somewhat sidelined and not sufficiently involved in decision-making processes. They perceive a gap in their capacity to fully fulfil their role (being the front door of innovation), citing resource limitations as a hindrance. While efforts to understand priorities and engage with various groups have been made through organised meetings, there remains a reluctance to fully embrace collaboration with them.
- **HSC Stakeholder Perceptions:** HSC stakeholders express concerns about the visibility of progress regarding HIRANI's engagement with the healthcare sector, suggesting a need for clearer communication and alignment. Clinical Entrepreneur stakeholders highlight HIRANI's effectiveness in facilitating connections between innovators and Trusts.
- **External Stakeholder Perceptions:** Stakeholders express uncertainty about the role and positioning of HIRANI within the healthcare system. Suggestions are made for HIRANI to emulate the BioInnovate Ireland Fellowship Programme as they are in a good position to foster wider collaboration outside the HSC. There is recognition of HIRANI's potential to facilitate collaboration between key decision-makers from the Northern Ireland Health and Social Care sector and industry partners, indicating its importance as a bridge between sectors within the healthcare ecosystem.

MOIC - Medicines Optimisation Innovation Centre

- MOIC focuses on optimising medication use and improving patient outcomes through innovative pharmacy practices and research. They collaborate with healthcare professionals, patients, and industry partners to develop and implement strategies for safe, effective, and cost-efficient medication management.
- MOIC partners with pharmaceutical companies, healthcare providers, academic institutions, and regulatory bodies to conduct research, develop guidelines, and promote best practices in medicines optimisation.
- Projects include:
 - Cardiometabolic pharmacy service in cardiovascular disease
 - COMET Study for COVID19 patients
- **Role in the Ecosystem:** MOIC serves as a leading resource for medication optimisation research, education, and innovation, promoting collaboration and knowledge exchange among stakeholders in the healthcare ecosystem.

Stakeholder Perceptions

- Stakeholders within MOIC generally perceive it as having a clear identity and synergy within its operations. There is a suggestion that the MOIC model (similar to AHSN model) should be adopted in NI to move towards a model of innovation. Collaboration with European partners and strong links with pharmaceutical companies are highlighted as a success.
- **HSC Stakeholder Perceptions:** Stakeholders highlight the success of MOIC being established using an AHSN model, which emphasises evaluating work for clinical impact and effectiveness. Some innovations originating from MOIC have achieved international recognition. MOIC collaborates closely with the HSC Industry Engagement.
- **External Stakeholder Perceptions:** MOIC is perceived by external stakeholders as doing notable work in medicines optimisation. However, as it is primarily focused on research, they believe MOIC lacks engagement with industry partners.

C-TRIC - Clinical Translational Research and Innovation Centre

- C-TRIC is a translational research hub dedicated to accelerating the translation of scientific discoveries into clinical practice and commercial products. They facilitate collaboration between academia, healthcare providers, industry partners, and patients to drive innovation in healthcare technologies, diagnostics, and therapeutics.
- C-TRIC collaborates with universities, hospitals, biotech companies, and government agencies to support translational research projects, clinical trials, and technology commercialisation efforts.
- Projects include:
 - Expressed Human Breast Milk Microbiota Study (EHBMMMS)
- **Role in the Ecosystem:** C-TRIC serves as a catalyst for translating research discoveries into clinical innovations, bridging the gap between academia and industry to deliver impactful healthcare solutions.

Stakeholder Perceptions

- Stakeholders within C-TRIC acknowledge that the organisation maintains close collaboration with HSC Industry Engagement.
- **HSC Stakeholder Perceptions:** Stakeholders suggest that C-TRIC should be granted more autonomy.
- **External Stakeholder Perceptions:** C-TRIC is perceived by external stakeholders as primarily focused on research and lacks in engagement with industry partners. The majority of external stakeholders (60%) have either worked with them or work with them regularly (mainly academia).

HSCQI - Health and Social Care Quality Improvement

- HSCQI is dedicated to driving continuous improvement in health and social care services across Northern Ireland. They provide leadership, expertise, and support to healthcare organisations and professionals in implementing quality improvement initiatives, enhancing patient safety, and optimising clinical outcomes.
- HSCQI collaborates with healthcare trusts, regulatory bodies, patient advocacy groups, and academic institutions to promote a culture of quality improvement, evidence-based practice, and innovation in the delivery of care.
- Projects and programmes include:
 - Timely Access to Safe Care (TASC)
- **Role in the Ecosystem:** HSCQI serves as a central hub for promoting best practices, fostering collaboration, and driving innovation in quality improvement within the healthcare system of Northern Ireland.

Stakeholder Perceptions

- There was a lack of engagement from HSCQI stakeholders, therefore no available data on their internal perspectives.
- **HSC Stakeholder Perceptions:** HSC Stakeholders view HSCQI as focusing on implementing small tests for changes and establishing robust quality improvement strategies within each trust. Stakeholders perceive this structure as a valuable resource to enhance quality improvement initiatives and drive positive change across the system.
- **External Stakeholder Perceptions:** External stakeholders perceive HSC Quality Improvement as having significant potential for collaboration and growth, although currently constrained by capacity limitations. HIRANI has identified substantial opportunities for collaboration with QI, noting their extensive clinical networks, but suggests that QI's current workload may hinder deeper engagement. Stakeholders emphasise the importance of expanding QI's capacity and involvement to fully leverage their expertise and drive impactful quality improvement initiatives.

HSC Innovations

- HSC Innovations facilitates the translation of innovative ideas and technologies into healthcare solutions that address unmet clinical needs and improve patient care outcomes. They provide support in intellectual property management, technology transfer, commercialisation strategies, and industry engagement to researchers, inventors, and entrepreneurs within the healthcare sector.
- HSC Innovations collaborates with academic institutions, healthcare providers, industry partners, venture capitalists, and government agencies to identify, evaluate, and commercialise promising innovations with commercial potential and societal impact.
- **Role in the Ecosystem:** HSC Innovations plays a pivotal role in fostering a culture of innovation, entrepreneurship, and technology transfer within the healthcare ecosystem of Northern Ireland, driving economic growth and societal benefit.

Stakeholder Perceptions

- Stakeholders within HSC Innovations highlight the importance of HSC Innovations' close partnership with MOIC.
- **HSC Stakeholder Perceptions:** Stakeholders express a need for clearer understanding of the role and activities of HSC Innovations, advocating for greater engagement with the wider industry. Concerns are raised regarding their capacity issues and the lack of support mechanisms for innovators, noting that it's a small team covering all NI Trusts. However, there is optimism with the imminent recruitment of a data scientist, indicating a step towards addressing capacity challenges.
- **External Stakeholder Perceptions:** Stakeholders highlight efforts by HIRANI to collaborate but note that outdated policies surrounding intellectual property (IP) pose significant barriers to innovation. The prevailing sentiment is that IP issues present a substantial obstacle to progress in the innovation landscape, underscoring the need for policy updates. 54% of external stakeholders have either worked with them, or work with them regularly.

