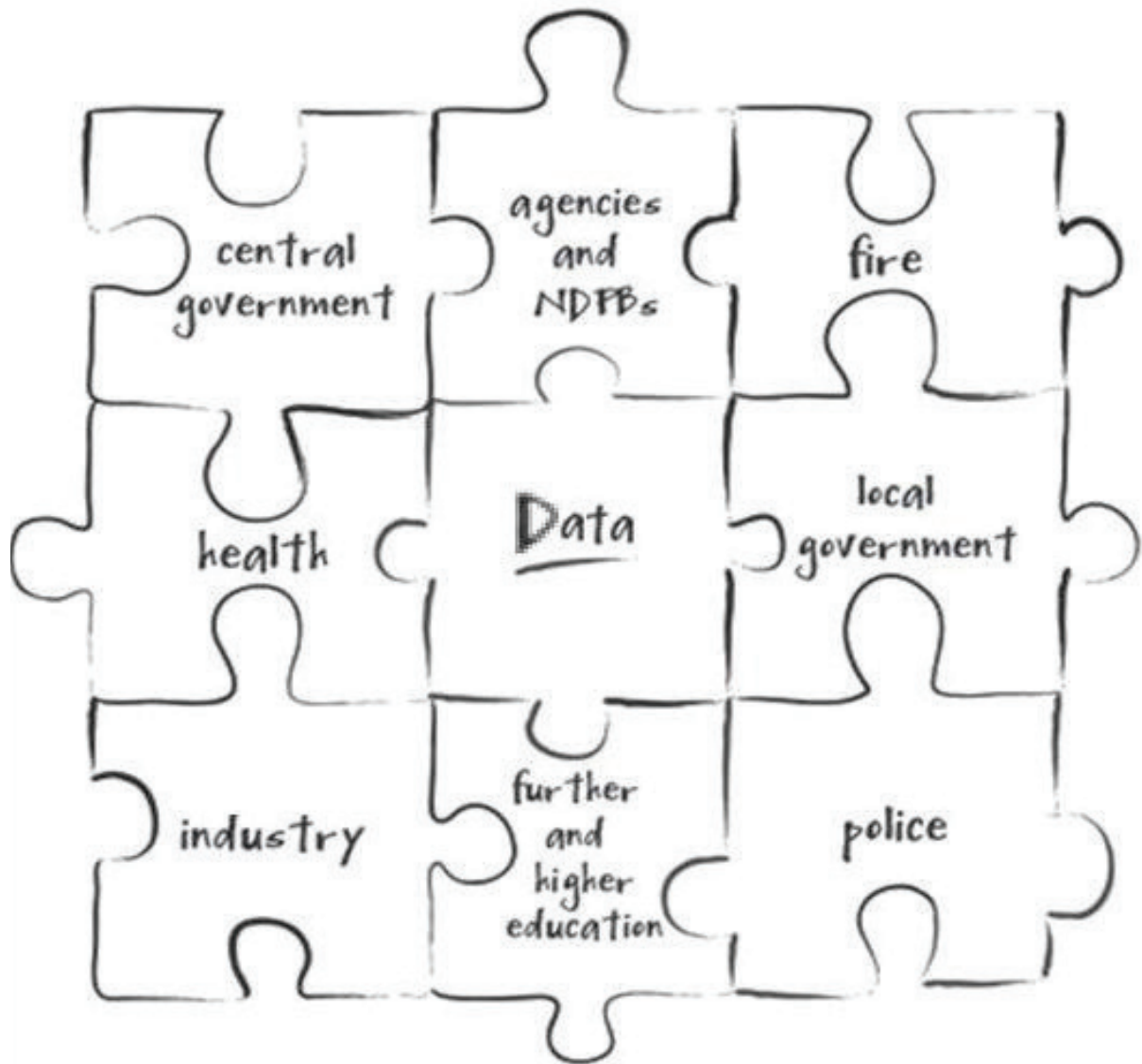


Open Data Resource Pack



Why and who should use this guide?

