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Ministerial foreword

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Appendix A
Data is an incredibly important resource and is the foundation upon which our public sector services are built. Opening up access to public sector data has the potential to enhance and transform government services in Northern Ireland and stimulate innovation in our private sector to the benefit of everyone.

Opening up our data will help improve the transparency and accountability of government and the publication of this strategy is a positive step in the development of open data as one of the key areas of open government I wish to see progressed. I believe our Northern Ireland public sector can be a world leader in innovation with a government that works with business in innovative ways to build our economy.

Open data has a crucial role to play in driving this innovation. The public sector must aspire to meet the expectations of an increasingly demanding population, improve government services and improve the economy. Mobile devices have the power to transform and revolutionise the interface between citizens and government and releasing open data can fuel the development of mobile apps for the benefit of citizens. It is about doing things differently and embracing change.

The implementation of this strategy will help transform current data management practices and create an ‘open by default’ culture within the public sector by developing an ethos that embeds publishing open data as a normal part of data management processes.

The strategy will put in place public/private governance structures and a shared platform to deliver open data through NIDirect. Embracing the 9 open data principles noted in the strategy will ensure that standards are adhered to, feedback is facilitated and that there is transparency about the reasons for withholding some data.

There are a number of examples in the strategy highlighting savings and benefits that have been delivered by open data and I believe that this strategy, supported by an ‘open by default’ data culture will deliver significant opportunities to both our public sector and Northern Ireland as a whole.

Simon Hamilton MLA
Minister of Finance and Personnel
Executive Summary

“If people put data on the web - government data, scientific data, community data, whatever it is - it will be used by other people to do wonderful things in ways they would never have imagined. The cry of ‘raw data now’ has spread around the world.”

Sir Tim Berners-Lee OM, KBE, FRS, FREng, FRSA

It is recognised that opening up public sector data is the right thing to do in terms of transparency, accountability, efficiency of the public sector and in driving economic growth through innovative use of data. This strategy sets out how we aim to build capacity for open data in Northern Ireland and develop an open data ecosystem with public sector bodies being pro-active in publishing their data. Additionally we will work on promoting the use of open data to drive innovation across public and private sectors and to encourage new commercial opportunities.

We will provide a framework to successfully implement and drive OPEN DATA BY DEFAULT. This will include not just the technology and a single point of access to public sector data but also the governance and engagement with non-public sector organisations and citizens who wish to consume and utilise the data.
The default will be that all public sector data will be open by default with exceptions in respect of personal data, security, commercial, intellectual property rights or environmental importance as noted in the 8th open data principle (page 15). We intend to embed the publishing of open data as part of normal internal data management processes. This will take time to implement so initially data that is in demand will be prioritised for publishing. Open standards will be mandated and the open government licence will be used to ensure clarity about data which is free to copy, adapt, commercially exploit and publish. All data at a minimum will be published in non-proprietary format and organisations will be mandated to update their data according to the refresh schedules that they publish. We will utilise this opportunity to gather feedback on the quality of public sector data so that over time this can be improved.

The strategy will not work in isolation but will be taken forward in conjunction with the NI Innovation Strategy and also wider Public Sector Reform. We will build on the skills within the public sector to efficiently deliver open data.

An overview timeline covering 2015-18 is displayed in Annex A with a more detailed ‘living’ open data road map available [here](#).

The key milestones to be delivered in the first year of the Strategy are:

- Set up the governance structures
- Create a centralised platform to deliver open data via NIDirect
- Mandate standards and publishing format
- Publish a number of high value datasets
- Develop and implement a stakeholder engagement plan
Technology and data are changing the world we live in. New ground-breaking uses of data, novel insights into existing data and innovative ways of delivering that data to citizens via mobile devices and wearable technology all have the potential to improve public services such as health, education, environment, planning and many more.

In order to perform its public task, the Northern Ireland public sector on a daily basis creates and maintains vast amounts of many different types of data. Opening up access to this type of data to citizens and the private sector has been demonstrated across the world to have many positive impacts such as increased public service efficiency, accountability of government and empowering citizens. There are a number of examples throughout this document illustrating the benefits of open data.

This strategy illustrates how open data can support reform and improvement through greater transparency and citizen participation. Open data has the potential to reduce the administrative burden of Freedom of Information (FOI) requests by already having data released and assist in driving efficiencies within the public sector by reducing data duplication across departments. Opening up this data to the public will help increase the usability of the data through people taking, transforming and adding value to the data.