NICRN - Northern Ireland Clinical Research Network

- NICRN facilitates and supports clinical research initiatives across Northern Ireland, aiming to improve patient care through evidence-based practice and innovation. They provide infrastructure, resources, and expertise to enable the conduct of high-quality clinical trials and research studies in diverse therapeutic areas, ranging from pharmaceuticals and medical devices to public health interventions and healthcare delivery models.
- NICRN collaborates with healthcare trusts, academic institutions, pharmaceutical companies, regulatory bodies, patient advocacy groups, and international research networks to enhance research capacity, recruit participants, and ensure adherence to ethical and regulatory standards.

- **Role in the Ecosystem:** NICRN plays a vital role in advancing clinical research, knowledge translation, and evidence-based practice within the healthcare ecosystem of Northern Ireland, contributing to improved patient outcomes and healthcare delivery.

Stakeholder Perceptions

- **HSC Stakeholder Perceptions:** 29% of HSC stakeholders have never heard of NICRN, while 42% have worked with them or work regularly with them.
- **External Stakeholder Perceptions:** NICRN's focus is primarily centred on clinical trials for medicines, with less emphasis on innovation initiatives. Their engagement metrics largely revolve around interactions with major clinical pharmaceutical companies, suggesting a narrower scope of collaboration beyond traditional research activities.

HSC Industry Engagement

- HSC Industry Engagement facilitates collaboration between the healthcare sector and industry partners to drive innovation, commercialisation, and economic growth in Northern Ireland. They provide support and guidance to healthcare professionals, researchers, and industry stakeholders interested in developing and commercialising healthcare technologies, products, and services.
- HSC Industry Engagement collaborates with pharmaceutical companies, medical device manufacturers, biotechnology firms, digital health startups, venture capital firms, and trade associations to identify opportunities for collaboration, investment, and knowledge exchange.
- Projects and initiatives include:
 - Innovation Evaluation Framework
 - Demographics and Patient Cohort Health Data Scientist Business Case
- **Role in the Ecosystem:** HSC Industry Engagement serves as a bridge between the healthcare sector and industry, facilitating cross-sectoral collaboration, knowledge transfer, and commercialisation of healthcare innovations to benefit patients, clinicians, and the economy.

Stakeholder Perceptions

- HSC Industry Engagement views its role as facilitation, they guide innovators towards suitable pathways for development and implementation. Their close collaboration with procurement ensures that healthcare needs align with available solutions. Embedded within the healthcare system, they leverage extensive connections to facilitate innovation adoption. Their association with HSC lends credibility and fosters receptiveness to new ideas. They express eagerness to coordinate efforts with entities like MOIC and C-TRIC to ensure innovations meet patient needs and receive adequate support.
- **HSC Stakeholder Perceptions:** HIRANI and the HSC Industry Engagement unit play complementary yet distinct roles in engaging with industry partners. While both entities facilitate collaborations, HIRANI primarily emphasises economic metrics, whereas the HSC Industry Engagement team mainly focus on patient and health outcomes. This group serve as a referral point to entities like MOIC.
- **External Stakeholder Perceptions:** HIRANI allocates approximately 43% of their business development efforts around procurement to HSC Industry Engagement. There is a perceived overlap in roles between this organisation and the Procurement and Logistics Service (PaLS). 27% of external stakeholders have never heard of them, while 33% have worked with them or work regularly with them.

HSC R&D Division - Research and Development

- The HSC R&D Division promotes and supports research and development activities across the Health and Social Care (HSC) sector in Northern Ireland, aiming to improve patient outcomes and service delivery. They provide funding, infrastructure, and governance support to researchers, clinicians, and healthcare organisations engaged in clinical and translational research projects, ranging from basic science to applied health research.
- The HSC R&D Division collaborates with academic institutions, healthcare trusts, funding agencies, patient advocacy groups, and government bodies to build research capacity, foster innovation, and address priority health challenges.
- **Role in the Ecosystem:** The HSC R&D Division plays a pivotal role in fostering a culture of research excellence, innovation, and evidence-based practice within the HSC sector of Northern Ireland, driving improvements in patient care and population health.

Stakeholder Perceptions

- They are actively involved with HSC Innovations, providing support through their innovations advice service, and exploring licensing opportunities for ideas that benefit patients. They also collaborate closely with HSC Innovations (integrated into core R&D team).
- **HSC Stakeholder Perceptions:** The R&D division actively communicates its initiatives and projects within the healthcare system, but stakeholders often lack awareness of their activities, resulting in limited understanding and appreciation of their scale and impact. Despite their efforts to engage with others, there remains a gap in awareness regarding the scope and importance of R&D activities.
- **External Stakeholder Perceptions:** The HSC R&D division is primarily focused on facilitating medicine trials, which may limit opportunities for broader collaboration within the innovation ecosystem. However, despite resource constraints, stakeholders acknowledge their effectiveness in engaging clinicians and health professionals in research and development activities.

PaLS - Procurement and Logistics Service

- PaLS is responsible for managing procurement, logistics, and supply chain operations to ensure the efficient and cost-effective delivery of goods and services across the Health and Social Care (HSC) sector in Northern Ireland. They oversee procurement processes, contract management, inventory control, and distribution of medical equipment, pharmaceuticals, consumables, and non-clinical services to healthcare facilities and providers within the HSC system.
- PaLS collaborates with healthcare trusts, government agencies, suppliers, manufacturers, distributors, and regulatory authorities to optimise procurement strategies, negotiate contracts, and mitigate supply chain risks.
- **Role in the Ecosystem:** PaLS plays a critical role in supporting the operational efficiency, financial sustainability, and regulatory compliance of the HSC sector in Northern Ireland by managing procurement and logistics functions effectively.

Stakeholder Perceptions

- PaLS perceives its role as crucial in streamlining innovation adoption processes, evidenced by its implementation of a SharePoint system akin to HSC IE's process. Stakeholders advocate for system-wide accessibility to this form to enhance transparency and collaboration across organisations. Concerns about sustainability of funding arise, highlighting the need for more long-term support. They set up their governance processes themselves but get guidance from DHCNI when needed.
- **HSC Stakeholder Perceptions:** 53% of HSC stakeholders have worked with, or work closely with PaLS, which is the highest percentage of collaboration between the internal stakeholder groups.
- **External Stakeholder Perceptions:** 25% of external stakeholders have never heard of PaLS.

