Northern Ireland
Audit Office

Innovation and Risk Management

A Good Practice Guide for the public sector

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Contents

Foreword

In the context of ever-changing landscapes, it is essential that public bodies identify new ways of operating and delivering better, more responsive services.

This guide is relevant to all public sector organisations and is intended to raise awareness, generate discussion, and encourage all public servants to consider what can be done differently to generate better outcomes. It is intended to encourage organisations to enable innovation, big or small. Doing the same things in the same ways will not result in better outcomes.

This guide discusses the perceived barriers to innovation within the Northern Ireland public sector, along with the key enablers of innovation. One of the key messages is that risk is a key part of the innovation process which should be managed rather than avoided. There is often a perception that governance and accountability structures deter innovative and new approaches. However, as auditors we recognise that well-managed risk taking is a necessary feature of most types of innovation.

We have highlighted the hugely important role of leadership, including how leaders can influence and shape a culture that encourages, enables and embeds innovation.

There are links to several useful resources, a self-assessment checklist, as well as practical insights into successful innovations across the public sector.

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Comptroller and Auditor General

June 2023

List of Abbreviations

DAERA   Department of Agriculture, Environment and Rural Affairs

DfE   Department for the Economy

FC   Frequent Callers

ISO   International Organization for Standardization

LPS   Land and Property Services

NIAS   Northern Ireland Ambulance Service

NISRA   Northern Ireland Statistics and Research Agency

NI Water   Northern Ireland Water

OECD   Organisation for Economic Co-operation and Development

OJEU   Official Journal of the European Union

ONS   Office for National Statistics

OPSI   Observatory of Public Sector Innovation

R&D   Research and Development

SBRI   Small Business Research Initiative

UK   United Kingdom

Introduction

Introduction

What is Innovation in the public sector?

1.   Innovation can mean different things to different people. Essentially, innovation in the public sector is about the creation and implementation of new, or changed, policies, processes, products, services and methods of delivery which result in improvements in the efficiency, effectiveness or quality of outcomes. In short, innovation is the application of new ideas to produce better outcomes. **Figure 1** visually defines innovation in the public sector.

2.   Common areas of innovation in the public sector include:

   · shaping policy development and directions;

   · implementing policies and programmes;

   · administrative processes; and

   · delivering services.

Figure 1: What is innovation in the public sector

Can be new or changed

· Policies
· Processes
· Services
· Methods of delivery
· Methods of communication

Is new to the organisation and can be

· The first of its kind
· Inspired by others
· Proudly found elsewhere

Can vary by scope and scale

· Incremental
· Radical
· Systemic

Once implemented it produces better outcomes and/or adds value

· Quality
· Efficiency/savings
· Citizen involvement
· Employee satisfaction
· Programme for Government outcomes

Source: NIAO based on the definition of public sector innovation included in the Copenhagen Manual

3. The <u>Northern Ireland Public Sector Innovation Lab</u> (the Innovation Lab) sits within the Department of Finance. It was created in 2014 in recognition of the need to enable innovation in the public sector. It aims to support senior leaders to improve public services and policies by creating a safe space to research, co-create ideas, test prototypes and refine concepts with citizens, public servants and stakeholders. It also promotes innovation methodologies, such as service design and behavioural science, with a view to widening their uptake and application across the service. In 2019, the Innovation Lab and Centre for Effective Services produced a report: <u>Beyond Ideas - Enabling a culture of innovation for improved public services</u>. This report explored the state of innovation in the public sector in Northern Ireland and highlighted that innovations in the public sector vary by scope and scale:

- **Incremental innovations** are going on all the time; individual staff and teams improving and streamlining how work is done day by day and contributing to continuous improvement. Examples from Northern Ireland include: the Small Business Research Initiative; and the Quality Improvement Innovation Centre at the South Eastern Health and Social Care Trust.

- **Radical innovations** include the development of new services, delivery methods or processes leading to marked improvements in performance. Examples from Northern Ireland include: Getting Ready to Learn (Department of Education); the Glider (Translink); and Shared Services (Department of Finance).

- **Systemic innovations** are major shifts that transform whole sectors, industries or organisations. They are complex, transformative and take time to implement. Examples from Northern Ireland include the Review of Public Administration.

Why produce a guide on Innovation and Risk Management?

4. There is increasing demand for better, more responsive services. In the context of changing landscapes and fiscal pressures, it is essential that public bodies identify new ways of operating and delivering services. The United Kingdom (UK) is one of forty countries that adopted the Organisation for Economic Co-operation and Development <u>(OECD) Declaration on Public Sector Innovation</u> in 2019. It recognises the shared understanding among governments about the role of innovation in meeting challenges, and constitutes a concrete commitment to support, improve and expand public sector innovation. It is based on five principles and associated actions that public sector organisations can use to inform and enhance innovation and its management:

- Embrace and enhance innovation within the public sector;

- Encourage and equip all public servants to innovate;

- Cultivate new partnerships and involve different voices;

- Support exploration, iteration and testing; and

- Diffuse lessons and share practices.

5. At the time of this guide, there is no specific government wide plan designed to support the implementation of the OECD declaration in Northern Ireland. **Appendix One** provides details on how the Republic of Ireland is working to promote, develop and embed a culture of innovation throughout its public sector. We found this to be an interesting example which demonstrates a commitment to innovating, including an overarching Innovation Strategy, supported by guidance and toolkits to assist public bodies.

6.   <u>Beyond Ideas</u> noted that in the public sector good ideas are getting stuck and staying small, while legacy systems, old policies and procedures continue to be used despite poor or weak evidence of their effectiveness. More needs to be done to encourage and embed innovation within public bodies and drive continuous improvement in government services.

7.   Traditionally, public sector bodies display many of the characteristics associated with a risk averse culture and there are inevitably risks associated with innovation. There is often a perception that governance and accountability structures deter innovative and new approaches. However, as auditors we recognise that well-managed risk taking is a necessary feature of most types of innovation. When properly managed, taking risks through challenging the status quo and innovating can lead to improved value for money and better outcomes.

8.   There were positives and opportunities that emerged in the midst of the difficulties and challenges brought about by the COVID-19 pandemic. These include a willingness to work in new and innovative ways, harnessing technologies and using them to best advantage to ensure business continuity, and to find more efficient ways of working. For example, in the health sector, innovative interventions were developed at pace to lessen the impact of the virus, and new ways of continuing to deliver existing services during the pandemic were also developed. Ensuring that the public sector takes the learning from those innovative and creative ways of working and continues to build on them is crucial for continuous improvement.

Structure of the Guide

9.   The guide is structured as follows:

- **Part One** identifies the barriers to, and enablers of, innovation in Northern Ireland public sector organisations.

- **Part Two** discusses how public sector organisations can create the conditions that enable innovation and the key role of leaders.

- **Part Three** considers the management of risk and innovation. It sets out the six stages of the innovation process and the key considerations to assist in mitigating potential risks throughout the innovation process.

- **Part Four** summarises six case studies, shared by public bodies in Northern Ireland, to demonstrate and share some of the innovations happening across the public sector to deliver better outcomes, the key enablers of those innovations, and the lessons learnt.

- **Appendix One** provides details on how the Republic of Ireland is working to promote, develop and embed a culture of innovation throughout its public sector.

- **Appendix Two** includes a self-assessment checklist for bodies to assist in identifying and mitigating potential risks which may arise throughout the innovation process.

- **Appendix Three** includes more detail on the case studies referred to in **Part Four**.

- **Appendix Four** provides useful resources and guidance for public sector organisations on innovation. It includes a link to the Observatory of Public Sector Innovation (OPSI) Playbook which has been developed to support countries in implementing the OECD Declaration referred to in paragraph 4.

10. **Figure 2** visually summarises how the parts of this guide come together to form our **Framework for Innovation and Risk Management in the public sector**. We drew on the work of organisations such as the OECD and the Innovation Lab, and the work of other public audit agencies, to develop this Framework.

Figure 2: Framework for Innovation and Risk Management in the public sector
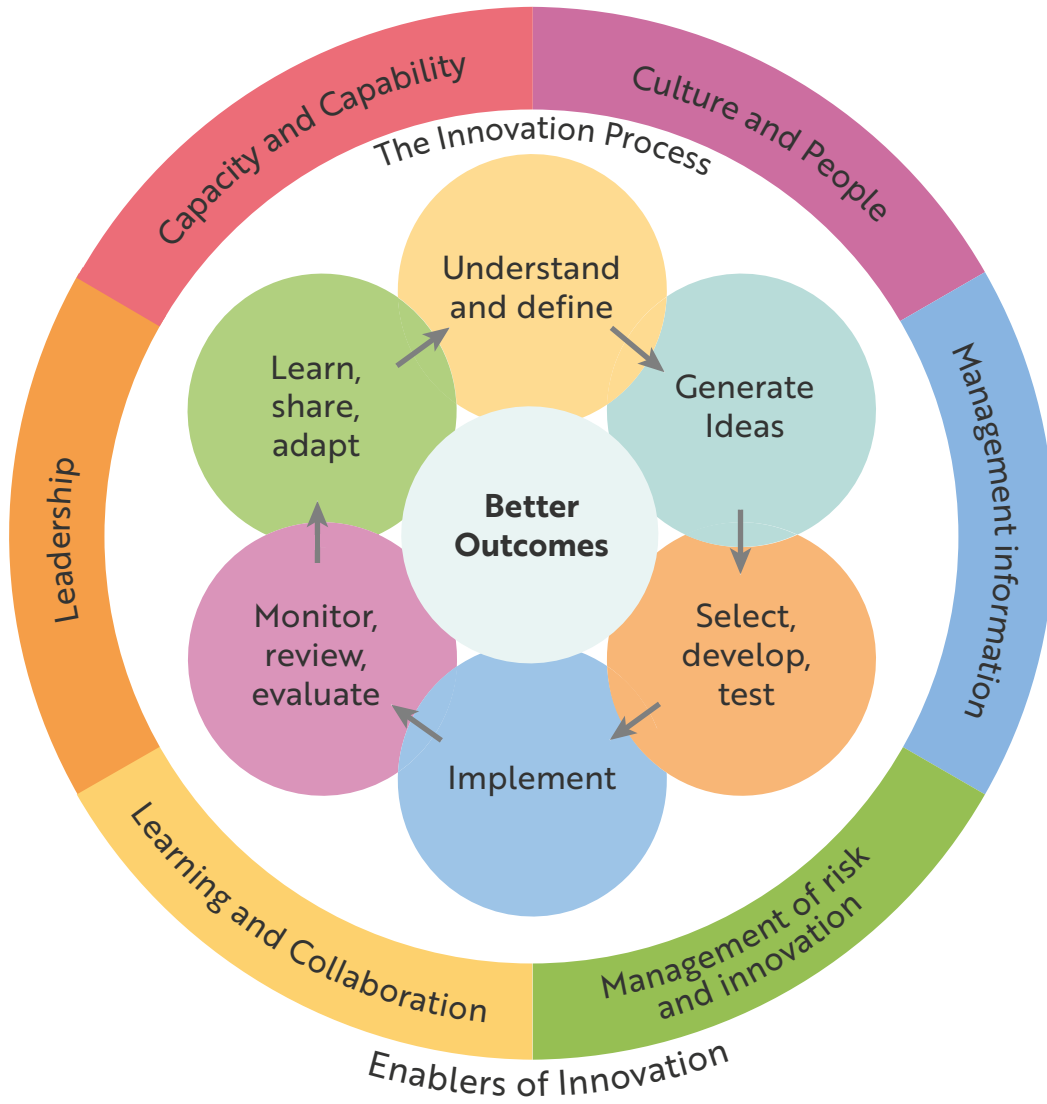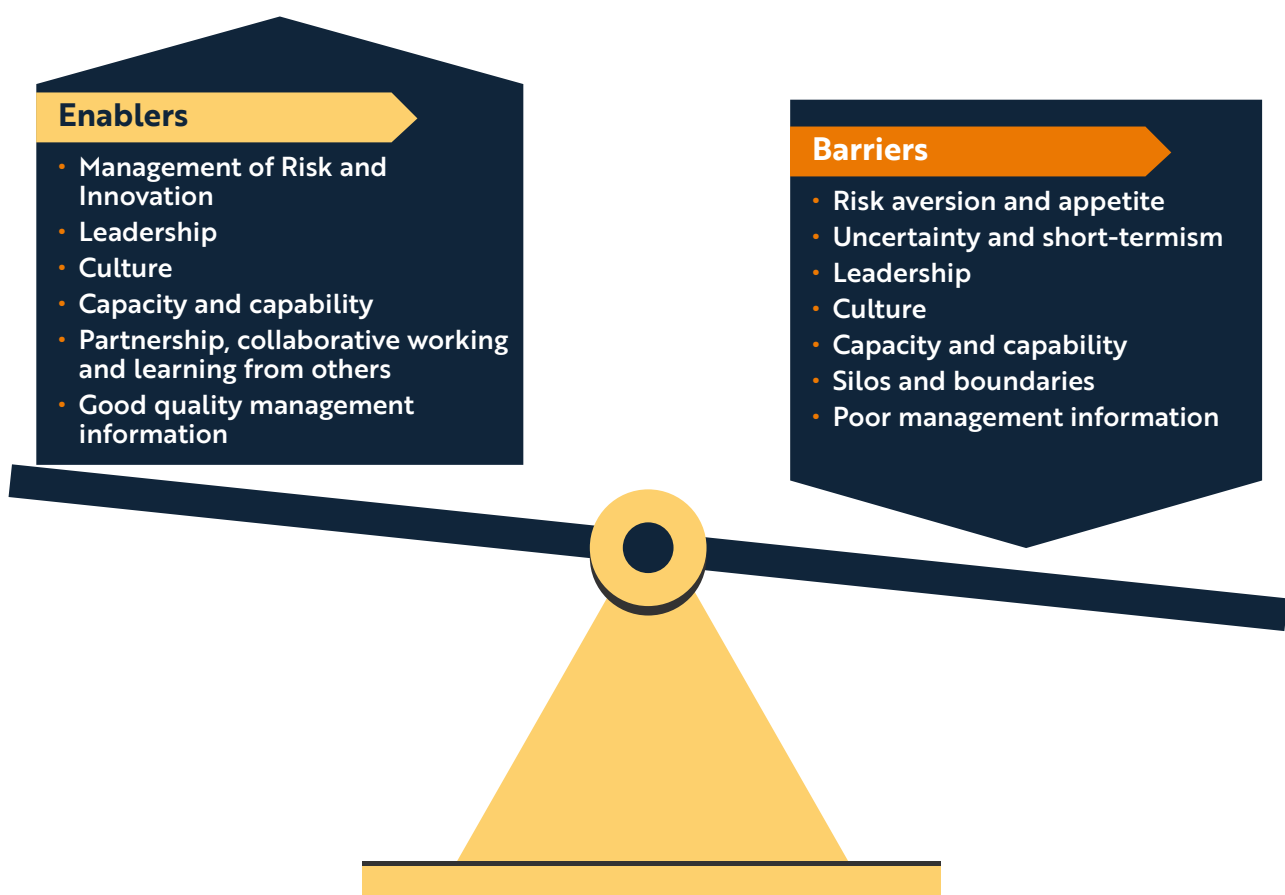
Part One:

Barriers to, and enablers of, innovation in public sector organisations

Barriers to, and enablers of, innovation in public sector organisations

1.1   In the private sector risks are seen in terms of the possible impact on profitability and shareholder value. The risk of not innovating is well understood and the consequences of failure are reduced profitability. In the public sector, however, risk is often considered in terms of the potential damage to an organisation's reputation and failure to achieve public policy objectives. The consequences of failure may mean the quality of public services and individuals' lives could be adversely affected. Innovation is not always seen as fundamental to the achievement of objectives.

1.2   **Figure 3** shows a number of commonly cited enablers of innovation and barriers to innovation. It is interesting to note that many of the barriers also feature as enablers. Beyond Ideas refers to the "innovation equation" which highlights the need to understand both sides of the equation i.e. both the barriers and the enablers; and then find a way to tip the balance in favour of the enablers to deliver change.

Figure 3: The Innovation Equation: Barriers and Enablers

Enablers

- Management of Risk and Innovation
- Leadership
- Culture
- Capacity and capability
- Partnership, collaborative working and learning from others
- Good quality management information

Barriers

- Risk aversion and appetite
- Uncertainty and short-termism
- Leadership
- Culture
- Capacity and capability
- Silos and boundaries
- Poor management information

1.3   We surveyed 111 public sector organisations to help us gain a better insight into the perceptions and experiences of innovation within public sector organisations in Northern Ireland. Over 50 per cent responded and shared their views on several matters including:

- how innovation is promoted and managed within their organisations;

- what they see as the main barriers to innovation;

- the greatest enablers of innovation; and

- the key actions or messages that could help to further embed innovation across the public sector.

We also asked respondents to share examples of innovations within their organisations and we have included a small number of these as case studies in **Part Four** and **Appendix Three**.

Key message

The main barriers to innovation, identified by Northern Ireland public sector organisations were:

- **The risk of failure and being held to account**
- **Risk appetite to innovation**
- **Organisational capacity and capability**
- **Uncertainty and short-termism**

Key message

The main enablers of innovation, identified by Northern Ireland public sector organisations were:

- **Leadership**
- **Organisational culture**
- **Organisational capacity and capability**
- **The willingness to collaborate with others/partnerships**

Key message

The key themes arising in the responses on key actions or messages that could further embed innovation within the public sector were:

- **Collaboration** – working together, internally and externally, to share knowledge, expertise, ideas and solutions
- **Leadership** – strategic vision and direction
- **Culture** - developing a culture of agility and learning which encourages and supports finding ways to do things differently
- **Risk is to be managed rather than avoided** - changing attitudes to be risk aware and not afraid to take well-managed risks, rather than being risk averse
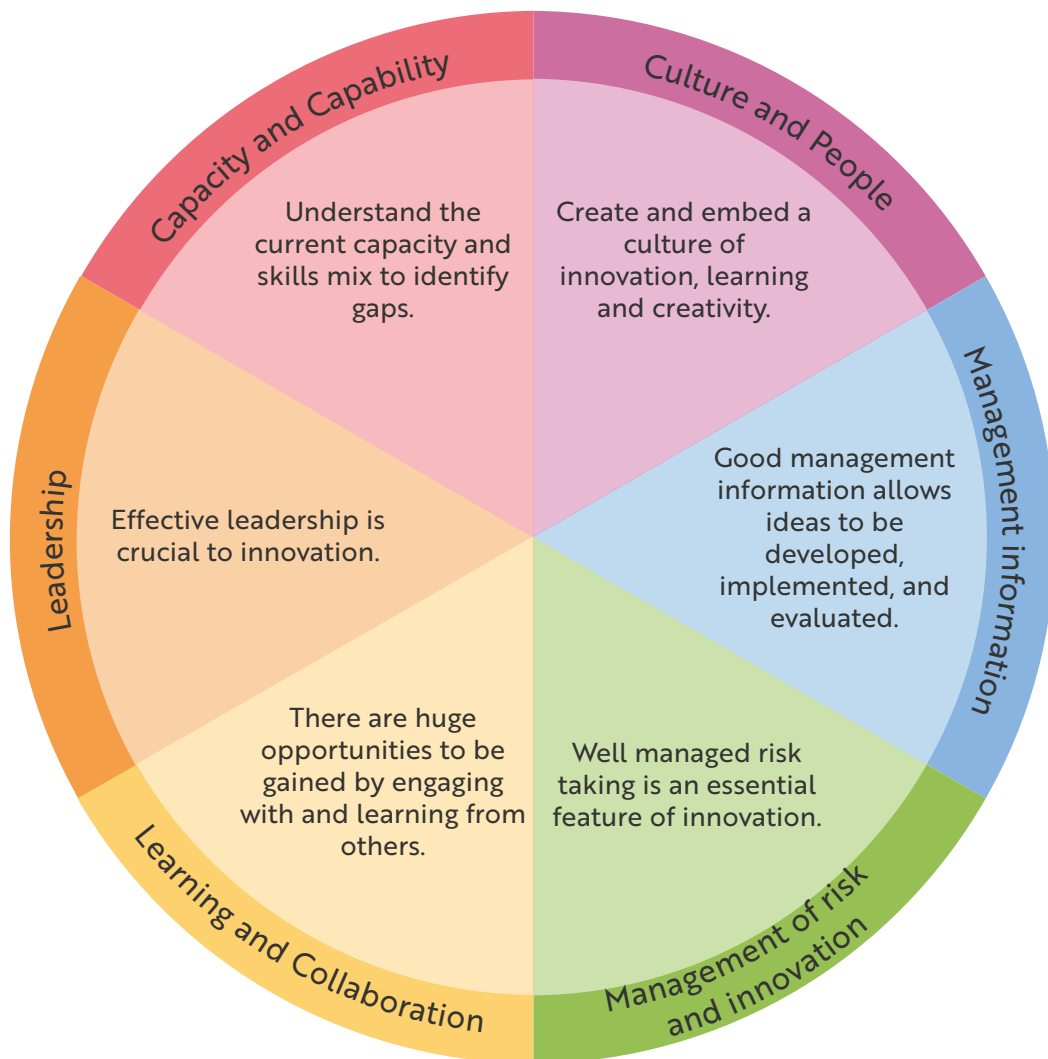
Part Two: Enabling Innovation

Enabling Innovation

2.1   As shown in **Figure 3** many of the barriers to innovation can also be enablers of innovation and vice versa. If the public sector is to narrow the 'Innovation Gap' between ideas and their successful implementation as innovations, then it needs to understand the conditions that can enable innovation. **Figure 4** expands on the key enablers of innovation shown in our Framework at **Figure 2**. Each enabler is discussed in more detail in this part of the guide.

Figure 4: Enablers of Innovation

Capacity and Capability — Understand the current capacity and skills mix to identify gaps.

Culture and People — Create and embed a culture of innovation, learning and creativity.

Management information — Good management information allows ideas to be developed, implemented, and evaluated.

Management of risk and innovation — Well managed risk taking is an essential feature of innovation.

Learning and Collaboration — There are huge opportunities to be gained by engaging with and learning from others.

Leadership — Effective leadership is crucial to innovation.

The importance of leadership

2.2   Research indicates that leadership is key to enabling innovation. Beyond Ideas identified eight ideas as a stimulus for leaders to unlock innovation in the public sector and includes a Leaders Innovation checklist. The importance of leadership in enabling innovation was the most frequently cited enabler of innovation in the responses to our survey of public sector organisations. The strategic vision and direction of leaders was also one of the key themes arising in responses on actions or messages that could further embed innovation within the public sector. So, what can leaders do to turn barriers into enablers and encourage and embed a culture of innovation throughout the public sector?

Key message

Leaders have a hugely important role in enabling and embedding innovation. Through their behaviours, and the policies and procedures put in place, leaders can create the conditions that either enable or hinder innovation.