The release of public sector data in open data formats has been demonstrated to be a driver in terms of growth, job creation and innovation which itself has been identified as one of the primary drivers of economic growth – as noted in the Innovation Strategy for Northern Ireland.

Drivers
There are drivers for open data at all levels of government – global, European, UK and local.

Global
The G8 Charter on Open Data\(^2\) was a major endorsement of the importance of open data by eight of the wealthiest countries in the world.

All members agreed to work towards five key principles:
- open data by default
- quality and quantity
- useable by all
- releasing data for improved governance
- releasing data for innovation

European
- The Digital Agenda for Europe\(^3\) is one of the main EU drivers for open data. Its aim is to help EU citizens as well as businesses to maximise their use of digital technologies to deliver smart sustainable growth. An action under the Digital Single Market was to open up public data resources for reuse.

- The Public Sector Information\(^4\) Directive's (PSI) core objective is to stimulate the creation of new markets based on the large volumes of public sector information that is currently restricted to government. Changes to the Directive which come into force mid-2015 will mandate that when allowing access to data under FOI this will automatically allow reuse of that data.

- The EU INSPIRE Directive\(^5\) has been hugely successful in terms of opening up and widening access to spatial data by enforcing both standards and deadlines with Member States. Although data provided through Spatial NI is not available under an open data licence it has demonstrated the benefits of easing access to spatial information in NI and sharing it at European level.

UK
- The UK Government is committed to becoming the most open and transparent government in the world. The creation of data.gov.uk\(^6\) and the releasing of data on finance, resources, procurement and geospatial data has facilitated this commitment. The UK is ranked number 1 on the Global Open Data Index\(^6\). The index measures and benchmarks on an annual basis the openness of data around the world.

- The Open Data Institute (ODI) is an independent non-profit company which was set up with 5 years’ funding from the UK government and the philanthropic investment firm Omidyar Network. The ODI's vision is to be a world-leading centre to innovate, exploit and research the opportunities for the UK created by the Government's Open Data policy.

\(^3\) http://ec.europa.eu/digital-agenda/digital-agenda-europe
\(^5\) http://inspire.ec.europa.eu/
\(^6\) http://global.census.okfn.org/
The Northern Ireland Innovation Strategy aims to increase innovation across Northern Ireland to stimulate the NI economy. The strategy recognises the role open data has in supporting innovation by facilitating easy access to public sector data that can be commercially exploited and also supporting open data as a means of sharing knowledge. The strategy commits to exploring the feasibility of establishing an Open Data Node and also to running open data competitions.

The open data strategy will be taken forward in conjunction with existing overlapping areas of work in NI such as that of Public Sector Reform, Digital Transformation and the work of the NI Innovation Strategy. They all have synergies in terms of increasing effectiveness of government and improving services for citizens through the exploration of new opportunities and innovative solutions with data as a common link.

The vision for the strategy is…

To embed a culture of ‘open by default’ within the NI public sector in order to drive public service efficiency, stimulate innovation and improve the economy in Northern Ireland.

This strategy applies to all Northern Ireland public sector bodies as defined in the PSI Directive (Article 2.1).
In the context of data which is not personal or sensitive, this strategy will meet the following aims:

- government data and information will be Open Data by Default
- provide a framework to successfully implement and drive open data by default
- create a single point of access to NI public sector open data (through NIDirect)
- ensure compliance with open data standards and legislation
- encourage and drive uptake of the use of open data
- increase open data skills within the public sector

Transport

Transport for London released all routes and live information about transport systems in London which has in turn created a wealth of externally developed apps informing the citizen of the most efficient route from A to B and when the next bus will arrive. It is ‘estimated to have generated a value of £15-58 million each year in saved time for users of Transport for London services’.

San Francisco City is also proactively publishing real time transportation data as open data. They have estimated their savings are $1 million per year due to the reduction in the number of calls to SF 311 (the San Francisco customer service centre for government) by 21.7% at an estimated $2 per call.
A combination of desk based research, phone calls and face-to-face meetings was conducted to gather information about what works and what has not worked when implementing open data strategies. This information gleaned from a range of stakeholders has contributed to the formation of this strategy.

This diagram illustrates the key elements that we will put in place to deliver the open data strategy within Northern Ireland.