CHIC - Northern Ireland Connected Health Innovation Centre

- CHIC is a collaborative hub focused on driving innovation in connected health technologies and solutions to enhance healthcare delivery and patient outcomes. They facilitate research, development, and implementation of digital health solutions, leveraging technologies such as telehealth, remote monitoring, wearables, and health informatics to address healthcare challenges and improve access, efficiency, and quality of care.
- CHIC collaborates with academic institutions, healthcare providers, industry partners, government agencies, and patient groups to co-design, pilot, and scale innovative connected health solutions, fostering cross-sectoral collaboration and knowledge exchange.
- Projects and programmes include:
 - Rapid community-based diagnostics
 - Wireless data acquisition from assistive devices to determine efficacy
- **Role in the Ecosystem:** CHIC serves as a catalyst for innovation, collaboration, and knowledge transfer in the field of connected health, driving the adoption and integration of digital solutions into the healthcare ecosystem of Northern Ireland.

Public Health Agency

- The Public Health Agency (PHA) in Northern Ireland, established in 2009, plays a pivotal role in safeguarding and enhancing the health and social wellbeing of the population. The PHA operates as a multi-disciplinary, multi-professional body, focusing on health protection, health and social wellbeing improvement, and research and development within the HSC sector.
- Partnering with individuals, communities, and various public, private, and voluntary organisations.
- **Role in the Ecosystem:** The Public Health Agency (PHA) plays a central role in promoting and protecting public health, fostering collaboration across sectors, and addressing health inequalities within the healthcare ecosystem of Northern Ireland.

Northern Ireland Biobank

- Established in 2011, the Northern Ireland Biobank (NIB) operates from the Patrick G Johnston Centre for Cancer Research (PGJCCR) at Queen's University Belfast. Initially focused on cancer biobanking in partnership with the Belfast Health and Social Care Trust, NIB has evolved into a regional research infrastructure, facilitating translational biomarker research across various health conditions in Northern Ireland and beyond. Core funding is provided by The Research and Development Division of the Health and Social Care Public Health Agency.
- **Role in the Ecosystem:** As a biobank, NIB plays a crucial role in the research and innovation ecosystem by providing researchers with access to high-quality biospecimens and associated health information. These resources accelerate discoveries in disease prediction, diagnosis, and treatment. By facilitating access to samples and data, NIB supports efforts to find new ways to diagnose and treat diseases, develop, and test new drugs, and personalise treatments for specific patient groups.

Stakeholder Perceptions on Organisations

The internal stakeholder feedback regarding innovation groups in Northern Ireland highlights several key points. Firstly, 21% of internal stakeholders feel there is an overlap between these organisations, however, this is mainly concerning administrative functions rather than the topics they cover. This potential inefficiency in administration can theoretically hinder their effectiveness, especially considering the common challenges they face regarding funding, resources, and relationship dynamics across different stages of innovation. Additionally, the feedback acknowledges the existence of silos within the groups, but attributes this more to individual personalities rather than inherent flaws within the groups themselves. Despite these silos, there seems to be a recognition that the groups work synergistically, avoiding duplication

of efforts and coming together to capitalise on shared opportunities. Overall, the internal feedback highlights the need for streamlining administrative processes (such as funding, resource management and relationship building), fostering collaborative efforts, and addressing any existing silos to enhance the effectiveness of innovation groups in Northern Ireland.

External stakeholder feedback indicates that a more considerable portion (43%) of stakeholders perceive overlap between the existing innovation organisations, implying potential inefficiencies that could be addressed through better coordination or consolidation efforts. Some stakeholders express a view that adopting a unified Academic Health Science Network (AHSN)-style model in Northern Ireland would significantly enhance collaboration within the healthcare innovation ecosystem, potentially leading to more effective outcomes, however they acknowledge the challenge of swiftly transitioning towards an AHSN-style model due to the abundance of existing innovation groups.

Appendices I and II present the depth of knowledge of internal stakeholder groups among internal and external stakeholders respectively.

Solutions and Initiatives transforming healthcare in NI

This section delves into a collection of case studies highlighting successful initiatives and innovative solutions within Northern Ireland's health and social care system. These case studies offer real-world examples of how collaboration, innovation, and forward-thinking approaches are reshaping healthcare delivery for the benefit of Northern Ireland's residents. From groundbreaking digital solutions to initiatives aimed at fostering innovation, each case study demonstrates the diverse range of efforts underway to enhance healthcare delivery, foster better patient experiences, and address the evolving needs of the NI population.

Case Study 1: Encompass – Transforming Healthcare Delivery in NI

Encompass represents a groundbreaking initiative within the Northern Ireland Health and Social Care system, aiming to revolutionise patient care through the implementation of a unified digital care record system. Developed by local expertise and guided by a vision of enhanced patient safety and quality of care, Encompass is poised to reshape the healthcare landscape of Northern Ireland.

Purpose and Objectives: Encompass seeks to create a single digital care record for every citizen in Northern Ireland receiving health and social care, with the overarching goal of providing the safest and highest quality of care possible. By consolidating health information into a unified platform, Encompass aims to empower patients, streamline care delivery, and facilitate informed decision-making by healthcare professionals.

Implementation Timeline: The initiative commenced with its implementation in the South Eastern Health & Social Care Trust in November 2023, marking the beginning of a phased rollout across all Health and Social Care Trusts in Northern Ireland. By the end of 2025, Encompass is slated to be fully operational in all Trusts, ensuring equitable access to digital care records for patients across the region.

Key Features and Benefits: Encompass offers patients and service users the ability to view and update their health information online, enhancing accessibility and promoting patient engagement. For healthcare professionals, Encompass facilitates seamless access to critical patient information, both in clinical settings and community care environments. By eliminating the inefficiencies of paper-based records and fragmented data sources, Encompass streamlines processes, enhances patient safety, and improves the overall quality of care delivery.

Collaborative Approach: Led by Dr. Dermot Hughes, with Dr. Raied Abdul-Karim serving as the Programme Director, Encompass embodies a collaborative effort involving multidisciplinary teams from across the Health and Social Care system. Partnering with Epic, a global leader in electronic health records, the Encompass team is dedicated to designing and implementing a system tailored to the specific needs of Northern Ireland.

Future Implications: As Encompass continues its phased rollout, it is poised to bring about transformative change in healthcare delivery in Northern Ireland. By providing immediate access to vital health information, streamlining processes, and fostering collaboration among healthcare professionals, Encompass sets the stage for a more efficient, effective, and patient-centric healthcare ecosystem.

Encompass stands as a testament to Northern Ireland's commitment to innovation and excellence in healthcare delivery. By harnessing the power of technology and collaboration, Encompass paves the way for a future where patient care is seamless, integrated, and truly patient-centred.