In 2015 the Scottish Government launched its [Open Data Strategy](#). The Scottish Government has designed this resource pack to support the strategy. This Resource Pack is intended to help public authorities throughout Scotland develop and implement their own plans for open data. The pack has been developed with support and input from public sector colleagues from across Scotland. It has been specifically designed to assist Scottish public authorities who want to make their data open, but it can be used by anyone with an interest in open data. It is intended for those with little or no knowledge of the topic.

This Resource Pack is a living document and will be updated as open data work in Scotland progresses. We welcome any feedback or suggestions and will incorporate feedback in future editions. If you would like to get involved in discussions or make suggestions please join our [Open Data Network](#) on Knowledge Hub. You can also get in touch by emailing stuart.law@scotland.gsi.gov.uk.

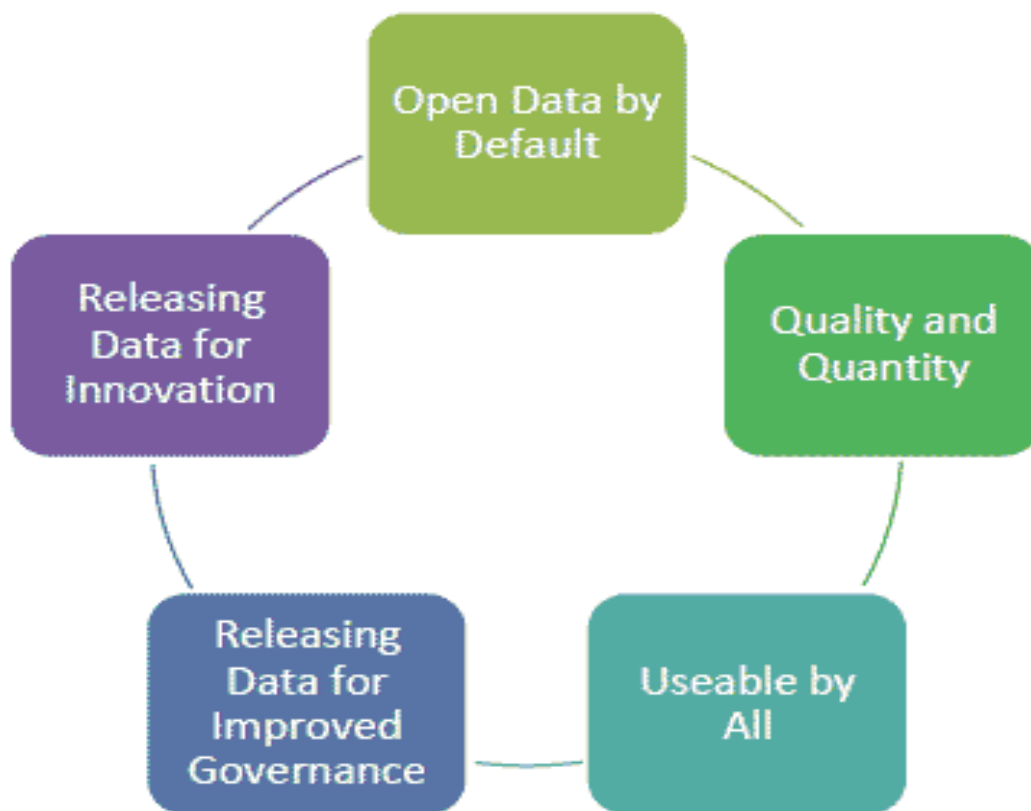
The Open Data Resource Pack has been divided into 10 sections and 2 annexes. If you are new to open data you may wish to start with [section 3](#).

Section 1	Scotland's Open Data Strategy
Section 2	Existing Legislation
Section 3	What is open data and why should you bother?
Section 4	Overview of the Open Data Process
Section 5	Start with a plan
Section 6	Select your data
Section 7	Create a dataset
Section 8	Make your data available
Section 9	You've published, now what?
Section 10	Training and Resources
Annex A	Templates and Checklists
Annex B	Case Studies

1. Scotland's Open Data Strategy

The Scottish Government launched its [Open Data Strategy](#) in February 2015, adopting the [G8 Open Data Principles](#). The strategy seeks to create a Scotland where non-personal and non-commercially sensitive data is recognised as a valuable resource which is made available openly for use by all.

Scottish public services are expected to release data in a way which aligns to the G8 Open Data Principles. The principles are shown in the diagram below.