The development of a stakeholder engagement strategy will encourage greater dialogue between officials, academics, industry and citizens. We will ensure the open data formats we publish are relevant to the users. We will build the skills and capability within government to proactively release relevant datasets.

Additionally we will provide the governance to drive open data within the public sector to achieve the vision of embedding a culture of open by default within NI government to improve public service efficiency, improve innovation and stimulate the economy in Northern Ireland.

An overview timeline covering 2015-18 is displayed in Annex A with a more detailed “living” open data road map available here.
Identifying data to be released

The strategy is aligned with both the G8 Charter and the Public Sector Information Directive and is therefore focused on releasing as much public sector information as possible. The emphasis is on releasing data in its original, unmodified form and at the finest level of granularity available. Data which can be made open will come from a variety of sources including registers, databases, spreadsheets, surveys and geospatial datasets. This data is collected and managed by the public sector body to carry out its duty or public task. Text-based data such as day to day emails, memos, businesses cases and reports which are generated from aggregating and manipulating raw data (which can be released) are excluded.

Demand/supply

The public sector holds vast amounts of data and although the aspiration of this strategy is that the release of data becomes part of the data management cycle, this will take time to embed and therefore we need to manage expectations. In order to get the balance right we will prioritise what is released in relation to external demand and interest with the acknowledgement that some datasets will not be able to be released due to the exceptions listed in Principle 8. Initial balancing will have to be done to prioritise what data is published prior to reaching ‘open by default’.

Some departmental business areas are further along the road to ‘open by default’ than others. Priority however will be given to datasets that are deemed to be of “high value” in terms of their potential for reuse.

As part of the process to identify what data should be released an online survey was conducted and widely publicised via email and social media. The majority of the 84 respondents were private citizens and SME’s with government, academia and the voluntary sector following. The results of which high value data categories (as identified in the G8 Charter) respondents were most interested in is displayed in the graph below.

- Geospatial data and statistics are by far the most popular followed by transport & infrastructure and science and research. When further asked to identify particular datasets for publication, geospatial boundaries, addressing, education, transport, health and flood areas were the most popular replies.

- Respondents wanted the data predominantly for research purposes and public interest with the rest wanting it for personal interest or to develop an app. with 32% wanting to use it within their company to improve services.

- As the open data platform and web presence develops users will be able to suggest datasets for open publication.

- A key element of the strategy is to go beyond existing open data commitments by helping to stimulate the market place for the reuse of public sector information by encouraging new commercial opportunities. We will take this forward by actively engaging with our innovation colleagues in the Department of Enterprise, Trade and Investment as well as our counterparts in the rest of the UK, the Republic of Ireland and Europe to identify opportunities for collaboration, share best practice and disseminate technical expertise.
In addition to the high level aims in Section 2 this strategy commits to nine open data principles listed below.

Nine Open Data Principles

1. All data on the NI open data platform is authoritative, accessible, relevant, timely, accurate and as unprocessed as possible

   The NI open data platform will be accessible through NIDirect, which is the official Government website for Northern Ireland citizens, providing a single point of access to public sector information and services. Not all data will necessarily be held on the portal, but it will be a means of signposting people to the data they require. The portal will be designed with both technical and non-technical users in mind and will adhere to open standards.

2. Use of open standards to ensure interoperability

   Good metadata (data about data) is crucial in determining the usability of any data source. This enables the release of imperfect data if it is the best available. The strategy will therefore mandate an appropriate standard for metadata to adhere to in order to enable interoperability with the central metadata catalogue on the NI open data platform. Guidance on tools to enable organisations to create and validate metadata will be provided.
Data published on the NI open data portal will as a minimum conform to step 3 on the 5 star deployment scheme⁹

All dataset owners will publish their data at level 3 (or above) on the 5 star deployment scheme for open data i.e. in non-proprietary formats e.g. .csv. The open data vision is to move to data publication at level 5; however, this will take a number of years to embed within the public sector. In the interim, the Digital Transformation Service Open Data Team will work with departments and organisations to build up skills to encourage the uptake of publishing data with Uniform Resource Identifiers (URIs) and also as linked data.

Open standards for publishing data will be built into contracts and procurements for services and systems

Going forward the ability to publish open data will be built into all public sector contracts and procurements. This will also ensure that the intellectual property of public sector data stays with the public sector and not 3rd party suppliers.

Use Open Government Licence (OGL)

To ensure clarity on who can use the data and for what purposes, unless otherwise stated the Open Government Licence for public sector information will be used for all data on the NI open data platform. This will mean that users will be free to copy, publish, distribute, adapt and exploit the information commercially so long as they acknowledge the source of the information via an attribution statement.