Case Study 2: NIPACS+: Advancing Diagnostic Imaging in Northern Ireland

NIPACS+ (Northern Ireland Picture Archiving and Communications System+) heralds a new era in diagnostic imaging, poised to revolutionise patient care across the region. Rooted in over a decade of progress through the original NIPACS initiative, NIPACS+ represents a significant leap forward in digital archiving capabilities, enabling seamless access to patient images for healthcare professionals.

Objective and Impact: NIPACS+ aims to consolidate Northern Ireland's diagnostic imaging services into a unified digital archiving system, allowing clinicians to access patient images instantly from any hospital within the region. With an estimated capital investment of £50 million, this initiative is set to benefit approximately two million examinations per year, enhancing patient care through timely diagnoses and improved access to critical imaging data.

Key Features and Benefits: By transitioning to a single imaging system, NIPACS+ eliminates the barriers of siloed information, enabling healthcare professionals to access all necessary imaging data from a centralised platform. This facilitates secondary consultations, enhances cooperation among medical teams, and ultimately leads to enhanced patient care, reduced costs, and increased efficiency in healthcare delivery.

Collaborative Approach: Led by the HSC Business Services Organisation (BSO), NIPACS+ embodies a collaborative effort involving multidisciplinary teams from across the Health and Social Care system. Integration with the encompass initiative further enhances the accessibility of imaging data, aligning with Northern Ireland's broader strategy for digital healthcare transformation.

Implementation Timeline: The implementation of NIPACS+ is conducted in two phases. Phase 1 focuses on the regional implementation of radiology services, with the Royal Victoria Hospital serving as the final site for this phase. Phase 2 extends the system to additional imaging specialties, including cardiology, oncology, obstetrics, and more, ensuring comprehensive coverage across the healthcare spectrum.

Future Implications: As NIPACS+ continues its phased rollout, it holds the promise of transforming diagnostic services in Northern Ireland. By standardising access to imaging data, fostering collaboration among medical teams, and optimising patient care pathways, NIPACS+ sets the stage for a more efficient, effective, and patient-centric healthcare system.

NIPACS+ stands as another testament to Northern Ireland's commitment to innovation, streamlining diagnostic imaging and fostering collaboration across the region. Its integration with encompass ensures a unified approach to patient care, enhancing efficiency and accessibility.

Case Study 3: NHS Clinical Entrepreneur Programme (CEP)

The NHS Clinical Entrepreneur Programme (CEP) is a year-long initiative fostering entrepreneurial and innovative thinking among healthcare professionals. With committed funding from Invest NI, Northern Ireland's healthcare professionals have the opportunity to participate in the Programme until March 31, 2026, in collaboration with the Health Innovation Research Alliance NI (HIRANI), HSC, and NHS.

Objectives and Impact: The programme aims to empower the healthcare workforce to develop and scale innovative ideas for the benefit of patients, staff, and the NHS at large. It seeks to equip participants with the skills, knowledge, and leadership capabilities necessary to drive innovation in areas such as digital health, genomics, data analytics, and advanced technology while remaining within the health service. By supporting invention, commercialisation, and adoption of new products, services, and care pathways, CEP contributes to innovation, economic growth and the transformation of healthcare delivery.

Delivery and Curriculum: Delivered by Anglia Ruskin University, CEP is part of the NHS Accelerated Access Collaborative (AAC), collaborating with industry, government, regulators, patients, and the NHS to facilitate the introduction of groundbreaking treatments and diagnostics. The curriculum covers various aspects of entrepreneurship, including business setup, funding acquisition, communication, and legal considerations. Participants receive guidance on building and running startups through educational events and mentorship opportunities with industry experts.

Key Features:

- **Workforce Development:** CEP caters to clinical and non-clinical NHS or HSC staff, selected through a competitive recruitment process, including doctors, dentists, nurses, allied health professionals, managers, and administrative staff.
- **Programme Structure:** Run by NHS England and NHS Improvement, the programme encompasses business essentials such as attracting investors, funding application, and corporate governance.
- **Support Services:** Participants benefit from mentoring, networking, education, resource access, and development tools to facilitate their entrepreneurial journey.

Impact: To date, CEP has secured over £225 million in funding, created over 1,000 jobs, and positively impacted 16 million users, illustrating its significant contribution to healthcare innovation and economic growth.

Limitations: Three interviewees involved in the Clinical Entrepreneurs Programme (CEP) expressed challenges in implementing their products within the Northern Ireland Trusts due to the Trusts' non-participation in the scheme. While one interviewee managed to establish connections independently, the others emphasised the necessity for changes to ensure that healthcare organisations in Northern Ireland and procurement processes are aligned with and participate in the CEP scheme.

Case Study 4: Institute of Research Excellence for Advanced Clinical Healthcare (iREACH)

The Institute of Research Excellence for Advanced Clinical Healthcare (iREACH) represents a groundbreaking initiative in Northern Ireland's healthcare landscape. Developed through collaboration among academia, industry, the NHS, and government stakeholders, iREACH aims to drive scientific innovation by establishing a unique ecosystem for testing new drugs and integrating them into care pathways.

Objectives and Impact: Led by Queen's University Belfast in partnership with the NHS, iREACH aims to advance research excellence in Advanced Clinical Healthcare in Northern Ireland. By extending capacity for clinical trials within the Belfast Region, iREACH enhances access to treatments for patients and signals industry expansion in Northern Ireland's healthcare sector. The cohesive integration of academic expertise, research intensity, and healthcare trust resources fosters a more connected healthcare system, promoting better treatments and technologies.

Facility Features: iREACH serves as an extension and integration of existing healthcare facilities, providing unified capability for clinical trials and innovation in the Belfast Region. By co-locating academic and industry partners with NHS resources, iREACH creates an environment conducive to collaboration and accelerated innovation. The facility offers incubation spaces for high-growth businesses, fostering accessibility to healthcare in practice and accelerating the pace of innovation.

Integration and Synergies: Aligned with other City Deal Innovation projects, iREACH leverages synergies with data analytics capabilities and the Centre for Digital Healthcare Technology, fostering innovation and collaboration across sectors. By integrating academic, industry, NHS, and government stakeholders, iREACH facilitates alignment of expertise, resources, and priorities to drive economic growth and better health outcomes.