- **Open Data by Default** - Those holding public data should make it open and available for others to re-use. Those collecting new data should make sure that releasing data for re-use is built into the process. Over time releasing data openly should become the default business practice.
- **Quality and Quantity** - The amount of public data available is huge but the data quality varies. Published data must be supported by [metadata](#). Metadata provides information about the data itself. Good metadata allows re-users to understand the data and its limitations.

- **Useable by All** - Data should be published in a manner which supports both easy discovery and easy re-use of the data. This includes making sure it is in a [format](#) which supports re-use and it has an [open licence](#). Data will be made available free, with defined exceptions.
- **Releasing Data for Improved Governance** – Public authorities will release data which supports delivery of better public services. They will use the data to improve the services and policies they deliver. Public authorities should aim to engage and inform the public through the release of open data.
- **Releasing Data for Innovation** – Release of data will create wider economic and societal benefits. Others will be encouraged to make use of the data and develop new products or services for non-commercial and commercial use.

By 2017, all public authorities in Scotland should be publishing their data in a format of [3 star or above](#). 3 star data is data which is made available online, with an open license, in an open and machine-readable format. [Section 7](#) explains the steps to achieve 3 star data release.

2. Existing Legislation

The [Open Data Strategy](#) supports a wider legislative initiative which has been designed to get public sector organisations across Europe releasing their data on a regular basis.

The strategy recognises and supports the duties placed on organisations under access to information legislation in Scotland and the UK. Whilst the Open Data Strategy encourages the proactive release of data in a manner currently beyond that required by legislation, legislation in this area can change over time. It is critical you understand your obligations under five key pieces of legislation. It is also important that you understand what powers the legislation gives you to support Open Data.

- [Freedom of Information \(Scotland\) Act 2002](#)
- [Environmental Information \(Scotland\) Regulations 2004](#)
- [Data Protection Act 1998](#)
- [INSPIRE \(Scotland\) Regulations 2009](#)
- [Re-use of Public Sector Information Regulations 2015](#)

You should also be aware of any other specific legislation which may govern your organisation's activities or obligations to disclose or withhold information.

Freedom of Information (Scotland) Act 2002 (FOISA) and Environmental Information (Scotland) Regulations 2004 (EIRs)

FOISA and EIRs are enforced by the Scottish Information Commissioner. The legislation gives any person the right to ask for information held by a Scottish public authority and the right to receive it. Requests for information under FOISA must be in writing. Requests for environmental information under the EIRs may also be verbal.

The legislation imposes two broad duties on Scottish public authorities:

1. The duty to respond to information requests within statutory time limits.

There is a presumption that information will be disclosed but the legislation makes provision for it to be withheld if exemptions or exceptions apply. These exemptions and exceptions are also relevant when releasing Open Data. This should be taken into account when developing your [Open Data Publication Plan](#).

2. The duty to proactively publish information.

Section 23 of FOISA requires authorities to “adopt and maintain a scheme [...] which relates to the publication of information by the authority...” Open data is one method of publishing information.

The Scottish Information Commissioner has created a [short guide](#) to help authorities decide which law applies when dealing with requests. More [detailed guidance](#) is available to help public authorities understand their obligations and deal with request. There will also be a FOISA contact within your organisation who you should speak to if you have any questions.

Data Protection Act 1998 (DPA)

The DPA is the main piece of legislation which protects personal data in the UK. Anyone who holds or processes personal data is obligated to comply with the act. The act defines [8 data protection principles](#). If you have questions about your obligations under the DPA, you should speak to your Information Asset Owner or consult the UK Information Commissioner’s [guidance](#).

INSPIRE (Scotland) Regulations 2009

The INSPIRE Regulations cover the release of spatial data by Scottish public authorities and organisations which carry out duties on behalf of public authorities. The regulations brought into force the [EU Inspire Directive](#) which aims to create consistency across all member states so that all spatial datasets can be easily shared, modified and combined. INSPIRE defines common technical standards for publishing spatial datasets which fall within [34 data themes](#).

All spatial data which falls under INSPIRE must be published. You should ensure that you publish your data as both [view](#) and download services, to the required standards, as well as its associated metadata. The latest information about INSPIRE can be found on the [UK Location](#) website.