Risk management and innovation

2.3   Traditionally public sector bodies display many of the characteristics associated with a risk averse culture. The risk of failure, and subsequently being held to account, can influence, or be influenced by, risk appetite. However, best practice guidance on risk management emphasises that the consequences of risk can be positive or negative. Well-managed risk taking can produce benefits for the organisation in terms of opportunities, but equally risk can present threats that ultimately may impact on an organisation's ability to meet its strategic objectives. Risk management is an important aspect of good governance and innovation. It is a useful tool in contributing to the achievement of outcomes and ensuring that public bodies meet their objectives.

2.4   Strong leadership is essential in embedding an organisational risk management culture and influencing attitude to risk throughout the organisation. Risk management continues to be a highly topical issue for all government departments and practical guidance on the concept of risk management is provided in HM Treasury's Orange Book: Management of Risk – Principles and Concepts. Most public sector organisations have well established risk management frameworks ensuring arrangements are in place to identify and analyse risks in a systematic way. Therefore, properly managed, calculated risk taking should already be a feature of all organisations and projects, and the implementation of risk management procedures should already form a necessary part of decision making processes. What may differ with innovation is the complexity of identifying and managing the risks.

Key message

It is worth remembering that it is not possible to eliminate risk; there will always be a level of residual risk that cannot be addressed. However, it can be properly managed and mitigated.

2.5 It is right that there are different risk appetites in different environments. There are some areas of the public sector where it is right to tolerate only a small risk profile, but there are other areas where there is a need to embrace risk. Properly managing risk is fundamental to delivering any level of change or transformation.

2.6 There is often a perception that governance and accountability structures deter innovative and new approaches. That should not be the case. Leaders should expect to be held to account - it is an integral part of the governance and accountability process in the public sector. Finding innovative ways to deliver improved public services at less cost is essential. Leaders should not fear being held to account when decisions have been made on the basis of robust evidence and change has been properly supported and enabled through effective risk management. The structure of an organisation's risk management function will vary according to its size, nature, and resource constraints. Equally, the risk management and governance structures put in place to manage innovations, will vary according to the complexity of the innovation and the assessment of risk associated with it. Being fit for purpose is key.

Organisational culture and people

2.7 Effective leadership is crucial to innovation and enabling a culture that supports innovation – a risk averse or indeed a blame culture will not foster innovation. Rather than focusing on the risk of a project failing, there is just as much need to consider the risk of doing nothing. Leadership can influence change in risk averse attitudes and help to create and embed a culture of innovation, learning and creativity, which is underpinned by appropriate risk management processes and an acceptance that some innovations won't work - but there will still be important lessons to learn.

2.8 Staff engagement, commitment and creativity is needed. Staff will often resist change that is imposed without a clear understanding of why it is necessary and how it relates to the organisation's objectives. There should be clear guidance and communication from leaders about what innovation means in relation to an organisation's objectives, their commitment to finding opportunities to innovate and do things differently, and what they expect staff to do. Leaders need to drive innovation and demonstrate the organisation's commitment to innovating. One third of respondents to our survey told us that there was an innovation champion or lead within their organisation. Whilst a champion can support leaders in driving and coordinating innovations it is crucial that this role is filled by a member of staff with the right skills, attitude and commitment.

Key message

A more innovative public sector needs a culture of learning and a willingness to take well-managed risks. A culture that supports innovation must be committed to and promoted within organisations to create the conditions where employee engagement and creativity can thrive.

2.9   The organisation's vision and mission should clearly reflect its commitment to innovation and creativity and seek to integrate innovation throughout its strategies and objectives. Public bodies should formally document their approach to risk management in a risk management strategy, to promote and embed risk management in the culture of the organisation. Similarly, having an Innovation Strategy which sets out priorities and goals can convey the importance of innovation to the organisation in achieving its strategic objectives and how it fits with wider corporate strategies. In our survey we found that the extent to which innovation is embedded within strategies and organisational objectives varies, as does the promotion, management and measurement of innovation within our public sector organisations. Only a small number of the public sector organisations that responded to our survey had an Innovation Strategy.

Good practice example from responses to our survey

The Department of Agriculture, Environment and Rural Affairs (DAERA) Innovation Strategy is a component of the DAERA Strategic Science Policy Framework. Its development and implementation are being governed through the DAERA Science Transformation Programme. An Innovation Champion, the Director of Innovation and Science Transformation Division, was identified in 2021. An Innovation Unit has been established to lead on the implementation of the strategy. An Innovation Strategy Project has recently been established within the Science Transformation Programme, with the DAERA Innovation Champion as its Senior Responsible Officer. The Project will lead the implementation of the strategy. Workstreams will include: development and management of a range of innovation initiatives; development and implementation of appropriate engagement, communication and promotion plans; and the development and implementation of a Monitoring and Evaluation Framework, to monitor and report progress against targets.

2.10   Other organisations provided examples of how innovation features within corporate plans and annual business plans.

2.12 The commitment to innovation and creativity, along with the ability to handle uncertainty and risk, can be reflected in competency frameworks, performance management and recruitment. Recognition and reward schemes can be powerful mechanisms for encouraging and maintaining a culture of innovation. These do not need to involve monetary rewards, and instead can be workplace recognition awards which celebrate success.

Good practice example from responses to our survey

In the Northern Health and Social Care Trust, teams and individuals are supported to lead innovations/improvements in their areas of work through Quality Improvement training. There are submissions for awards to celebrate and recognise innovations and improvements locally, regionally and nationally.

Collaboration and learning from others

2.13 There are huge opportunities to be gained by engaging with and learning from others. Leaders can shape attitudes towards collaboration and doing things differently. Considering the perspectives of multiple stakeholders, including end users, can lead to more ideas and potentially better, more informed, solutions. Working with others can also lead organisations to identify opportunities to adopt innovative ideas found elsewhere.

2.14 In our survey, 80 per cent of respondents told us that their organisation co-operates with other bodies on innovative activities. Encouraging and enabling even more collaboration and greater use of partnerships and secondments across the public sector and beyond can enrich skills and also enable organisations to access skills and/or resources not readily available internally.

Key message

There are huge opportunities to be gained by engaging with and learning from others, both internally and externally. Bringing together different experiences and skill sets, can result in better ideas or identify opportunities to adopt innovative solutions developed elsewhere.

Good practice example: Collaborative working between Land and Property Services (LPS) and the Innovation Lab

LPS Revenue and Benefits Directorate approached the Innovation Lab to ask if Behavioural Science could be used to prompt ratepayers to contact LPS about their outstanding debt.

LPS traditionally issues a final notice concerning non-payment of rates, followed by a Court summons to remaining outstanding debtors after a 10-day period. These Court summons letters cost approximately £39 per letter to issue, a cost which can be added to the ratepayer's debt.

The aim of the collaboration was to assist LPS to develop a new letter, using Behavioural Science principles, to prompt ratepayers to take action either by contacting LPS to make payment or agree a payment arrangement to avoid proceeding with legal action for unpaid rates. Working collaboratively with LPS, the Innovation Lab designed a new letter using insights from psychology as a final push to prompt contact or payment.
It was introduced in April 2019 and during the following six months over 8,000 of the new 'pre-court letters' were issued.

Approximately one-third of the ratepayers who were contacted paid, or made an arrangement to pay, thereby avoiding legal action and an additional £39 charge for the legal costs. This collaboration contributed to the collection of £4.1 million rates from those ratepayers over the period the new letters had issued.

Source: LPS and the Innovation Lab

Good quality management information

2.15   Leaders and innovators need good quality management information to fully understand their organisation, the environment in which it operates, its performance, and the opportunities and challenges it may face in the short, medium and long term, both internally and externally. The potential for the benefits to be gained by using expertise such as data scientists and analysts to support public sector innovation is being increasingly recognised. Good quality management information can enable the scope for innovation to be identified and provide the necessary evidence to support the case for adopting an innovative approach.

2.16   From an early stage in any successful process, organisations need to be clear on what information is needed to inform, monitor and evaluate a project, policy or decision – and the availability of that data. This can be more challenging when the information needed falls under the remit of other organisations and data sharing agreements are required. Once clear on the required management information, organisations then need to ensure that appropriate data collection and monitoring arrangements are put in place to enable effective review, evaluation and learning.

Key message

Good quality, accurate, comprehensive, reliable and timely management information is essential for successful innovation, to inform decision making and to identify and manage risks.   The information needed, should be identified early in the process. This is particularly important in innovations that require information-sharing across organisations to ensure appropriate arrangements are put in place.

Managing uncertainty and short-termism

2.17   One of the main barriers to innovation identified by Northern Ireland public sector organisations in the survey responses was uncertainty and short-termism, including in relation to funding.   Single year budgets and political uncertainty in Northern Ireland makes forward planning and longer-term commitments challenging.   Our report on the Northern Ireland Budget Process highlighted a number of issues, including the use of single-year budgets, with very limited potential to carry forward unspent funds and the need for clearer links between the budget and desired Programme for Government outcomes.

2.18   New ways of doing things may prove to be successful and demonstrate the potential benefits of change, however, often an idea falters before full implementation due to a lack of funding or changing priorities.   Several of the case studies included in **Part Four** of this guide have been unable to maximise their potential outcomes due to funding uncertainty.

2.19   However, there are opportunities to seek funding from other sources to support and enable new ideas.   For example, the Small Business Research Initiative (SBRI) enables the public sector to tap into new ideas and technologies and speeds up their adoption.   It helps government departments connect with innovative businesses to solve challenges facing the public sector.   The SBRI uses the procurement of research and development to support the creation of new products and solutions.   The SBRI has been used in Northern Ireland to help introduce new innovations in a range of areas including health, education, environment, business rates, audit and tourism.   See further details at SBRI - the Small Business Research Initiative | Department for the Economy (economy-ni.gov.uk)

Key message

Innovations need commitment and, ideally, longer-term support.   However, the public sector needs to find ways to deliver better outcomes in challenging and uncertain times. This requires resilience, flexibility, well-managed and intelligent risk taking and a clear strategic direction, which focuses on outcomes.

Part Three:

The Management of Risk and Innovation

The Management of Risk and Innovation

3.1   As previously noted in **Part Two**, risk management is an important aspect of good governance and innovation and is a useful tool in contributing to the achievement of outcomes and ensuring that public bodies meet their objectives. Strong leadership is essential in embedding an organisational risk management culture and in influencing attitude to risk throughout the organisation. A risk aware approach to innovation counters risk averse behaviours.

3.2   Innovation does not happen in isolation. It requires a constant flow of challenging ideas, and it goes beyond just the generation of these ideas.   Innovation also involves development, successful application, implementation, evaluation, and learning. Key questions that organisations should ask include:

- How can we ensure we explore and find opportunities for innovation?

- How will we select what we are going to do and why?

- How will we implement to make it happen?

- How will we capture the benefits achieved?

- What have we learnt and how will we share it?

3.3   Innovation can be considered as a process that can be designed, implemented, managed, and improved in all organisations. **Appendix Four** includes details of the ISO 56000 series of guidance standards on Innovation Management which provide international best practice on the systematic management of innovation activities in organisations of all types and all sizes.

3.4   Innovation models can help organisations to frame, understand and manage the process. Whilst models may differ in their schematic layout, they have broadly similar stages, beginning with understanding the issue and working through from idea generation to implementation.   For example, Beyond Ideas explores the various stages in the innovation process and features an innovation curve to illustrate the process of innovation, highlighting that the journey is not always simply linear.

3.5   **Figure 5** sets out the six stages of the innovation process that is part of our framework at **Figure 2**. Each stage is described in more detail in this part of the guide, along with suggested key considerations to assist in mitigating potential risks. A self-assessment checklist is also included at **Appendix Two** which is intended as a useful prompt for organisations seeking to identify and mitigate potential risks which may arise throughout the innovation process and should be considered as part of the wider risk management process within an organisation.