Public Benefit: iREACH delivers wide-ranging benefits for the entire region, increasing efficiency within the healthcare system and providing scope for increased research opportunities. Through state-of-the-art clinical facilities and partnerships with patients and the public, iREACH ensures that its activities meet the needs of stakeholders. Ultimately, iREACH aims to drive economic development, attract talent, and deliver better health outcomes for the people of Northern Ireland and beyond.

iREACH represents a significant leap forward for Northern Ireland's innovation landscape, uniting academia, industry, and healthcare to drive scientific advancement. By fostering collaboration, enhancing research capacity, and leveraging state-of-the-art facilities, iREACH promises to propel Northern Ireland to the forefront of advanced clinical healthcare innovation, ultimately benefiting patients and fostering economic growth in the region.

Key Innovation Champions

This section explores the local champions and partners driving innovation within Northern Ireland's dynamic healthcare landscape. These exemplars represent a diverse array of individuals dedicated to advancing healthcare delivery and catalysing transformative change. Each profile sheds light on the invaluable contributions made by these champions and partners in fostering innovation, improving patient outcomes, and shaping the future of healthcare in Northern Ireland. Through their collective efforts and unwavering commitment, they exemplify the spirit of collaboration and innovation that defines Northern Ireland's healthcare ecosystem.

Dr. Patrick Stirling

Patrick Stirling, a general practice partner, stands as a notable figure within Northern Ireland's healthcare landscape, spearheading initiatives that significantly impact primary care and innovation. His multifaceted contributions span various domains, showcasing his dedication to advancing healthcare delivery and quality improvement.

At the forefront of his endeavours is the development of in-house IT solutions tailored for primary care settings. Patrick's expertise and ingenuity have been instrumental in crafting innovative booking systems and direct patient feedback mechanisms, particularly crucial during the COVID-19 pandemic. By leveraging technology, he not only enhances operational efficiency within general practice but also fosters patient engagement and satisfaction.

Moreover, Patrick's influence extends to the realm of education and knowledge dissemination. He has played a pivotal role in establishing regional educational platforms, including webinars and websites, designed to empower primary care practitioners. These platforms serve as invaluable hubs for sharing clinical insights, facilitating system learning, and driving quality improvement initiatives, thereby enhancing the overall standard of care across the region.

In addition to his educational endeavours, Patrick serves as a GP representative on a regional GP information platform. This platform endeavours to establish a comprehensive national data set for primary care in Northern Ireland, enabling data-driven decision-making, business intelligence, and research initiatives. His involvement underscores his commitment to fostering innovation and leveraging data analytics to drive meaningful insights and improvements in primary care delivery.

Furthermore, Patrick actively engages in quality improvement networks, seamlessly integrating quality improvement projects into educational platforms. His collaborative approach ensures that practitioners have access to the latest advancements and best practices, ultimately enhancing patient outcomes and healthcare delivery effectiveness.

Although not directly engaged in HSC Industry collaboration, Patrick recognises the potential benefits of such partnerships, particularly in areas like chronic disease monitoring and innovation funding. His advocacy for integrating primary care needs into system-wide innovation efforts underscores the importance of prioritising and supporting initiatives at the frontline of healthcare delivery.

Patrick's notable platform, GPNi.co.uk, stands as a testament to his commitment to education and knowledge sharing. With over 11,000 hours of clinical education delivered in 2023, the platform serves as a cornerstone for clinicians and pharmacists to engage in collaborative learning and share invaluable insights and experiences on a regional level. Through initiatives like GPNi.co.uk, Patrick continues to elevate the standard of care and drive innovation within Northern Ireland's healthcare ecosystem.

Jonathan Wallace

Jonathan Wallace, a distinguished figure in academia, holds the esteemed position of Professor of Innovation within the engineering faculty, representing one of the largest academic institutions in Northern Ireland. With a keen focus on addressing contemporary challenges, particularly in the realm of AI and digital health, Jonathan collaborates closely with colleagues to pioneer innovative solutions that reshape healthcare delivery and patient outcomes.

At the heart of Jonathan's research agenda lies a dedication to advancing life sciences, particularly in the realm of digital health and well-being. He is deeply engaged in projects aimed at leveraging cutting-edge technologies to revolutionise healthcare practices, with a particular emphasis on improving diagnostic capabilities and reducing waiting times for critical interventions.

Jonathan's notable projects and collaborations underscore his commitment to driving innovation and fostering collaborative partnerships across academia, industry, and healthcare providers. Noteworthy initiatives include the Magic Rehabilitation Service, a collaborative endeavour with the Department of Health aimed at promoting patient-centred care and engagement. Additionally, his leadership in projects such as the Lung Cancer Research Project, funded by UK Research and Innovation, demonstrates his prowess in leading large-scale endeavours that leverage new medical technologies for improved patient outcomes.

Furthermore, Jonathan's contributions extend beyond individual projects, as he actively advocates for open data initiatives and ethical AI systems in healthcare. His emphasis on patient involvement and co-creation of services underscores his commitment to preventive healthcare and patient-centred innovation.

In his senior position within academia, Jonathan serves as a bridge between research and practical healthcare applications, engaging with strategic boards, government departments, and industry partners to drive system-wide innovation efforts. His influence over innovation is further evident in his advocacy for better collaboration between healthcare trusts and the promotion of successful innovations.

Moreover, Jonathan champions a system-wide approach to healthcare innovation, advocating for policy shifts that empower citizens to take responsibility for their own care. By emphasising the importance of collaborative, multi-stakeholder approaches, he seeks to drive meaningful change and improve healthcare outcomes for all. Jonathan Wallace's exemplary leadership and dedication to innovation position him as a key driving force in advancing healthcare innovation in Northern Ireland and beyond.

Dr. Frances Duffy

Dr. Frances Duffy emerges as a prominent figure in the healthcare landscape, wielding her expertise as a Clinical Psychologist and Clinical Entrepreneur to pioneer innovative solutions aimed at enhancing mental health care for older individuals, particularly those affected by dementia. At the forefront of her endeavours lies the development and implementation of the CLEAR Dementia Care model app, a groundbreaking innovation that offers comprehensive training nationally and regionally.

In addition to her pioneering work in dementia care, Dr. Duffy has spearheaded initiatives such as the Enhanced Delirium Support and Rehabilitation Service, which aims to provide tailored support for patients grappling with delirium. Despite facing challenges such as time constraints, engaging care homes and carers, and a lack of clear innovation pathways, Dr. Duffy remains committed to driving positive change in mental health care for older individuals.

Collaboration lies at the heart of Dr. Duffy's approach to innovation, as evidenced by her partnerships with Ulster University on dementia projects and with Nightingale Analytics for the development of a dementia assessment app. Her efforts have garnered national recognition, with accolades from esteemed institutions such as Ulster University, the Dementia Health Care Network Ireland, and Age NI.

Moreover, Dr. Duffy actively engages with various stakeholder groups within the healthcare ecosystem, advocating for a more collaborative approach to support innovators and streamline the system. Her vision for a united HSC ecosystem underscores the importance of categorisation and robust support mechanisms, particularly for entrepreneurs navigating complex agreements and governance structures.