In Scotland, the [Scottish SDI Metadata Catalogue](#) (SSDI) supports the publishing of Scottish public sector spatial data metadata to the INSPIRE and UK Location metadata standards. It provides the discovery component for a set of on-line services that will allow users to evaluate and use public sector spatial data. Guidance on how to create INSPIRE metadata on the SSDI can be found [here](#).

Re-use of Public Sector Information Regulations 2015

The Public Sector Information Regulations cover any information a public sector body:

- a) produces, holds or disseminates within its public task, and

b) holds the copyright for.

Under the regulations, public sector bodies should make their information available for re-use under an open licence at marginal cost. Marginal cost in most cases will be nil. The legislation specifies exceptions to the marginal cost default, for example trading funds. In such cases, public sector bodies may charge re-users to cover the costs of collection, production, reproduction and dissemination of information, together with a reasonable return on their investment.

The National Archives have produced a [checklist](#) to help public sector bodies make sure they satisfy their obligations under the regulations. Detailed [guidance](#), including information around charging, has been produced for public sector and cultural sector bodies.

3. What is open data and why should you bother?

What is Open Data?

Data is information. For the purpose of this guide open data is the release of non-commercially sensitive and non-personal public sector information. Open data does not contain personal information relating to individuals or information which could be used to identify individuals. If you have any questions about dealing with personal information you should speak to the relevant Information Asset Owner in your organisation. You may also find it helpful to read the guidance issued by:

- [the UK Information Commissioner](#)
- [the Scottish Information Commissioner](#) about how to apply the personal data exemptions under FOISA and the EIRs.

Additionally, information which could cause economic harm if released is not within the scope of open data. There is no precise definition of 'non-commercially sensitive information', organisations will need to use discretion and balance the public interest of transparency against the right to confidentiality. The default position should be to release the information and you should not attempt to prevent its release unless there is a good reason.

You may find it helpful to read the Scottish Information Commissioner's guidance on responding to information requests as the same questions and principles apply to your open data.

- [Commercial Interests](#) and the Economy
- [Confidentiality](#)
- the [Public Interest Test](#)

5 Star Schema

Releasing your data isn't enough. There are other features which must exist if the information is to be considered open data. Open data should be:

- available at no cost to the user
- freely available to be used, redistributed and reused by anyone for any purpose, including commercial, without restriction. Aka, an [open license](#)
- available online in [machine-readable formats](#)
- easily discoverable through use of relevant [metadata](#)

“Open data and content can be **freely used, modified, and shared** by anyone for any purpose”

[Open Knowledge Foundation – The Open Definition](#)

Tim Berners-Lee, founder of the world wide web, suggested a [5 Star Open Data Model](#) which organisations can aspire to.

Summary of the 5 Star Open Data Model

★	Data available online with open license permitting re-use. Examples – Tables and charts in PDF document or scanned images
★★	Data available online in a machine readable format, with open license permitting re-use. Examples – Excel tables and charts
★★★	Data is available online, in non-proprietary machine readable format, with open license permitting re-use. Examples – Comma Separated Values (CSV) Extensible Mark-up Language (XML)
★★★★	Data is available online, in non-proprietary machine readable format, with open license permitting re-use. Data is described in a standard way and uses unique reference indicators, so that people can point to your data.
★★★★★	Data is available online, in non-proprietary machine readable format, with open license permitting re-use. Your data uses unique references and links to other data to provide context.

Under the [strategy](#) all public authorities in Scotland should be aiming to release all data in a 3 star format or above by 2017. In order to achieve this standard you should be building capability and capacity in your organisation now. [Section 7](#) outlines the steps required to achieve 3 star release.

Why should you bother?

Uncertainty around the benefits and costs of open data often leads to organisations to ask why should we bother? There are many reasons why the public sector should be keen to release open data, both practical and ideological.