⁹ http://5stardata.info/
Feedback mechanisms will be available for data released as open data

Public sector bodies will publish their data in as raw a form as possible with any errors or limitations with the data noted in the metadata. Feedback loops on data quality will be developed via the NI open data platform. This will facilitate users to submit comments and feedback to data publishers to drive improvement in the data over time.

Datasets will be updated in accordance with agreed refresh schedules

Many open data initiatives which are initially successful in publishing data subsequently fail due to data not being refreshed. All datasets published on the NI open data platform will be mandated to be refreshed according to the schedule stated in the associated metadata record.

Transparency about reasons for withholding datasets

We will be transparent about reasons why data cannot be released. Exceptions for not releasing data include:

**Personal data** - the public sector holds citizen data to conduct business with the citizen and deliver appropriate services. Open data does not include citizen personal data; legislation (the Data Protection Act (1998)) is in place to protect personal and sensitive data and must be complied with. If data can be released it will be anonymised according to the Information Commissioner’s Anonymisation Code of Practice and/or aggregated using recognised statistical methods to ensure data privacy for individuals

**Security, commercial or IPR consideration** - data must not compromise national security, defence, or public security – or statistical or commercial confidentiality (Article 1, 2 (C) PSI Directive) or have licensing restrictions. Where there is 3rd party IPR and data cannot be released – when renewing agreements or procuring new datasets, a right to releasing data as open data must be aspired to. Currently there are a number of areas within the public sector which are income generating and subject to a commercial licence such as mapping data from Land & Property Services (LPS). It is recognised that to fully realise the benefits of open data that this will need to be addressed.

**Environmental reasons** - data of environmental importance (which cannot be aggregated) may be excluded under regulation 12(5)(g) of the Environmental Information Regulations (2004) where disclosure would adversely affect the protection of the environment to which the information relates.

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All data will be considered for archiving

Where necessary we will endeavour to create a permanent and lasting access to time stamps of data by creating an archiving policy in conjunction with the Public Records Office of Northern Ireland. This is often an area that is overlooked when devising open data strategies; we shall investigate current best practice and produce guidance for departments and organisations.

Crime

376,000 bikes were stolen in England and Wales in the year ending March 2014. ‘Check that Bike’ is a website that utilises open data (obtained under FOI requests) from national registers, police crime data and insurance records so that people buying second hand bikes can check the frame number to determine if it had been stolen. The site is now attracting >15,000 visitors per month and has identified 1097 stolen bikes valued at an estimated £291,802. A more proactive approach to releasing data on bike theft would greatly enhance the geographic coverage and therefore use of the site.
It is expected that over time the culture of open data by default will become embedded within day to day data management across the Northern Ireland public sector. However initially strong governance and leadership will be crucial to the success of this strategy. Governance will be cognisant of the external community and the ideas and direction that they can contribute.

Climate.com is a website in the US that was built on the consumption of open data (60 years worth of data on crop yield statistics, soil data, geology data and open weather data) - to produce weather statistics for the agricultural industry. It also sells crop insurance to farmers. The company was sold in 2013 for $930 million to Monsanto - an American multinational agricultural company.
The NI open data lead is the Director of Digital Services. The proposed governance arrangements are shown on the right.

**Information Governance & Innovation Board (IGIB)** – is the key decision-making body within the NI Civil Service for all matters relating to innovation and governance in the context of information management (IM), information technology (IT), risk management and information assurance (IA). The IGIB is comprised of board level representatives from all departments and is chaired by the Permanent Secretary of the Department of Finance and Personnel.

**NI Open Data Implementation Board** – this board will be comprised of members from public sector organisations and will be responsible for driving the strategy. This board will report to the Director of Digital Services as the custodian of the Open Data Strategy.

**NI Open Data Advisory Panel** – this board will be comprised of representatives such as the private sector and academia whose terms of reference will be to give advice and guidance to the Implementation Board.

**NI Open Data Technical Sub-group** – this group will be comprised of technical representatives who will be responsible for developing the open data platform.
Monitoring and Reviewing

This strategy will be reviewed on an annual basis by the Open Data Implementation Board with input from the Open Data Advisory Panel to ensure that objectives are being met. Throughout the year progress will be monitored at all Implementation Board meetings. Day-to-day progress will be monitored by the Digital Transformation Service Open Data team.