Dr. Frances Duffy's exemplary work not only showcases the transformative potential of frontline innovation but also underscores the pressing need for streamlined pathways and increased collaboration within the healthcare system. As advocates for a more cohesive and supportive ecosystem, Dr. Duffy's efforts pave the way for improved mental health care outcomes for older individuals, offering hope for a brighter future in dementia care and post-diagnosis support.

Leveraging Northern Ireland's Innovation Ecosystem

Northern Ireland's Health and Social Care (HSC) system possesses a unique set of strengths that position it as a prime candidate to lead innovation in healthcare. With a relatively stable and sizable population, an integrated health and social care structure, and a wealth of historical data sets, Northern Ireland offers fertile ground for system-wide studies with results applicable to broader populations and markets. A thriving innovation ecosystem already exists, comprising a diverse array of organisations, networks, funding programmes and technological infrastructure supporting the system. Despite these strengths, the absence of a system-wide authoritative governance and leadership structure hampers the system's ability to fully capitalise on available innovative opportunities. Understanding the landscape of innovation capabilities is paramount for stakeholders seeking to leverage these resources effectively.

1. Collaborative Networks:

Collaborative networks serve as vital conduits for knowledge exchange, resource sharing, and collective problem-solving. These networks bring together diverse stakeholders, including academia, industry, healthcare providers, and government agencies, fostering synergistic partnerships to address complex challenges and drive impactful innovations.

2. Funding and Investment:

A diverse array of public funding initiatives, strategic partnerships, and grants are pivotal in bolstering research and innovation endeavours across the healthcare landscape. These resources play a crucial role in nurturing collaborative ventures, empowering researchers, and catalysing transformative projects. Appendix III presents the depth of knowledge and work external stakeholders have with the main funding and investment bodies in Northern Ireland.

3. Technological Infrastructure:

The technological infrastructure supporting healthcare innovation encompasses a range of tools and systems aimed at enhancing the delivery, management, and security of healthcare services. This infrastructure includes healthcare interoperability solutions, facilitating seamless data exchange; cybersecurity solutions, protecting sensitive patient information; and health information systems like Electronic Health Records (EHRs) and Clinical Decision Support Systems (CDSS), which centralise patient data and aid clinical decision-making. Numerous initiatives in Northern Ireland actively support the technological infrastructure.

4. Innovation Projects and Initiatives:

Innovation Projects and Initiatives represent the driving force behind transformative change in the research and innovation ecosystem. These initiatives encompass a wide range of efforts, from pilot programs to large-scale projects, aimed at developing and implementing novel solutions to pressing healthcare challenges.

5. Research Institutions and Organisations:

Research Institutions and Organisations form the backbone of the healthcare research and innovation landscape, comprising academic institutions, healthcare trusts, and specialised research centres. These entities are dedicated to advancing knowledge, conducting groundbreaking research, and translating discoveries into real-world applications.

Collaborative Networks

- Health Innovation Research Alliance Northern Ireland (HIRANI)
- Digital Health and Care NI (DHCNI)
- HSC Engagement
- Clinical Translational Research and Innovation Centre (C-TRIC)
- Northern Ireland Connected Health Innovation Centre (CHIC)
- Northern Ireland Clinical Research Network (NICRN)
- NHS Clinical Entrepreneurs Programme

Funding and Investment

- InvestNI
- NIHR Invention for Innovation (i4i)
- Launchpad
- Techstart Ventures
- Engineering and Physical Sciences Research Council (EPSRC)
- UK Research and Innovation
- PaLS - Procurement and Logistics Service
- Belfast Regional City Deals
- Matrix
- Catalyst

Technological Infrastructure

- Encompass
- Epic
- Cyber
- Core Laboratory Information Management System (CoreLIMS)
- Evolve programme
- NIPACS+

Innovation Projects and Initiatives

- Institute of Research Excellence for Advanced Clinical Healthcare (iREACH)
- HSC Innovations
- Local digital initiatives
- Digital Catapult Northern Ireland
- The Innovative Devices Access Pathway (IDAP) - pilot phase

Research Institutions and Organisations

- University of Ulster
- Queens University Belfast
- Northern Ireland Clinical Research Network (NICRN)
- Health and Social Care R&D Division
- Public Health Agency
- Northern Ireland Biobank

The Role of Digital in Innovation

Digital technologies and data are central to driving change within a health innovation ecosystem. However, it's essential to acknowledge that innovation encompasses more than just digital solutions. While digital is just one facet of the broader innovation spectrum, it garners significant attention and offers promising solutions. This section delves into the multifaceted role of digital in healthcare innovation, specifically in Northern Ireland, acknowledging how it is leveraged in the Digital Innovation Strategy, facilitated by the creation of the Digital Innovation Hub.

As part of the engagement, internal stakeholders were surveyed to gauge their perspectives on the role of digital within the healthcare innovation landscape. Ranked below are the perceived roles of digital in innovation:

1. **Facilitating collaboration:** The majority of respondents (80%) recognise the role of digital in fostering collaboration among partners within the innovation ecosystem. This indicates a widespread acknowledgment of digital tools and platforms as facilitators for joint projects and initiatives.
2. **Providing data and evidence:** A significant proportion of respondents (73%) acknowledge the importance of digital in providing data and evidence to support decision-making and prioritise innovation efforts. This highlights a recognition of the value of digital technologies in informing strategic planning and prioritisation of innovation.
3. **Improving workflow and diagnostics:** A substantial number of respondents (70%) see digital innovation as crucial for enhancing workflow efficiency and diagnostic capabilities within the healthcare setting. This underscores the perceived benefits of digital solutions in optimising operational processes and enhancing patient care.
4. **Advising on cutting-edge innovation:** Two-thirds of respondents (67%) view digital as a valuable source of advice and guidance on innovative solutions that can address various healthcare challenges, supporting improved population health, workflow, and diagnostics.
5. **Embedding and adopting innovations:** A significant portion of respondents (67%) recognise the role of digital in facilitating the widespread adoption and integration of innovative digital solutions within healthcare systems.
6. **Supporting digital and technical aspects of innovation:** A majority of respondents (63%) acknowledge the role of digital in providing technical support and expertise for innovation initiatives.

Overall, the insights suggest a strong recognition of the multifaceted role that digital plays in driving innovation within healthcare ecosystems. From facilitating collaboration and providing data-driven insights to supporting implementation and technical aspects, digital technologies are seen as integral components of modern healthcare innovation strategies.