The volume of information available is increasing rapidly. Public sector organisations are large producers and collectors of information. As part of their public tasks, public sector organisations collect a wide range of non-commercially sensitive and non-personal data. This data is a valuable public resource, which in the past has been

underused. Making the data available to the public helps realise the full potential of the data and creates many benefits, including:

- increased transparency and democratic accountability
- greater civic engagement
- improved efficiency and effectiveness of public services
- innovation and economic growth

UK Prescription Savings Worth Millions

Using publicly available prescription data, innovative start-up companies working with NHS doctors identified potential savings estimated to be worth approximately £200 million. The low cost project identified potentially huge savings in the prescription of statins, by doing simple analysis over a period of 8 weeks on publicly available data. Tools are now being developed to find savings in the prescriptions of other drugs, increasing the potential for significant savings.

Detailed analysis and results of the project can be found here: <http://www.prescribinganalytics.com/>

Showing the public how taxes are spent

Wheredoesmymoneygo.org is one of the many popular sites which have been built using publicly available data. Developed by the Open Knowledge Foundation the site aims to show people, graphically, where public money in the UK is spent. The site always tracks historical spending so users can see where spending has risen or fallen.

The Open Knowledge Foundation hopes the information will “help citizens discover their own part in government economic activity — thereby encouraging them to take a more active interest in, and a more thoroughly informed engagement with, the official institutions around the.”

More examples of how open data is benefitting the public sector and wider public can be found in our [case studies section](#).

Cost of opening data

Open data uses existing internal data so the costs of preparing it for release should be low. However there will costs such as:

- web hosting and creation of portal

- promotion and advertising
- converting data into open formats
- time to update and maintain data
- time to promote open data both internally and externally

Costs will vary depending on the size of your organisation, your plans for open data and the level of open data maturity already existing in your organisation. The costs involved should not stop public authorities making their data open. In the vast majority of cases the data was captured or created using public funds and should be made accessible to all for re-use.

Open data is data which is available for free. This allows equal access to the data and allows it to be widely used and re-used. Any data which requires a fee to access cannot be considered true open data.

There are legislative exceptions which allow some public bodies to charge for their data in certain circumstances. If you are considering charging for your data, you should make sure you are entitled to do so under the existing access to information [legislation](#).

Remember: Open data can transform society, business and the public sector – why wouldn't you want to do it?

Useful links

[8 Principles of Open Data](#)

[Open Data Handbook](#)

[Open Knowledge Foundation – What is open data?](#)

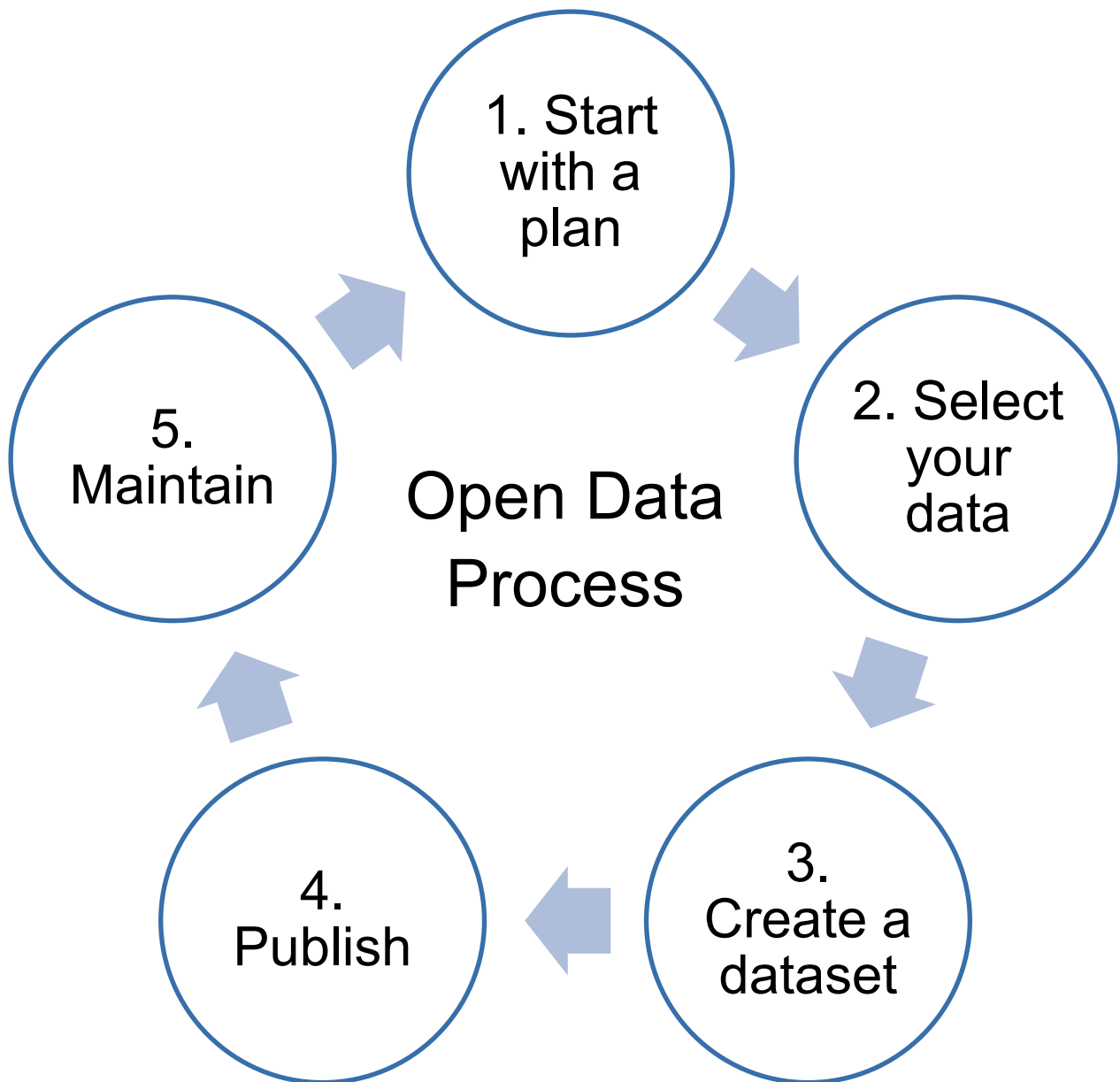
[Socrata – Why does my organization need open data?](#)