Figure 5: The Innovation Process
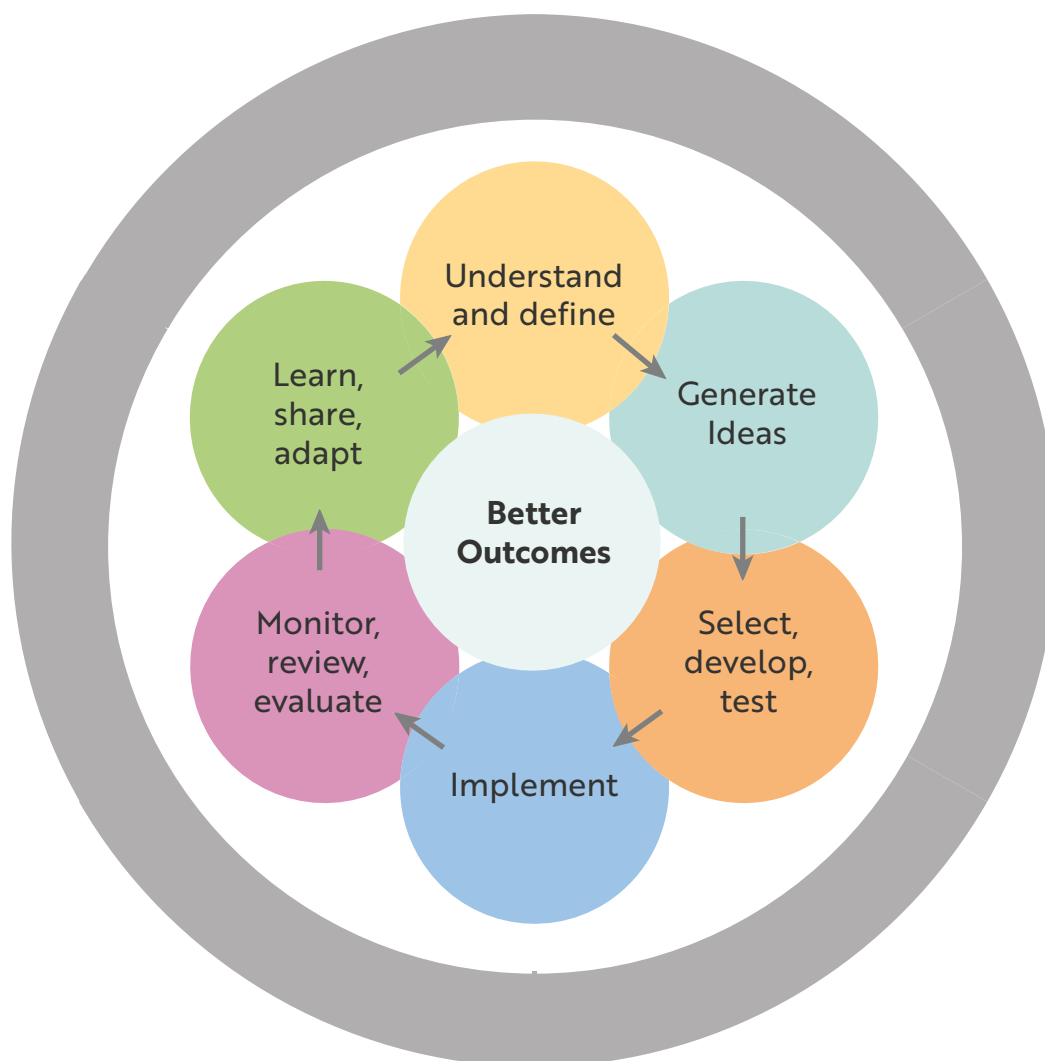
Stage 1: Understand and Define

3.6   The first step towards innovation is to recognise, understand and define the need, problem, or opportunity for innovation. Beyond Ideas emphasises the importance of defining the problem to ensure that the innovation addresses the real issue and not a symptom of it.

Key considerations

- The right people need to be involved from this early stage, including end users.

- Understanding the broader context is critical to being able to frame the need, problem, or opportunity appropriately and to understand its full implications.

- From the outset the user should be kept at the core of the innovation process.

- Understand and detail the hidden risk of not doing something rather than solely focusing on doing it.

Stage 2: Generate Ideas

3.7 Beyond Ideas highlighted that we do not spend enough time generating ideas. Generating new ideas as well as revisiting and exploring existing or previous ideas from different angles, and considering changing circumstances, are all key to identifying solutions. Whilst there is no one size fits all approach, there are many tools that can help with facilitating creative thinking and idea generation. These range from informal processes such as brainstorming, through to more complex techniques such as scenario analysis.

Key considerations

- **Considering the issue from the perspective of multiple stakeholders can lead to more ideas and potentially better, more informed, solutions.**

- **Seek to build in-house capacity and expertise and consider opportunities to avail of external expertise. For example, the Small Business Research Initiative, and teams such as the Innovation Lab.**

Stage 3: Select, Develop and Test

3.8 Assess the various options identified rigorously and determine which one(s) should be further explored and the best approaches or methods for doing so. It is important that development and testing is approached from the perspective of learning, rather than seeking to avoid the risk of perceived 'failure'. Development and testing can include trials, pilots and prototyping to prove the value (or otherwise) of an innovation. The scope and scale of the development and testing will vary according to a number of factors including:

- the complexity of the proposal;

- the timeframe in which the issues need to be addressed;

- the data available;

- the outcomes being sought; and

- the extent of uncertainty and risk.

3.9 This stage should result in clarity as to what works best. Innovations can then be refined or discounted and an evidence base developed, including intended outcomes and impacts. The knowledge and evidence gained can then inform the ongoing management of risks associated with the innovation.

Key considerations

- **Consider if others have done something similar. What can you learn from them? Is there the opportunity to adopt and adapt?**

- **Ensure that options development is well informed and supported by an evidence base.**

- **How well do the options deliver against intended objectives and outcomes?**

- **How deliverable is each outcome?**

- **Ensure that the end user is kept at the core of the design and the decision-making processes.**

Stage 4: Implement

3.10   An innovative idea is only as good as its implementation. Implementation is the process of putting an agreed plan into effect. Efficient and effective implementation is an essential component of innovation and will likely take time and require resources. As with any project, implementation will require a robust strategy or plan clearly describing the objectives, expectations, roles and responsibilities and setting out the practical steps to implementation. Appropriate governance and project management arrangements should be in place to monitor progress, manage risk and delivery of the innovation. The level of risk identified by the project owner(s) should inform the risk management process, the governance and monitoring arrangements and the complexity of the project management tools used.   Whilst implementation is a stage of the process, Beyond Ideas highlights the need to ensure it is also considered early and often.

Key considerations

- **Ensure the project implementation plan is clear, well understood and agreed before implementation commences.**

- **Ensure sufficient attention is given to the practicalities of implementation, including a phased implementation or transition arrangements to maintain continuity of service.**

- **Be clear at an early stage what information is needed to monitor, assess and evaluate, and ensure appropriate data collection and monitoring arrangements are put in place to enable effective review, evaluation and learning.**

Stage 5: Monitor, Review and Evaluate

3.11 All projects, programmes and initiatives should be monitored, reviewed and evaluated in terms of outcomes and impact on an organisation's performance – is it producing better outcomes or adding value?

3.12 Evaluations must be realistic and honest. Beyond Ideas has previously noted that programme assessments are often too positive. Valuable lessons can be learnt from both successful and unsuccessful innovations. Review and evaluation methodologies and timeframes should be determined to best fit the circumstances of the particular innovation. Meaningful reviews and evaluations require relevant, good quality performance and management information.

Key considerations

- **Ensure an appropriate evaluation strategy is in place to monitor, assess and evaluate success.**

- **This stage depends upon having good quality, relevant management information. Data collection and performance measures must be built in at the outset.**

- **Monitor impacts and outcomes at an early stage to consider if adjustments are required.**

Stage 6: Learn, Share and Adapt

3.13 Innovation is a dynamic ongoing process. The public sector cannot afford to stay still. It must continue to learn, share and adapt. During an innovation cycle, lessons will be learnt about the factors that contributed to both the successes and failures. Identify what went well, why and what you would do again; and what did not go well, why and what you would not do again. Build on experience and lessons learnt.

3.14 Beyond Ideas uses the phrase "proudly found elsewhere" or "second adopters". That means those willing to adopt and adapt innovation from elsewhere. This can save time and resources while still reaping the benefits for the public, so share your successes and lessons widely.

Key considerations

- **Build on experience and success.**

- **Learn from all innovations – successful or otherwise.**

- **Take account of lessons learnt and share widely.**

Part Four:

Innovation in Practice: Lessons to be shared

Innovation in Practice: Lessons to be shared

4.1   As part of our survey of public sector bodies in Northern Ireland, we asked respondents to share examples of innovations within their organisation. This section captures six innovative case studies and focuses on the key enablers and lessons to be shared more widely. Further details on each case study including: the problem, issue or opportunity; the solution; implementation; and the impact of the innovation are provided in **Appendix Three**.

Innovation	Key enablers and lessons to be shared
Case Study One: **Northern Ireland Water (NI Water)** Developing hydrogen and oxygen ecosystems	· **Collaboration and partnership working** - Led by NI Water and through collaboration and support across government departments and the private sector, an innovative solution (electrolysers, producing hydrogen and oxygen) emerged to simultaneously address three challenges. · **Developing and testing** through research, trials and pilots, from small scale towards larger scale, helps to learn lessons and build an evidence base, to reduce uncertainty and risk and demonstrate proof of concept. · **Availing of external support and funding opportunities** such as SBRI to enable the public sector to tap into new ideas and technologies to provide innovative solutions to challenges. · The use of the **OJEU Innovation Partnership Procedure**, a first for Northern Ireland, worked well. Any interested party was able to participate in the open tender pre-qualification process for "developing hydrogen and oxygen ecosystems". Following this, a shortlist of partners was selected to go forward to the Invitation to Innovate phase. As part of this phase they participated in a series of innovation working sessions/meetings. This allowed them to separately develop the technical, commercial and contractual aspects of their tender submissions. It also enabled each party to refine its proposals and NI Water was able to sharpen its requirements and specification based on what could reasonably be achieved.

Innovation	Key enablers and lessons to be shared
Case Study Two: **Northern Ireland Ambulance Service (NIAS)** Complex Case Team	• **Having a clear mandate from the top** to make the space and time for new ideas **and a supportive culture** across various directorates such as IT, Policy, and Finance. • Public sector bodies should seek to **put users at the heart of the services** they perform and their policy responses. Face-to-face holistic review of service user (patient) needs ensured NIAS identified the root cause of service use, the problem to be solved, and ultimately develop a solution. • **Collaboration and learning from others** - both internally and with key external stakeholders to: break down silos and barriers; listen and learn from others; and work together to develop a multidisciplinary solution. • **Information governance** - the cornerstone of the Complex Case work is information sharing. However, the absence of an overarching Information Sharing agreement in NI leads to constant challenges to ensure that data and information is being shared within General Data Protection Regulation (GDPR) guidelines. The lack of ability to share information can lead to a much greater challenge for all parties when trying to ensure the safety of patients and others when developing a plan of care.