Environment

www.gaugemap.co.uk is an innovative application using real-time open data on river level and tide data from the Environment Agency for England and Wales. Users can view real time water level data in a user friendly manner via a map on their laptop or mobile device or can follow tweets on river levels from nearby river level monitoring stations via Twitter. Opening up access to this data gives a wealth of information to the citizen whether they are worried about their property flooding or simply wish to use a nearby river for recreation purposes.
7 Risks

There are risks related to the release of public sector data around its interpretation and use. Examples include incorrect conclusions being drawn from faulty analysis, quality of data not being perfect and deliberate manipulation of the data or privacy disclosure. Most of the risks that result from using open data are due to a lack of communication or a lack of interpretation between the data provider and the data user about limitations, errors or the timeliness of the data. This risk exposure can be mitigated by introducing clear communication and validation procedures along with clear and precise metadata. Anonymising and aggregating data properly to avoid disclosure of any personal data will ensure that the fundamental right to the protection of personal data is maintained.

Health

A start up company based at the Open Data Institute analysed 8 months worth of National Health Service open data on prescriptions focusing specifically on statins. They identified that if the cheaper generic equivalent statin had been prescribed in all cases rather than a proprietary statin that over the eight months of data analysed over £200m could have been saved. Further information can be found on the prescribing analytics website\(^\text{11}\).
Conclusion

The release of public sector data is an ambitious undertaking. The goal of this strategy is to change internal processes so that data is automatically published as open data, once collected. This will take time to embed, however it will be worthwhile in terms of the value derived from it. Value such as increased transparency, which in turn will promote increased trust and participation from citizens, value from enhancing new innovation and providing new services, value from increased efficiency in driving down administrative costs in relation to answering FOI requests and value from engaging in better information management practices such as metadata creation.

In order to deliver the strategy we will create both the appropriate governance to drive it and a technical platform to deliver it. Stakeholder engagement is crucial so we will continue to engage with data-holders, data-users and developers, and investigate opportunities to publish new information through existing or innovative channels. In addition, by adhering to the 9 open data principles we are showing our commitment to fully embrace open data to achieve the vision of embedding a culture of open by default across the NI public sector.
**Aggregated data** - A form of anonymisation of unit records involving combinations such that individual details are not disclosed.

**Linked data** - The term used to describe the recommended best practice for exposing, sharing and connecting items of data on the semantic web using unique resource identifiers (URIs) and resource description framework (RDF).

**Metadata** - Data that describes or defines other data. Anything that users need to know to make proper and correct use of the real data, in terms of reading, processing, interpreting, analysing and presenting the information. Thus metadata includes file descriptions, codebooks, processing details, sample designs, fieldwork reports, conceptual motivations, etc., in other words, anything that might influence the way in which the information is used.

**Open data** - Data which can be used, re-used and re-distributed freely by anyone - subject only at most to the requirement to attribute and share-alike. There may be some charge, usually no more than the cost of reproduction.

**Public Sector Information (PSI)** - The wide range of information that public sector bodies collect, produce, reproduce and disseminate in many areas of activity while accomplishing their Public Task.

**Personal data** - As defined by the Data Protection Act 1998, data relating to a specific individual where the individual is identified or identifiable in the hands of a recipient of the data.

**Public task** - Public task information consists of information that a public sector body must produce, collect or provide to fulfill its core role and functions, whether these duties are statutory in nature or are established through custom and practice. The term 'public task' features in the Re-use of Public Sector Information Regulations 2005 (SI 2005 No. 1515) and the INSPIRE Regulations 2009 (SI 2009 No. 3157).

**Resource Description Framework (RDF)** - a W3C standard, is the foundation of several technologies for modelling distributed knowledge and is meant to be used as the basis of the Semantic Web.

**Uniform Resource Identifier (URI)** - The generic term for all types of names and addresses that refer to objects on the World Wide Web. A URL is one kind of URI.

**Source:** APPSI glossary
http://www.nationalarchives.gov.uk/appsi/appsi-glossary-a-z.htm
Contact Us
To contact us about this Strategy please email OpenData@nidirect.gov.uk
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ODT: Open Data Team  
ODIB: Open Data Implementation Board  
ODAB: Open Data Advisory Board  
DIM: Departmental Information Manager  
PSG: Permanent Secretaries Group  
IAO: Information Asset Owner  
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