Similarly, when external stakeholders were asked a related question, they also ranked "Facilitating collaboration" as the most important role digital plays in the NI ecosystem, highlighting the importance placed on collaborative efforts and partnerships within the ecosystem to drive all innovation forward. Following closely, "Supporting the digital and technical aspects of innovation" underscores the significance of technical expertise and support in enabling successful innovation initiatives. Additionally, the emphasis on "Facilitating the embedding and adoption of digital innovations at scale" signals a focus on scalability and widespread adoption of digital solutions, reflecting a desire for tangible impact and transformation across the healthcare system. These were followed by "Horizon scanning" and "Providing data and evidence" indicating a forward-looking approach, with stakeholders seeking to leverage emerging technologies and empirical evidence to inform innovation efforts and decision-making. Finally, the lowest perceived role of digital was "Implementing digital innovation" which may indicate that external stakeholders perceive challenges or complexities associated with execution, such as resource allocation, change management, or integration with existing systems. Alternatively, it could reflect a recognition that successful implementation relies heavily on prior steps, such as collaboration, technical support, and scalability, which are seen as more foundational to the innovation process.

The Digital Innovation Hub

The Digital Innovation Hub in Northern Ireland forms part of the HSCNI's Digital Innovation Strategy 2022-2026. It is committed to initiating a change in mindset and culture surrounding digital innovation, while also addressing the challenges the innovation ecosystem experiences (described further in the next chapter of this report). It is designed to facilitate the end-to-end development cycle of healthcare innovation initiatives, from conception to implementation and scaling. This is achieved through a structured approach known as the Innovation Pathway, which consists of three main stages: opportunity identification, testing, and scaling.

Innovation Pathway Stages:

1. **Build Foundations & Identify Opportunities:** This stage involves determining priorities for digital innovation, engaging stakeholders to identify best practices and pain points, and establishing a repository of best practices.
2. **Incubate, Test & Accelerate:** Shortlisted ideas are further developed into formal use cases, prioritised based on cost-impact analysis, and progressed to proof-of-concept and piloting stages.
3. **Scale, Deploy & Learn:** Successful initiatives are scaled for wider deployment, with a focus on establishing execution plans, setting milestones, and facilitating further solution development.

To operationalise these goals, the Digital Innovation Hub is structured around key functional layers, focusing on governance, assurance, and decision-making, as well as the Innovation Pathway itself. Governance processes will ensure strategic alignment, evaluate innovation projects, and oversee contractual and legal obligations. Collaborative efforts with governmental bodies and industry partners will be facilitated through a digital ecosystem collaboration plan, fostering sustainable relationships and promoting innovation.

Within the Innovation Pathway, emphasis is placed on horizon scanning, leveraging established networks and thematic areas to identify and prioritise opportunities. An innovation repository will provide access to examples of digital innovation, fostering knowledge sharing and collaboration. Prioritisation will focus resources on key priority areas aligned with the broader healthcare vision and strategy, maximising impact within resource constraints.

Delivery functions of the Digital Innovation Hub encompass proof of concept, funding management, scale and deployment, and pilot assessment. An innovation fund will promote a "digital first" culture, while innovation wrap-arounds will provide support for innovators and adopters alike. Continuous improvement will be ingrained in the hub's ethos, with each cycle of innovation informing future endeavours and driving progress in healthcare innovation in Northern Ireland.

Digital Innovation Resources

83% of internal stakeholders, and 75% of external stakeholders believe the system does not currently have the resources to support the roles that they believe digital should play in the collaborative innovation ecosystem.

Internal stakeholders list the following necessary resources that they feel the ecosystems needs to support the digital aspect of innovation:

- **Adequate resourcing:** There's a consensus on the importance of having sufficient resources for data analysis and implementation to maximise the potential of vast data sources. Resource needs extend comprehensive support in terms of people, processes, policies, adequate funding and technological infrastructure.
- **Expertise in data protection:** Stakeholders emphasise the need for expertise in data protection, including creating Data Protection Impact Assessments (DPIAs), ensuring internet/wi-fi coverage, and bolstering cybersecurity measures.
- **Education for staff:** There's a call for ongoing education and training programs to enhance staff skills and competencies in digital technologies.
- **Advisors, champions, and technical experts:** Stakeholders stress the importance of having knowledgeable advisors, champions, and technical experts to guide digital initiatives effectively.

- **Better connectivity and accessibility:** Improved connectivity and accessibility are identified as essential for enabling seamless digital interactions and access to resources.
- **Expertise in business analysis:** Stakeholders highlight the importance of having expertise in business analysis functions to strategically align digital systems and ensure compatibility and integration.
- **Prioritisation and dedicated teams:** There's a call for prioritisation frameworks and dedicated teams focusing on IT, clinical, and research innovation to streamline efforts and ensure focused outcomes.

External stakeholders list the following necessary resources that they feel the ecosystems needs to support the digital aspect of innovation:

- **Engagement events and innovation platforms:** Stakeholders highlight the need for regular engagement events, such as hackathons, accelerators, and bootcamps, to promote rapid innovation and leverage digital resources effectively, acknowledging the competition with the private sector for talent and resources.
- **Administrative and leadership support:** There's a call for increased coordination, administrative support, and dedicated leadership roles, such as a Director of Innovation and Chief Innovation Officer or Innovation Lead, to drive innovation initiatives and facilitate collaboration across stakeholders and disciplines. They also stress the importance of joint leadership between the Department of Health and the Department for the Economy, as well as support at interfaces in innovation, to ensure effective coordination and alignment with strategic goals outlined in reports and strategies.
- **Enhanced connectivity and collaboration:** Stakeholders emphasise the importance of establishing a single front door linked to all ecosystem parts via a portal or regular meetings, facilitating cohesive strategy development, unified funding initiatives, and prioritisation of service development opportunities.
- **Funding and educational support:** There's a consensus on the critical role of funding to allocate time for research and digital innovation, support investment in new ideas, and provide high-quality educational materials tailored to digital innovation approaches.

When inquired about resources that could contribute to the research, innovation, and digital aspects of the ecosystem, the majority of internal stakeholders disagreed; yet of the small number who affirmed, interested staff members and professionals were the prevailing answer to resources offered.