Innovation	Key enablers and lessons to be shared
Case Study Three: **Probation Board for Northern Ireland (PBNI)** Enhanced Combination Orders (ECOs)	• **Leadership, a clear mandate from the top and collaboration** The top-down support and weight of the 'sponsorship' from the Office of the Lord Chief Justice and the support of the judiciary were key. Alongside this were the proactive relationships that probation staff fostered with local judges. • **Collaboration and learning from others** The solution in this example was a product of: learning from other similar intensive community-based initiatives in England; significant discussion internally within the PBNI; and external engagement with the community and voluntary sector, and the Criminal Justice Board. • **Communication and Messaging** A systematic and collaborative approach was taken which emphasised that it was in everyone's interests to reduce the number of short-term prison sentences. This communication and messaging ensured everyone understood the purpose of the initiative and gained support across stakeholders. • **Piloting and early evaluation** Early evaluation of pilots showed positive indicators of success and, critically, defined success in ways that mattered (i.e. making a difference to the numbers of short prison sentences imposed). Court sentencing data provided this evidence quite early on, with easy comparators between courts where ECOs were available and those where they were not.

Innovation	Key enablers and lessons to be shared
Case Study Four: **Northern Ireland Statistics and Research Agency (NISRA)** Census 2021 interactive web application	• **Leadership and culture** The Senior Responsible Officer had an innovative vision and attitude. The Tech Lab team culture both embraced innovation and learning and pushed for new innovative outputs rather than doing the same things again. • **User Focused** The user should be kept at the core of the decision-making, design and delivery processes and innovations should be developed with this mindset. The focus in this project was very much on the user experience of using the app. Feedback from users was sought during the development and informed further changes to the app. • **Collaboration** between the Census Office and the NISRA Tech Lab for ideas generation, and later in the project with the Office for National Statistics Digital team, IT teams and the IT Security Officer. This engagement and collaborative working helped to overcome several barriers in relation to IT platforms, lack of knowledge of web development software, risks in relation to security of the app and the protection of the data. • **Project Management** Agile Project Management works well in developing new outputs especially in IT and software development projects. The project was split into four phases; progress was reviewed every fortnight and keys risks were identified, discussed and documented. • **Added value of experts** such as Tech Lab to facilitate defining, developing, and implementing innovative solutions.

Innovation	Key enablers and lessons to be shared
Case Study Five: **Department for the Economy (DfE)** Blue Zone Funding	• **Collaboration and partnership working** The development of this innovation came from a strong working relationship between key stakeholders. The partnership, initially a one-off during 2020, has been further strengthened and has led to three successive years of 'blue zone' funding for various Innovate UK competitions. The approach is being examined by the other devolved administrations as a way of increasing engagement with Innovate UK. DfE officials are continuing to engage with Innovate UK to identify competitions which directly contribute to the achievement of DfE's "10X Economy – A Decade of Innovation" strategy, vision and priorities. • **Be clear on roles and responsibilities** A memorandum of understanding was put in place to ensure roles, responsibilities and governance arrangements were understood by all parties. • **The importance of a clear focus on users and agreed outcomes** In this case, to increase the number of fundable Northern Irish bids to be supported through Innovate UK competitions and to provide much needed assistance to early-stage tech companies during lockdown. This was enabled through open, honest and regular dialogue between partners, which has been key to the success of the 'blue zone' funding initiative. • **Solutions can be found in difficult circumstances** Efforts had previously been made to tackle the issue of low levels of bids for Innovate UK funding but with limited success. However, the Covid pandemic and the recognition of the need to do something for early-stage technology companies facing a cash flow crisis during lockdown, focused minds across DfE, Invest NI, Innovate UK and the Department for Business, Energy and Industrial Strategy. This led to an innovative problem-solving approach to the issue.

Innovation	Key enablers and lessons to be shared
Case Study Six: **Department of Health** Advance Care Planning	• **Partnership working and multi-disciplinary teams** The Advance Care Planning team leadership realised and embraced the strength of bringing in different expertise and perspectives to inform the direction and development of policy and how it would be 'better by design'. This enabled a co-production approach to policy design. The team worked across several disciplines including policy leads, clinicians and other healthcare experts, communications professionals, behavioural scientists and service design professionals who provided valuable insights on how to optimise the behavioural change necessary to underpin the implementation of Advance Care Planning. • **Use of Innovation Lab** The team knew there was a need for behaviour change and was aware of Behavioural Science as a methodology. This was why they initially approached the Innovation Lab. After some early conversations, the potential for also using Service Design methodology and the benefit that skillset could add to the team and the project was also recognised. It was therefore decided to engage the Innovation Lab to use these two strands. The Innovation Lab team was able to experiment with combining Service Design and Behavioural Science in this project, which was welcomed and encouraged by the Advance Care Planning team. • **A shared focus on the users and outcomes** The Advance Care Planning team was open minded and collaborative; it was very willing to try new things and work collectively to the common goals of the project. This, alongside extensive stakeholder engagement with users, enabled the multidisciplinary team and stakeholders to feel they were operating in a 'safe space' and could put forward ideas and have frank conversations about many aspects of Advance Care Planning and to experiment and explore solutions. The success in this project was gained by everyone involved having a shared focus on the outcomes - the whole became the greater than the sum of all the parts. • **Added value from engaging with and utilising the creativity of users/citizens** The mindset of the team when developing the policy was ensuring that the user/citizen was placed at the core of the design and decision-making process. One of the key ethos used by the Innovation Lab was user-centred design which means talking, listening and learning from those who will use the policy and any resulting service coming from that. The team also utilised the creativity of people and communities to explore the importance of Advance Care Planning. This was an effective means that helped build a bridge for communities to engage in Advance Care Planning. This reflects how, in large scale public health programmes working for cultural and behavioural change, there is a need for complex informal and less visible social networks to interact with professional services. To build the bridge to these type of conversations, 15 grants were awarded to a diverse range of organisations to support creative projects in the community which encouraged people to start conversations about their future wishes and to plan ahead.

Appendices

Appendix 1: Republic of Ireland: Making Innovation Real, the Public Service Innovation Strategy

In 2020, the Republic of Ireland launched Making Innovation Real, the Public Service Innovation Strategy. This coordinates the Government's ambitions and commitment to grow innovation across the Republic of Ireland's public service. A key objective in the development of the strategy is to operationalise innovation by providing an overarching Innovation Strategy for the entire public service which can cascade to all public service bodies.

The Public Service Innovation Strategy identified four key priority areas to be addressed. These priorities are supported by a number of key actions that will be taken in order to achieve the vision of the Republic of Ireland having a truly world-class, innovative public service:

- Citizen-Centric Innovation - Put citizens and users at the centre of innovation to enhance their experience of public services;

- Culture of Innovation – Create a culture where all staff are inspired, empowered and enabled to innovate;

- Scale-Up Innovation – Work across sectors and organisations to optimise efficiency by scaling innovations across the public service; and

- Transformative Innovation – Drive innovation across the public service by pioneering change and long-term transformation.

Coordination of the delivery of the Strategy is managed by the Department of Public Expenditure and Reform's Reform and Innovation Division. The Department of Public Expenditure and Reform has also developed guidance, support and toolkits to assist Public Service organisations to set their own innovation goals and actions and to incorporate these activities into their corporate strategies and business plans.

There are a number of initiatives in place which aim to promote and develop a culture of innovation across the public sector including: the development of a declaration on public sector innovation which all public service organisations are asked to opt in to; a public sector innovation network; and a national public sector innovation week.

Further details, including guidance documents, useful resources and more on the initiatives which seek to promote and embed innovation throughout the public sector can be found on the dedicated innovation hub at Our Public Service - Action 6: Promote a culture of innovation in the public service (ops.gov.ie).

Source: gov.ie - Minister McGrath launches "Making Innovation Real", the Public Service Innovation Strategy (www.gov.ie) and Making-Innovation-Real-PS-Innovation-Strategy.pdf (ops.gov.ie)

Appendix 2: Self-assessment checklist (paragraph 3.5)

The prompts below suggest questions to be considered at each stage of the innovation process as part of the wider innovation and risk management process. They are for guidance only and are not intended to be exhaustive. The potential risks and management of those risks at each stage will vary depending on the specific context and scale of the innovation.

Stages 1, 2 and 3: Understand and Define; Generate Ideas; Select, Develop and Test Suggested questions to consider:	Yes / No
Is there authority and support from senior management for the innovation?	
Has the nature, context, and complexity of the specific issue, problem, or opportunity to be addressed been fully understood or defined? This will help mitigate the risk that the innovation addresses a symptom rather than the real issue.	
Have you considered and detailed the risk of not doing something, as opposed to focusing solely on the risks associated with doing something?	
Have you clearly distinguished between risks which can be managed and uncertainty?	
Are arrangements in place to consider, manage and review risks?	
Is the organisational culture supportive of change and challenge? If not, have you considered how you will manage resistance to change or challenge?	
Do you have the time, space and adequate resources?	
Are the right people with the right knowledge and skills involved from the early stages to ensure that the problem, as well as the risks, are fully understood?	
Have you engaged with all stakeholders to ensure matters are considered from a sufficiently wide perspective including engaging with all the bodies in the system that are impacted by your innovation? Co-creation can ensure a wider perspective which can lead to more and potentially better ideas as well as more informed decisions and solutions that reflect the user's perspective.	
Has the user/citizen been kept at the core of the design and the decision-making processes?	
Have potential solutions been thoroughly developed and tested?	
Do you have a robust evidence base to support decisions made at each stage?	
Does the innovation involve collaboration/partnership working or working across different bodies or reliance on a key external body e.g. an IT provider? If so, are you clear on your level of control over the possible solution and any associated risks?	
How well do the options address intended objectives and outcomes and how deliverable are they?	
Have similar innovations been adopted elsewhere? Have they been successful, are there lessons to be learnt or good practice available? Is there the opportunity to adopt and adapt and be proud of finding elsewhere?	
Have you considered the use of experts to facilitate at each of these stages such as the Innovation Lab?	
Have you considered whether it is possible to access initiatives such as SBRI to support your innovation?	

Stage 4: Implement Suggested questions to consider:	Yes / No
Have appropriate governance and project management arrangements been developed and put in place?	
Is there a clear project implementation plan? Is it well understood and has it been agreed before implementation commences?	
Are roles, responsibilities, and timings clearly understood?	
Are the necessary skills, expertise and experience available? If you have identified any skills gaps, are you clear on how they will be addressed?	
Has sufficient attention been given to the practicalities of implementation, including a phased implementation or transition arrangements to maintain continuity of service?	
Have you taken a realistic view as to the timing of implementation?	
Have you continued to engage with stakeholders, especially end users?	
Are arrangements in place to ensure any difficulties arising are promptly identified and addressed?	
Are you clear on what information is needed to monitor, assess and evaluate the innovation?	
Are appropriate data collection and monitoring arrangements in place to enable effective review, evaluation and learning?	

Stage 5: Monitor, Review and Evaluate Suggested questions to consider:	Yes / No
How will success be defined and measured? Are you clear on how outcomes, not outputs, will be measured?	
Has an appropriate evaluation strategy been agreed?	
Do you have the necessary quality data and analytics to monitor, assess and evaluate success or otherwise on the on going appropriateness of the initiative?	
Is your evaluation realistic and honest?	
Have you obtained early indications in terms of delivery and meeting the objectives and expectations of all stakeholders?	
Have you considered the impact of the innovation on outcomes, service, effectiveness and efficiency measures?	
Have you re-considered the initial assumptions, aspirations and objectives? Do they remain current and relevant and does the initiative remain appropriate?	

Stage 6: Learn, Share, and Adapt Suggested questions to consider:	Yes / No
Are there processes in place to promote innovation, celebrate success and learn from all innovations – successful or otherwise – and share within your organisation and beyond?	
Are processes in place to learn from, and adapt, the project management processes or governance and oversight arrangements especially in relation to your next innovation?	
How can you use the experience gained over each stage to build in-house knowledge, understanding, capability and expertise?	

This checklist is **available** as a standalone editable document from the NI Audit Office website.