[The ODI – How will open data affect me?](#)

[The ODI – What is open data?](#)

[UK Government Open Data White Paper](#)

4. Overview of the Open Data Process



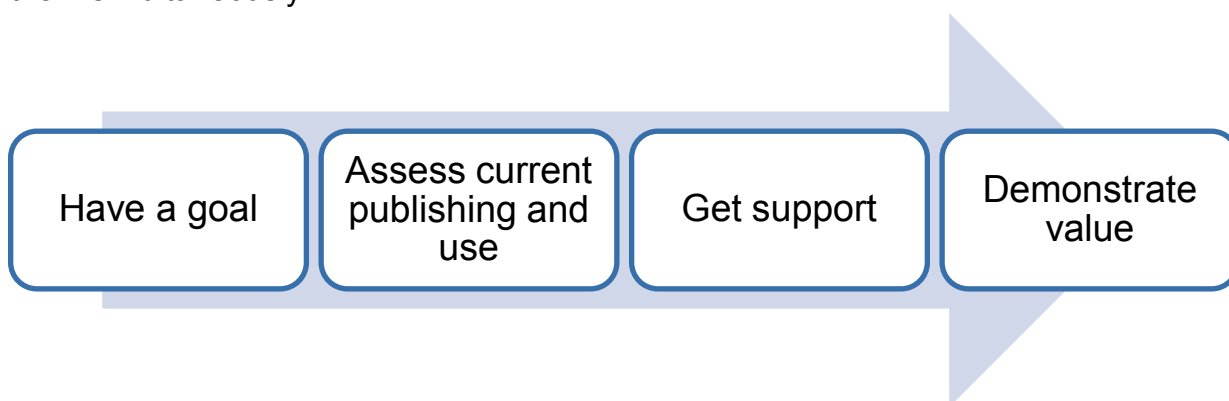
The open data process is not static. It is a continuous process that you will go through many times as your open data work develops. For ease the process has been described in 5 steps. In reality the process is not linear and you will likely do a few of these steps in combination.