External stakeholders, however, proposed the following contributions:

HIRANI

- Able to act as the communication voice across multiple stakeholders, organisations and networks within the ecosystem

University of Ulster

- CH:LL Living Lab User Experience (UX and Usability Engineering Lab)
- Access to Centre for Digital Healthcare Technologies and its Resources (CDHT)
- Access to research funding
- Access to equipment
- Access to expertise
- Existing roles who can support the network
- Stakeholders with knowledge, expertise, R&D and commercial experience

Queens University Belfast

- Image Reading Centre
- Knowledge of bidirectional translational processes

InvestNI

- A range of business support and R&D programmes which can support and fund business engagement with the HSC
- Funding and entrepreneurship

Innovate Island

- Innovation ecosystem [map](#)

Celsio

- Library of eLearning courses
- Innovation competency and capability assessments
- Online Innovation Management system

ABPI

- Support with research

Cogniss

- Ability to enable innovators to build compliant digital health technologies, without any need for technical teams

Trimedika

- Networks and technical teams

Conclusion

In conclusion, the Northern Ireland research and innovation ecosystem stands out with areas of excellence evident in its multitude of organisations, initiatives, achievements, and emerging programs. The region's steadfast commitment to problem-solving, innovation, and collaboration is evident through the case studies and profiles of innovation champions presented in this report, and these examples only scratch the surface.

While Northern Ireland's healthcare innovation journey is marked by remarkable progress, challenges around collaboration, implementation and spread have been touched on. The next chapter will delve deeper into these hurdles, exploring barriers, blockers, and the needs of the ecosystem as experienced by the stakeholders in it.

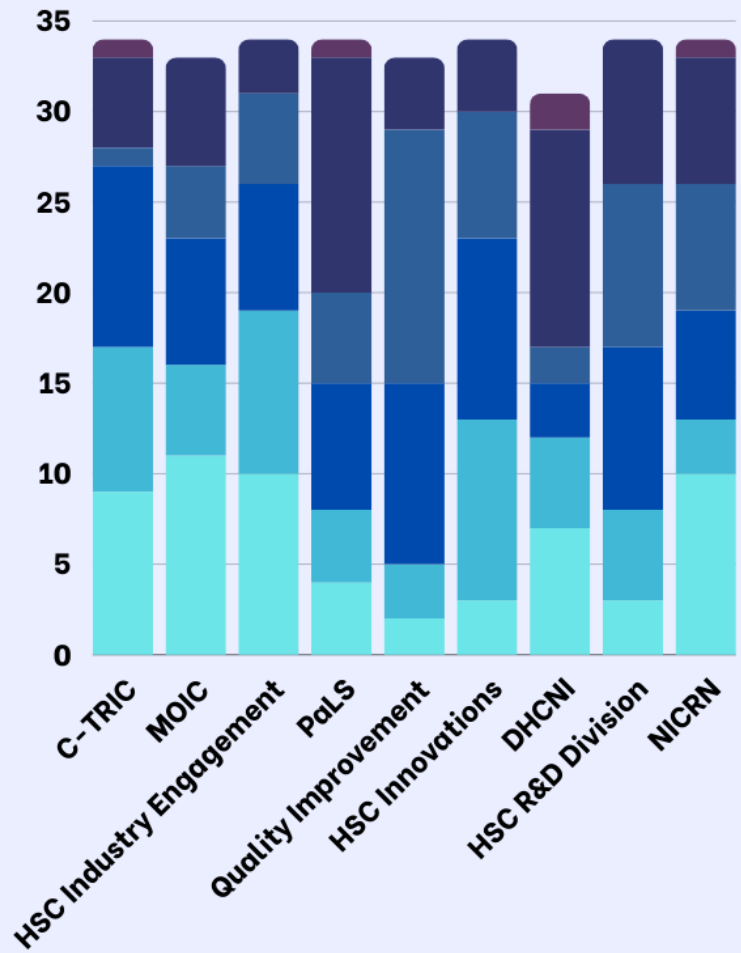
Despite these challenges, Northern Ireland remains poised at the forefront of healthcare innovation. With a collective dedication to overcoming the current challenges, leveraging emerging innovations and technologies, and fostering a culture of innovation, the region is well-positioned to lead the way in shaping the future of healthcare.

Appendix I: Internal knowledge of innovation groups

What is your knowledge of the following internal stakeholder groups regarding their role in research and innovation?

Internal

- Never Heard Of
- Heard Of
- Some Knowledge of
- Worked With
- Works Regularly With
- Signposts To

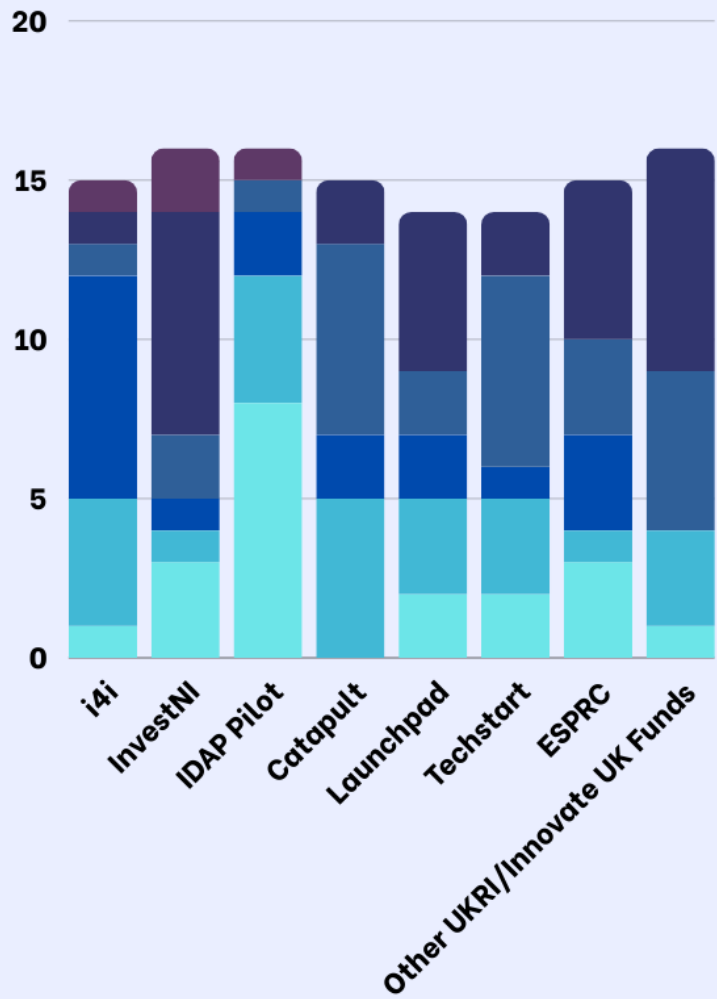


Appendix II: External knowledge of innovation groups

What is your knowledge of the following funding or support programmes and initiatives?

External

- Never Heard Of
- Heard Of
- Some Knowledge of
- Worked With
- Works Regularly With
- Signposts To



Appendix III: External stakeholder knowledge of funding support

What is your knowledge of the following HSCNI centres and initiatives?

External

- Never Heard Of
- Heard Of
- Some Knowledge of
- Worked With
- Works Regularly With
- Signposts To