Appendix 3: Innovation Case Studies

As noted at paragraph 4.1 as part of our survey of public sector bodies in Northern Ireland we asked respondents share innovations within their organisation. We have captured six of those innovative case studies to share the stories more widely. Summaries of the key enablers and lessons learnt are included in **Part Four**. Further details on each case study are provided below including: the problem or issue identified; the solution; implementation; and the value/impact of the innovation in delivering better outcomes.

Case Study One:
Innovation in Northern Ireland Water (NI Water): Developing hydrogen and oxygen ecosystems

The problem, issue, or opportunity

There are three seemingly unrelated challenges and opportunities:

- **Decarbonisation of Northern Ireland's electricity system** requires shifting from natural gas generation to renewable electricity, led by investment in wind. Northern Ireland has an 80 per cent renewable electricity target by 2030. Only 49 per cent of power consumed is from renewables – of which 85 per cent is from wind. More power is consumed during the day than at night so having even more wind power will mean increasing excess of power at night. As well as storing surplus power, Northern Ireland needs to find a valuable use for this otherwise wasted power.

- **Need to move to carbon free fuels.** Northern Ireland public sector operates a large fleet of fossil fuelled vehicles. Decarbonising the transport system may mostly be electrification but for heavy transport and heavy goods we need a sustainable fuel alternative such as green hydrogen. Locally produced green hydrogen has a net zero carbon footprint and will support the decarbonisation of Northern Ireland's public transport. The NI energy strategy highlights that hydrogen is a substantial opportunity for Northern Ireland: "*we can become world leaders in the new hydrogen economy*".

- **The lack of capacity at wastewater treatment works.** Over 100 of Northern Ireland's cities and towns have constrained systems. NI Water needs to accept and process more sewage faster and greener but current biological treatment performance is a limitation.

Solution

NI Water, the Strategic Investment Board, and the Department for the Economy (DfE) all recognised these challenges especially in the context of both the UK Net Zero legislation and now the local Climate Change Act. They each also saw the future opportunities and how these could be best met by working together. As a result, through collaboration, support and innovative thinking across the public and private sector, an innovative solution - Hydrogen-producing electrolysers - emerged to simultaneously address all three of these seemingly unrelated challenges.

Hydrogen-producing electrolysers provide the opportunity to make use of the surplus renewable electricity from wind to produce green hydrogen. This locally produced green hydrogen would be used to support accelerating the decarbonisation of public transport, heat and eventually power generation. They also provide flexibility in the energy system - in how and when energy is produced and consumed, as well as a substantial increase in storing energy when it is plentiful so that it can subsequently be used when it is needed.

Alongside green hydrogen, electrolysers produce oxygen. The oxygen is normally vented into the atmosphere because demand is limited. However, oxygen is the lifeblood of wastewater treatment processing. Oxygen is currently delivered into the treatment process by blowing large quantities of air into wastewater. Air contains 21 per cent oxygen. Aeration is energy hungry and costly.

Enriching the aeration process with high purity oxygen can, when taken with other measures, optimise the performance of a wastewater treatment works that is approaching its biological capacity. Extending the life of a wastewater works in this way is only normally undertaken in very limited real-life circumstances as it is extremely expensive to import bottled oxygen. If, however, NI Water was able to harness low-cost oxygen that is normally vented by electrolysers, this has the potential to alleviate constraints on wastewater treatment works, as well as lower the large energy costs for aeration.

Electrolysers that operate by using surplus renewable generating capacity present not only an opportunity to produce affordable green hydrogen, but they also present NI Water with an opportunity to access the oxygen that is normally vented. A good example of surplus generating capacity is at night when wind turbines are increasingly being turned off because there is insufficient customer demand for the electricity. As more wind farms are built, this under-utilisation at night will extend. Switching them on in order to power electrolysers holds out the prospect of being able to produce affordable green hydrogen and provides access to low-cost oxygen.

Innovation conception and development

NI Water commenced research into the use of oxygen in wastewater in 2019; SBRI funding for a small-scale pilot was secured. This used an enriched oxygen supply produced from a 10kW (kilowatt) electrolyser to treat wastewater. The limited pilot demonstrated that batches of regular sewage were processed around 32 per cent faster when compared to the conventional approach.

Implementation

In 2020, NI Water was awarded £5.25 million of funding by DfE to enable the design, purchase and implementation of an oxygen/hydrogen demonstrator project. This world-leading project is now underway. It includes a 1MW (megawatt) electrolyser that was procured using the Official Journal of the European Union (OJEU) Innovation Partnership Procedure; a first-of-a-kind for Northern Ireland. Lagan MEICA JV were awarded a Strategic Partnering Agreement contract to develop and deploy the oxygen/hydrogen ecosystem.

This Belfast Demonstrator project creates a purpose-built facility to further test and show the benefits that oxygen can bring to the wastewater treatment process at a more substantial scale. The learnings from the Belfast Demonstrator will inform the design, operation and benefits that can be achieved when electrolysers and the use of oxygen is deployed at scale across NI Water. The green hydrogen, compressed and stored as a transport fuel, offers Northern Ireland's public transport sector access to an affordable local fuel source to assist in decarbonisation. NI Water continues to work with Translink to establish the arrangements through which hydrogen can be supplied.

The value/impacts of the Innovation

When embraced at scale, this innovative approach should:

• make a major contribution to decarbonising Northern Ireland's power, heat and transport in the context of both the UK Net Zero legislation and now the local Climate Change Act;

• facilitate and, indeed, catalyse the required inward investment in windfarms, which is needed to decarbonise Northern Ireland's energy system. Electrolysers are a 'controllable load' which can be switched on to produce energy (in the form of green hydrogen) to store and use to meet demand when the wind doesn't blow;

• demonstrate the early adoption of electrolysers in the Northern Ireland energy system;

• assist in alleviating wastewater constraint which is affecting our housing and business developers as well as to improve efficiency at treatment works;

• help drive sustainable economic growth by creating jobs and attracting inward investment;

• help to push Northern Ireland to the forefront of the global hydrogen economy;

• create local Science, Technology, Engineering and Math (STEM) jobs; and

• enhance security of supply as green hydrogen can be converted back to electricity at times of critical need.

Key enablers and lessons to be shared

• **Collaboration and partnership working** - Led by NI Water and through collaboration and support across government departments and the private sector, an innovative solution (electrolysers, producing hydrogen and oxygen) emerged to simultaneously address three challenges.

• **Developing and testing** through research, trials and pilots, from small scale towards larger scale, helps to learn lessons and build an evidence base, to reduce uncertainty and risk and demonstrate proof of concept.

• **Availing of external support and funding opportunities** such as SBRI to enable the public sector to tap into new ideas and technologies to provide innovative solutions to challenges.

• The use of the **OJEU Innovation Partnership Procedure**, a first for Northern Ireland, worked well. Any interested party was able to participate in the open tender pre-qualification process for "developing hydrogen and oxygen ecosystems". Following this, a shortlist of partners was selected to go forward to the Invitation to Innovate phase. As part of this phase they participated in a series of innovation working sessions/meetings. This allowed them to separately develop the technical, commercial and contractual aspects of their tender submissions. It also enabled each party to refine its proposals and NI Water was able to sharpen its requirements and specification based on what could reasonably be achieved.

Case Study Two:
Innovation in Health: NI Ambulance Service (NIAS) Complex Case Team

The problem, issue or opportunity

The complex needs of Frequent Callers (FC) - anyone over the age of 18 who calls for an emergency ambulance more than 5 times in one month or more than 12 times in 3 consecutive months - were often unmet or overlooked by how services were traditionally offered in Northern Ireland.

The reason for their call is often the same as it was the day, the week and month before. FCs often present with a complex mix of issues such as social isolation, mental health conditions, addictions or unmet medical and social needs. Addressing the needs of these service users can be time intensive.

It was often something that NIAS, as an emergency service, was unable to deal with and the crews who responded had two options - either bring the patient to the local emergency department, or leave them at home - neither of which was appropriate. This was just putting the person back in a revolving door of 999 use.

Covid also saw a rise in FCs which was a similar pattern across UK ambulance services. In 2022 there were over 12,000 FC calls at an estimated cost of over £1.2 million.

The impact of FCs puts the public at risk of a delayed ambulance response and an inefficient service provision. By reducing the number of FC calls this frees up NIAS for people who require assistance in a genuine emergency.

Solution

NIAS developed its own bespoke approach to frequent service users. The Complex Case Team's primary objective is to ensure FC patients receive the appropriate care for their needs using a person-centred approach to patient care. The Complex Case Team engages face-to-face with FCs to get an in-depth, holistic assessment. It then liaises with statutory and voluntary organisations to establish appropriate care pathways using a multidisciplinary approach which benefits both patients and stakeholders. Working together ensures that the person's root needs are being addressed, and at the same time reduces the demand being placed on the emergency services and unscheduled care services. This collectively frees up resources for the wider health care system and allows emergency services to respond to genuine emergencies.

Implementation

The NIAS Complex Case project has been in operation since October 2017. Initially a pilot project was undertaken which looked at the top 20 FCs across the region. This method of engagement with the small initial 'test cohort' of service users led to clear and significant reductions in 999 calls to NIAS, the number of ambulance responses, and emergency department attendances.

Following on from this pilot, NIAS established the regional Complex Case Team to identify and respond to FCs. Although there is only one permanent member of staff and no permanent funding for the team, NIAS is currently using NIAS staff and paramedics on alternative duties.

In 2019 the team also sought to identify and provide an intervention to "lower level" potential frequent callers who were regularly calling the ambulance service but not meeting the national criteria. NIAS examined the potential impact of sending a mass distribution letter to this cohort of service users. As a result, a standardised letter containing advice and information for newly identified potential frequent callers was introduced, to signpost service users to more appropriate care providers to meet their individual needs before they met the FC criteria. NIAS also developed an easy-read educational flyer that is included with letters to provide information and guidance along with a link to an animated video. Whilst the primary aim was improved patient outcomes, NIAS also wanted to see if it was possible to reduce the number of emergency calls FCs made.

The Complex Case Team continues to evolve. In 2022 NIAS was awarded a one-off NHS charities grant of £189,000 as a result of its proposal to work in collaboration with the British Red Cross to trial the project 'INTERACT'. This bespoke support service, operational from February 2023 – January 2024, is the first project of its kind in Northern Ireland. It offers support to those with complex needs in the community. NIAS is the first Ambulance Service in the UK to commission this service directly. This will not only ensure patient-centred care and better patient outcomes; it will also reduce demand on both NIAS and the wider health care system.

Service users who meet the pre-determined criteria will be referred to the British Red Cross by the Complex Case Team. There are four British Red Cross specialist staff working across NIAS South Eastern Division and Belfast Division. They will provide one-to-one tailored intensive coaching support. The British Red Cross, in partnership with NIAS staff and other health and care professionals, will build a profile of the individual and underlying reasons for their use of unscheduled services. There is capacity for 150 frequent callers to be supported over the project, with potential for re-entry following relapse as required.

The value/impacts of the Innovation

Since 2017 the Complex Case Team has managed in excess of 800 frequent callers, potential frequent callers and vulnerable adults. Intensive engagement with frequent callers leads to positive patient outcomes and reduced call volumes to the ambulance service - assisting in the ability of NIAS to respond to those who are in genuine need of an emergency ambulance.

A recent review of the impact of the team's interventions on 20 of the top service users led to the following reductions:

- 63 per cent overall reduction in demand 6 months post intervention;

- 60 per cent reduction in 'calls only';

- 63 per cent reduction in ambulance responses; and

- 73 per cent reduction in emergency department admissions.

The estimated costs of managing these 20 patients reduced from over £128,000 to £40,000. Whilst not a saving in terms of removing front line ambulances, the reduction in calls helps with getting to the sickest quickest.