- Step 1: [Start with a plan](#)
- Step 2: [Select your data](#)
- Step 3: [Create a dataset](#)
- Step 4: [Publish](#)
- Step 5: [Maintain](#)

5. Start with a plan

Now you know what [open data is all about](#), you should be starting to ask how can your organisation get involved? To get the most out of any open data initiative, organisations must seek to embed the practice within its existing processes. The simplest way to begin establishing open data in your organisation is to design a plan.

This section provides practical guidance about how to create a successful open data plan in 4 steps. The order of steps is a guide and you could choose to do many of them simultaneously.



Step 1: Have a goal

Before launching your open data project, you should be clear about what you want to achieve. Your organisation will have its own strategic aims and goals, open data is another tool to support these. Does your organisation have a particular problem which open data could help solve or a target which open data could help achieve?

You will need to develop a [publication plan](#) which will require you to prioritise your data release, you should be think carefully about publishing data for the sake of it. You may find it difficult to demonstrate value and get support. Having a clear goal for your open data and showing how opening data can help with organisational issues will encourage senior management support and can be the catalyst for establishing a longer term open data initiative.

Step 2: Assess your open data publishing and use

A useful tool to identify how your organisation currently uses and publishes data is the [ODI Pathways](#) self-assessment questionnaire. The questionnaire will help identify how engaged your organisation currently is with open data and will provide practical recommendations to improve your score.

The tool could be used to help shape your open data goal as it helps identify gaps in your processes and areas for improvement.

Step 3: Get support

Feedback from colleagues across the public sector, has shown that for open data to be successful in the long term it requires support from across the organisation at all levels. Start with a small group of supporters who can then help you get support from others. Every organisation has a different structure and culture but generally you will want:

- **Senior management** – Having senior management support ensures your work is given weight. Senior management should be willing to help drive the project forward and help resolve disputes if they arise.
- **Open data champions** – These are people throughout the organisation who are interested in making the open data project a success. Open data champions will be the point of contact for questions and will help keep the wider organisation updated on progress of work.
- **IT and GIS specialist** – It would be wrong to make your open data project an IT only initiative, it requires support from all areas of the business. However, as open data will likely require working with new technologies and formats, their support will be essential.
- **FOI and/ or publication scheme contacts** – Colleagues in this area will have vital experience around dealing with requests, signposting people to information and an understanding of the FOISA/EIRs exemptions and exceptions.

Tips for getting support

- **Be specific** - explain how open data will help them specifically e.g. proactively releasing data may reduce FOI requests saving time and resources
- **Use case studies** – case studies help you show people why open data is worthwhile. Use the [case studies](#) in this resource pack to help persuade your stakeholders
- **Address fears** – be clear about the purpose of your project and address any concerns your stakeholders may have.

Step 4: Demonstrate value

Embedding open data within your organisation is an iterative process. You should continually evaluate your plan as your open data work progresses. Does your goal

need to change because your plans have moved on? Are your aims still realistic and achievable?

You should also be looking to capture evidence which will show stakeholders how open data is bringing value to your organisation. A good way to demonstrate value would be to show how your project is helping support the initial goal. Demonstrating the success of the project can help persuade others to get on board and help embed open data into your organisations business practices. Other examples which may help demonstrate value:

- decrease in freedom of information/general requests
- efficiency savings e.g. decrease in processing times, financial savings
- greater public engagement with your organisations
- economic benefits e.g. development of apps and innovations using your data

EdinburghApps

EdinburghApps began as an annual once a year competition with the Council providing challenges and teams taking part over 6/7 weeks to develop strong concepts or/and prototypes which are then judged in a final event. EdinburghApps supports Edinburgh's open data strategy, challenges must all be supported by the sharing and release of data sets. The winners then have the opportunity to work with the Council to develop their ideas, and deliver products.

In two cases the Council helped winners to start their business from scratch, and also supporting participants to find other business opportunities.

Read the [case study](#) to find out more about the benefits to participants and the City of Edinburgh Council.

Useful Links

[Code for America Open Data Guide](#)

[Socrata – Define clear and measurable goals](#)

[The ODI – How to make a business case for open data](#)

[W3C Best Practice – Organisational internal engagement](#)

6. Select your data

How do you decide which data to publish first? Prioritisation of data release is necessary as it is impractical and potentially costly to release all your data at once. There is no definitive guidance on data prioritisation, there are many ways an organisation can choose to select its data depending on its goals.