The impact of sending a letter to potential frequent callers has been very successful in reducing 999 calls on average by 57 per cent with this cohort of patients. NIAS is currently the only ambulance service in the UK that aims to assist service users in preventing them being frequent callers in the first instance.

As a result of the joint British Red Cross project, a number of benefits for NIAS and the wider health service are expected, including a reduction in the number of calls to ambulance services and in the number of conveyances to hospital from identified frequent attenders, which in turn will free up budget spend that can be allocated to other health priorities.

Key enablers and lessons to be shared

- **Having a clear mandate from the top** to make the space and time for new ideas **and a supportive culture** across various directorates such as IT, Policy, and Finance.

- Public sector bodies should seek to **put users at the heart of the services** they perform and their policy responses. Face-to-face holistic review of service user (patient) needs ensured NIAS identified the root cause of service use, the problem to be solved, and ultimately develop a solution.

- **Collaboration and learning from others** - both internally and with key external stakeholders, regionally and across the UK, to break down silos and barriers; listen and learn from others; and work together to develop a multidisciplinary solution.

- **Information Governance** - the cornerstone of the Complex Case work is information sharing. However, the absence of an overarching Information Sharing agreement in Northern Ireland leads to constant challenges to ensure that information is being shared within General Data Protection Regulation guidelines. The lack of ability to share information can lead to a much greater challenge for all parties when trying to ensure the safety of patients and others when developing a plan of care.

Case Study Three:
Innovation in Justice: Enhanced Combination Orders

The problem, issue, or opportunity

The underlying problems and root causes of offending behaviour must be tackled if reoffending rates are to be reduced. These include for example: alcohol or drug addiction; accommodation problems; lack of support; and issues with mental health. This 'problem' was crystallised through consideration of a range of statistics and data including:

- 88 per cent of prison sentences imposed in Northern Ireland in the previous 12 months had been for one year or less.

- Research had demonstrated short prison sentences were ineffective in addressing offending behaviour, given that there was little that could be done in practical terms to rehabilitate offenders during a short prison stay.

- Over half of people released following a short prison sentence were reconvicted within 12 months.

Solution

In 2015, the then Lord Chief Justice asked the Probation Board for Northern Ireland (PBNI) senior managers to develop and pilot a more demanding community order as an alternative to the high usage of short-term prison sentences, without need for new legislation. The solution proposed by the PBNI was an intensive community sentence called 'The Enhanced Combination Order' (ECO) which focused on rehabilitation, restorative practice and desistance. When the Court is minded to impose a short prison sentence, ECOs enable judges to impose more intensive `Combination Orders' which have been "enhanced" with a range of 'bolt-ons' to address specific needs. This solution was a product of learning from other similar intensive community-based initiatives in England and also significant discussion within the PBNI and liaison with the community and voluntary sector, along with a presentation to the Criminal Justice Board, to agree what an ECO would look like.

All offenders subject to ECOs have been offered an assessment by psychologists in respect of any mental health issues, and parenting/family support work is also included, where applicable. The requirements for offenders include:

- participation in victim focused work;

- a restorative intervention, if possible; and

- an accredited programme such as 'Thinking Skills', if appropriate.

In addition, participants undertake intensive offending-focused work with their Probation Officer, supported by other probation staff, exploring the impact of participants' behaviour on victims, their family and the community. PBNI works in partnership with several community and voluntary organisations to deliver this service.

Every participant is required to make reparation to their community via unpaid work /community service. This can include sorting donated items in charity shops, working with sports clubs or undertaking manual squad work such as gardening tasks within a community setting. Non-compliance with an ECO results in offenders being summonsed to court and potentially sentenced to custody.

Implementation

In October 2015 the Probation Board began piloting ECOs in two court divisions - Ards and Armagh and South Down. The initiative was extended to the North West in October 2018. As of the end of September 2022, 793 people have received an ECO. Plans to introduce ECOs to courts in County Antrim in 2021 were impacted by the pandemic and have not progressed further, due to the prioritisation of Covid business recovery across justice, and the current budgetary pressures and uncertainties.

The value/impacts of the Innovation

Northern Ireland Statistics and Research Agency (NISRA) reviews of the pilot in 2017 and 2019 found it had largely achieved its aims and met participants' needs. The latter evaluation reported a 20.7 per cent decrease between 2015 and 2017 in short-term custodial sentences imposed by the courts piloting ECOs, as well as promising participant engagement and completion levels.

An economic appraisal by the Ulster University Economic Policy Centre in May 2019, also identified an expected annual net benefit of £5.7 million to £8.3 million to society if ECOs were fully rolled out across Northern Ireland. This reflected lower costs of ECOs compared to short-term prison sentences, lower potential reoffending rates and associated costs of crime, the monetary value of unpaid work completed by offenders, and additional revenue from improved employment prospects. Qualitative benefits for offenders' families and the wider community were also identified. PBNI also highlighted that in the courts using ECOs, short term prison sentences had reduced by 13 per cent between 2015 and 2019, compared with a 17 per cent increase in non-ECO Courts.

Key enablers and lessons to be shared

- **Leadership, a clear mandate from the top**
  The top-down support and weight of the 'sponsorship' from the Office of the Lord Chief Justice and the support of the judiciary were key. Alongside this were the proactive relationships that probation staff fostered with local judges.

- **Collaboration and learning from others**
  The solution in this example was a product of: learning from other similar intensive community-based initiatives in England; significant discussion internally within the PBNI; and external engagement with the community and voluntary sector, and the Criminal Justice Board.

- **Communication and messaging**
  A systematic and collaborative approach was taken which emphasised that it was in everyone's interests to reduce the number of short-term prison sentences. This communication and messaging ensured everyone understood the purpose of the initiative and gained support across stakeholders.

- **Piloting and early evaluation**
  Early evaluation of pilots showed positive indicators of success and, critically, defined success in ways that mattered (i.e. making a difference to the numbers of short prison sentences imposed). Court sentencing data provided this evidence quite early on, with easy comparators between courts where ECOs were available and those where they were not.

Case Study Four:
Innovation in Northern Ireland Statistics and Research Agency (NISRA): Census 2021 interactive web application

The problem, issue, or opportunity

The Census Office needed a new innovative visual online solution that would enhance the dissemination of Census 2021 results. There is a wide user base for census results and some users want to see a visual census profile. To meet new customer and stakeholder requirements the solution needed to improve the quality of current output presentation - as was provided by 2011 Northern Ireland Neighbourhood Information service area profiles - and content, as well as enable access and awareness for less technical users. The solution needed to be user friendly, visual, and interactive. The challenge was whether NISRA could prepare a Northern Ireland version and do so within the time constraints of the 2021 Census release schedule published.

Solution

The solution was envisaged to be a user friendly, fast, interactive web application with clear graphics and area navigation through maps and a search box. The platform would enable users to get a census profile of their chosen area, with the ability to choose a comparison from either an alternative 2021 area or the 2011 equivalent (if available). The latest version is at Census Area Explorer (nisra.gov.uk).

The Census Office commissioned the NISRA Tech Lab to develop a solution. The aim of the Tech Lab is to provide a dedicated resource to colleagues across NISRA to progress ideas for improvement in a way that is free from the treadmill of business as usual, by allowing the Tech Lab team to do some of the design thinking and development. The Tech Lab uses Agile Project Management techniques along with Lean Six Sigma tools to identify the best solution, develop the solution in-house and handover to the customer for long-term ownership and development.

During the scoping/exploratory phase, the Tech Lab discovered that the Office for National Statistics (ONS) had prototypes of an app that met most of the census requirements.

Implementation

This project moved from an idea through to successful implementation within only four months. Risk management and governance arrangements were put in place to manage the process. A Senior Responsible Officer and a Project lead were appointed. The project was managed by a team made up of Census and Tech Lab statistical staff.

The project was split into four phases:

1. **Scope** – explore ideas and solutions used by others, define what is needed and propose a possible solution. The solution proposed was based on an ONS prototype of an app which would need further development in order to meet new census user requirements.

2. **Development** – working in fortnightly sprints (or work chunks) develop proof of concept, prototypes and iterations of a solution. Progress was reviewed every fortnight and key risks were identified, discussed and documented. The Tech Lab addressed Information Assurance risks with the Department of Finance Accreditor and IT Security Officer (including external code review and pen testing) on behalf of the Information Asset Owner, keeping them informed through updates in Sprint Reviews, face-to-face workshops and email correspondence.

   During the development phase a draft first output was prepared based on 2011 data. It was scrutinised by Census Office staff and NISRA staff to get their thoughts and views. It was also shared

with key census groups and circulated to the census customer register to get feedback. Comments from those groups and from the survey were used to make changes to the app published in September 2022 and to create a 'wish list' of developments for the future versions of the app (two further iterations and releases in December 2022 and February 2023).

Detailed plans were in place in the run up to the first release in September 2022 and subsequent releases in December and February 2023.

3. **Handover** – skill up the customer (in this case the Census Office) to prepare the data, customise the app and deploy future versions. Further development of the app then lies with the Census Office which is continuing to develop ideas for innovations and improvements with further releases planned. The Census Office have since updated the app with new topics and lower geographical areas and will continue to develop the resource further as more census results are released.

4. **Close** – close and evaluate the project.

The value/impacts of the Innovation

- Customer feedback (through survey, social media and email) was very positive.

- More than 10,000 page views in the first month.

- The speed to stand-up the project and share the initial prototype with Census Office users was very fast. It would not have been possible to engage with the market in that time.

- Strong collaborative working between the Tech Lab and the Census Office. Links with the ONS Digital team were strengthened.

- Skills transfer – methods, techniques and software were handed over to the Census Office for future process replication.

Key enablers and lessons to be shared

- **Leadership and culture**
  The Senior Responsible Officer had an innovative vision and attitude. The Tech Lab team culture both embraced innovation and learning and pushed for new innovative outputs rather than doing the same things again.

- **User Focused**
  The user should be kept at the core of the decision-making, design and delivery processes and innovations should be developed with this mindset. The focus in this project was very much on the user experience of using the app. Feedback from users was sought during the development and informed further changes to the app.

- **Collaboration** between the Census Office and the NISRA Tech Lab for ideas generation, and later in the project with the ONS Digital team, IT teams and the IT Security Officer. This engagement and collaborative working helped to overcome several barriers in relation to IT platforms, lack of knowledge of web development software, risks in relation to security of the app and the protection of the data.

- **Project Management**
  Agile Project Management works well in developing new outputs especially in IT and software development projects. The project was split into four phases; progress was reviewed every fortnight and keys risks were identified, discussed and documented.

- **Added value of experts** such as Tech Lab to facilitate defining, developing, and implementing innovative solutions.

Case Study Five:
Innovation in the Department for the Economy (DfE): Blue Zone funding (Innovate UK)

The problem, issue or opportunity

Innovate UK provides funding to companies across the UK for innovation activities. Northern Ireland has historically underperformed in bidding for funding from Innovate UK with a smaller number of bids per 1,000 companies than any UK region, despite having a good win rate when bids are submitted. A significant number of projects have been assessed as fundable but unsuccessful, as competition budgets had been exhausted – this is known as the 'blue zone'. Bids falling into the 'blue zone' was recognised as resulting in a chill factor with good research and development (R&D) projects not progressing and reducing the likelihood of those companies bidding to Innovate UK in the future.

DfE was keen to increase the number of fundable Northern Irish bids to be supported through Innovate UK competitions. Not only would this increase investment in research and development and encourage new products and services to market, it would also increase NI's credibility and visibility by increasing the number of NI organisations bidding to, and being successful, at national competitions.

During the pandemic, there was recognition within DfE that while the Covid support schemes were able to provide support for many businesses, there was a serious problem for many early-stage technology businesses, many of whom were particularly vulnerable to disruption to cashflow.

Innovate UK, as part of its response to Covid, ran 'Fast Start', a £40 million R&D competition for small scale technology innovations to support the Covid response. Northern Ireland businesses were successful in bidding for 20 awards under this scheme. However, DfE officials recognised that many others had fallen into the 'blue zone' and these tended to be exactly the kinds of early stage technology companies already facing difficulties due to Covid-related market disruptions and which were at risk of being lost.

The solution

Efforts had previously been made to tackle the issue of low levels of bids for Innovate UK funding but with limited success. There had also been discussion around how to address the 'blue zone' bids, but the Covid pandemic and the recognition of the need to do something for early-stage technology companies facing a cashflow crisis during lockdown focussed minds across DfE, Invest NI, Innovate UK and the Department for Business, Energy and Industrial Strategy. This led to an inventive problem-solving approach to the issue.

Rather than attempt to design a new funding scheme or competition to support these companies, which would have taken a significant amount of time and resource, DfE secured agreement from Innovate UK to contribute additional resource into the Fast Start budget specifically to support Northern Irish bids in the 'blue zone'.

The arrangement was shaped and developed through discussions between DfE, Invest NI and Innovate UK, with a memorandum of understanding put in place to ensure roles, responsibilities and governance arrangements were understood by all parties. DfE selects appropriate Innovate UK competitions and provides funding to Innovate UK. Innovate UK manages the funding and programme, and therefore deals with the risk management and governance arrangements in line with the requirements of the relevant programmes. By building on existing competitions, several key risks, including time delays, were addressed.

Impact

The initiative enabled Northern Irish companies to receive support to take forward a further 41 R&D projects which otherwise would have gone unfunded. In a number of cases, this ensured the survival of early-stage R&D companies through the pandemic and provided an opportunity to build new products.

Case studies are available at https://matrixni.org/dfe-innovation-funding/

Key enablers and lessons to be shared

- **Collaboration and partnership working**
  The development of this innovation came from a strong working relationship between key stakeholders. The partnership, initially a one-off during 2020, has been further strengthened and has led to three successive years of 'blue zone' funding for various Innovate UK competitions and the approach is being examined by the other devolved administrations as a way of increasing engagement with Innovate UK. DfE officials are continuing to engage with Innovate UK to identify competitions which directly contribute to the achievement of DfE's "10X Economy – A Decade of Innovation" strategy, vision and priorities.

- **Be clear on roles and responsibilities**
  A memorandum of understanding was put in place to ensure roles, responsibilities and governance arrangements were understood by all parties.

- **The importance of a clear focus on users and agreed outcomes**
  In this case, to increase the number of fundable Northern Irish bids to be supported through Innovate UK competitions and to provide much needed assistance to early-stage tech companies during lockdown. This was enabled through open, honest and regular dialogue between partners, and has been key to the success of the 'blue zone' funding initiative.

- **Solutions can be found in difficult circumstances**
  Efforts had previously been made to tackle the issue of low levels of bids for Innovate UK funding but with limited success. However, the Covid pandemic and the recognition of the need to do something for early-stage technology companies facing a cash flow crisis during lockdown, focused minds across DfE, Invest NI, Innovate UK and the Department for Business, Energy and Industrial Strategy. This led to an innovative problem-solving approach to the issue.

Case Study Six:
Innovation in Health: Advance Care Planning policy

The problem, issue or opportunity

Advance Care Planning is important for all adults, at whatever stage of life. Research, including the 2018 Northern Ireland Life and Times survey, and early stakeholder engagement identified a gap in understanding what was needed to prompt people from not knowing about Advance Care Planning, to knowing about it, and then wanting to engage in it. There is strong evidence to support the decoupling of Advance Care Planning from palliative and end of life care, and limited to end of life decisions, and moving instead towards a life course approach for all adults. The problem is that people in Northern Ireland do not really know about Advance Care Planning and the benefits for them and those they care about to use it.

Solution

The Advance Care Planning policy was developed to encourage and support an adult to think about what is important to them and plan to have greater choice and control over decisions for their future. Advance Care Planning is an umbrella term covering personal, legal, clinical and financial planning. It is a voluntary process and helps a person to make known what their wishes, feelings, beliefs and values are. This is very important if the person becomes unable to make the relevant decisions for themselves at any point.

Implementation

The new Advance Care Planning policy for adults in NI was successfully launched in October 2022 and a Department of Health website has been developed Advance Care Planning: For Now and For the Future | Department of Health (health-ni.gov.uk). However, the ability to progress to full implementation has been impacted since January 2023 due to financial uncertainty. Pending a decision to progress work beyond April 2023, a thorough implementation plan is in place including: a communications/social media plan; agreed operational frameworks; training and education resources available; as well as evaluation plans.

The governance structure for this project came through an Advance Care Planning Steering Group with representation from the Department of Health, the Public Health Agency, Carer representatives and interested members of the public. The Advance Care Planning Steering Group was supported by two other reference groups: The Palliative Care in Partnership programme; and the Northern Ireland Clinical Ethics Forum. These management and governance arrangements ensured the team had a wider perspective and understanding of stakeholder's issues, placing users at the core of decision making and designing a policy solution that reflects the user's perspective, particularly given the sensitivity of the subject matter. This enabled the management of risk across a number of elements, whether that be financial or ethical or acceptance of the policy.

The Advance Care Planning core team, extended beyond the usual multi-disciplinary team of policy leads, health and social care experts, to include communications professionals, as well as appropriate experts such as the Innovation Lab and Creative advisors and productors. Weekly team meetings were held which operated on the basis of having one shared workplan so everyone felt part of a team approach.

Keys enablers and lessons to be shared

- **Partnership working and multi-disciplinary teams**

  The Advance Care Planning team leadership realised and embraced the strength of bringing in different expertise and perspectives to inform the direction and development of policy and how it would be 'better by design'. This enabled a co-production approach to policy design. The team worked across several disciplines including policy leads, clinicians and other healthcare experts, communications professionals, behavioural scientists and service design professionals who provided valuable insights on how to optimise the behavioural change necessary to underpin the implementation of Advance Care Planning.

- **Use of Innovation Lab**

  The team knew there was a need for behaviour change and was aware of Behavioural Science as a methodology. This was why they initially approached the Innovation Lab. After some early conversations, the potential for also using Service Design methodology and the benefit that skillset could add to the team and the project was also recognised. It was therefore decided to engage the Innovation Lab to use these two strands. The Innovation Lab team was able to experiment with combining Service Design and Behavioural Science in this project, which was welcomed and encouraged by the Advance Care Planning team.

- **A shared focus on the users and outcomes**

  The Advance Care Planning team was open minded and collaborative; it was very willing to try new things and work collectively to the common goals of the project. This alongside extensive stakeholder engagement with users, enabled the multidisciplinary team and stakeholders to feel they were operating in a 'safe space' and could put forward ideas and have frank conversations about many aspects of Advance Care Planning and to experiment and explore solutions. The success in this project was gained by everyone involved having a shared focus on the outcomes - the whole became the greater than the sum of all the parts.

- **Added value from engaging with and utilising the creativity of people**

  The mindset of the team when developing the policy from the inception was ensuring that the people (citizens, users, carer, patients, professional) were placed at the core of the design and decision-making process. One of the key ethos used by the Innovation Lab was user-centred design which means talking, listening and learning from those who will use the policy and any resulting service coming from that. The team also utilised the creativity of people and communities to explore the importance of Advance Care Planning. This was an effective means that helped build a bridge for communities to engage in Advance Care Planning. This reflects how, in large scale public health programmes working for cultural and behavioural change, there is a need for complex informal and less visible social networks to interact with professional services. To build the bridge to these type of conversations, 15 grants were awarded to a diverse range of organisations to support creative projects in the community which encouraged people to start conversations about their future wishes and to plan ahead.

Appendix 4: Useful resources

Beyond Ideas – enabling a culture of innovation for improved public services (September 2019) | DoF Innovation Lab & Centre for Effective Services shares insights on innovation and implementation, based on interviews and wider engagement with senior public sector leaders in Northern Ireland.

OECD - Innovative Government The **Organisation for Economic Cooperation and Development** (OECD) is an international organisation that works with governments, policy makers and citizens to establish evidence-based international standards and finding solutions to a range of pressing social, economic and environmental challenges including innovation in the public sector.

OECD Declaration on Public Sector Innovation establishes five principles, and associated actions, that governments or public organisations can use to inform (or enhance) innovation and its management.

Digital Government Toolkit - OECD This site can help guide decision-makers in using digital technologies to encourage innovation, transparency, and efficiency in the public sector by comparing good practices across OECD countries - includes case studies and good practice examples from across the world.

OECD Fostering Innovation in the Public Sector This report looks at how governments can create an environment that fosters innovation. It suggests ways to support innovation – including by managing information, data and knowledge – as well as strategies for managing risk.

Observatory of Public Sector Innovation The OECD has developed the **Observatory of Public Sector Innovation (OPSI)** to support countries strengthening their public sector capacity by collecting, analysing and sharing examples and shared experiences of public sector innovation and provide practical advice to countries on how to make innovations work.

OPSI_Innovation Playbook To support countries in implementing the OECD Declaration, OPSI co-created the Innovation Playbook which serves as an accessible and actionable instrument for public officials and managers to put the innovation principles into practice. It provides a roadmap with practical step-by-step guidance on how to concretely apply the Declarations' principles.

The Copenhagen Manual A guide on why and how your country can benefit from measuring public sector innovation.

Nesta | UK innovation agency for social good **NESTA (National Endowment for Science, Technology and the Arts)** has conducted a range of evidence-based research into innovation in the public sector.

NESTA Innovation in the public sector - how can public organisations better create improve and adapt This paper brings together the results of many years of research and experience at Nesta on how public sectors can become more effective innovators.

NESTA 20 Tools for Innovating in Government 2019 This handbook covers 20 evidence-based tools, designed to help bring bold ideas to life to change lives from within government. This includes tools that uncover new insights and generate ideas, to tools for developing and testing, or tools that support system change.

Our Public Service - Home (ops.gov.ie) "Our Public Service" is the Department of Public Expenditure, NDP Delivery and Reform's framework for innovation and continuous development in Ireland's public service.

Making Innovation Real (www.gov.ie) A strategy for embedding innovation in the Irish Public Service

ISO-56000 Series Innovation Management_-_NSAI_Leaflet.pdf (ops.gov.ie) The ISO 56000 series of guidance standards on Innovation Management have been developed by the International Organization for Standardization and innovation experts from across the world.   The standards provide international best practice on the systematic management of innovation activities in organisations of all types and all sizes.

NIAO Reports:
2022 and 2023

NIAO Reports 2022 and 2023

Title	Date Published
2022	
Planning in Northern Ireland	01 February 2022
The COVID-19 pandemic: Supply and procurement of Personal Protective Equipment to local healthcare providers	1 March 2022
Northern Ireland Non-Domestic Renewable Heat Incentive Scheme: Progressing implementation of the Public Inquiry recommendations	22 March 2022
Extraordinary Audit of Causeway Coast and Glens Borough Council	07 July 2022
The National Fraud Initiative: Northern Ireland	19 July 2022
Continuous improvement arrangements in policing	21 July 2022
NIAO Review of NI Water's sale of Portavoe Reservoir	21 July 2022
2023	
Planning Fraud Risks	01 March 2023
Pre-School Vaccinations in Northern Ireland	05 April 2023
Public Procurement in Northern Ireland	25 April 2023
Ministerial Directions in Northern Ireland	27 April 2023
Reducing Adult Reoffending in Northern Ireland	13 June 2023

NIAO Reports 2022 and 2023