This section will present a list of practical guidelines based on best practice from around the world. Annex A has simple [downloadable checklist](#) which has been developed to help you navigate each of the steps.

How to select your datasets?



Step 1: Identify your data and create asset register

Before you know which datasets to release, you must identify what data you hold. If you do not know what data your organisation has, then you may miss out valuable data.

This may seem like a daunting task as your organisation will likely hold its data in various places and across multiple platforms, for example databases, spreadsheets, folders, documents and websites. Do not let the size and scale of the task put you off. This is an important step in your open data journey and will also be useful for other work related to [Freedom of Information](#) and [Re-Use of Public Sector Information](#). Beginning with the identification of high level datasets and adding granularity over time will make the task more manageable.

It may be useful to ask colleagues across your organisation to help with this step, people are likely to have a good understanding of the data held within their own department or division.

Capture metadata

When you are identifying your data you should begin to capture metadata. Metadata is descriptive information about the data. It can describe elements such as the content, format, currency and limitations. More guidance on metadata can be found [elsewhere](#) in this pack.

At this stage you should attempt to capture as much metadata as possible as it will make things simpler in later stages. You should begin with what you would like to include in your asset register. The checklist in Annex A provides a short list of key metadata elements which you should begin capturing.

Asset Register

You now have enough information to create a comprehensive list of all the data you hold. Your asset register will be used to create an [Open Data Publication Plan](#) which will inform the public about the data you hold and intend to release as open data.

Example asset registers

[Department for Transport Information Asset Register](#)

[DCLG Data Inventory](#)

[Home Office Information Asset Register](#)

This asset register does not need to be published and can be kept as an internal resource. However, it would be possible to combine an open data asset register with your organisations PSI asset register. The [2015 PSI Regulations](#) require your organisation to publish a register of both published and unpublished information assets which fall within its public task. The potential open data that your organisation holds may fall out-with its public task. The PSI asset register could be extended to cover all of the data your organisation holds.

Your register is not static, the information you hold will change over time. Your asset register(s) should be reviewed and updated at regular intervals.

Useful Links

[National Archives Asset List Guidance](#)

[National Archives Identifying Information Assets and Business Requirements](#)

[National Archives Information Asset Register Guidance](#)

[National Archives Public Sector Information Guidance](#)

[W3C Best Practice – Discover published information by site scraping](#)

[W3C Best Practice – Identifying what you already publish](#)

Value Assessment

During the initial stages of identifying data and capturing metadata, you should make an initial assessment about the data's value and priority for release. An initial value assessment can help identify potential priority releases. Each organisation will assess the value of their data differently, depending on their priorities and quality of available data. The checklist in Annex A has a handy list of areas which should be considered in order to assess value.

Step 2: Select the open data you want to publish

When it comes to selecting data to publish, there is no right way. The important thing is to begin putting data out there. We recommend **starting small and building up**. Focusing on a few key datasets will help you create a maintainable publishing process. You should then add more data over time.

You will have to consider dataset prioritisation. Which datasets should you release first? If you have identified a few priority releases, should these be released together or separately? When prioritising your data you will begin shaping a plan for future releases. This plan or schedule will be helpful when compiling your [Open Data Publication Plan](#).

There are number of easy ways to begin prioritising your data.

Start with your goal

You should return to the goals of your open data project and identify the datasets which support the realisation of those goals.

Quick wins

Sometimes an organisation may choose to release data which is easy to publish openly. Examples include upgrading data already published online (PDFs, Excel files, Word documents or other formats) into an open format. As this data is already released to the public, converting it to an open format should be easy and non-contentious.

Small, easy releases help get the project off the ground and build momentum, but organisations should be careful not to rely on easy releases for too long as the public may lose faith in the initiative if valuable datasets remain closed.

Demand driven release

Release the data that the users want. Examine informal (e-mail/calls) and formal requests (FOISA requests) for data. Does your organisation have a twitter or facebook page? Check the comments to see if there are suggestions about possible data you could release. By making the most requested datasets available in a discoverable, open format you can satisfy public demand and help reduce administrative burdens on departments e.g. fewer enquiries or requests.

Another way is to ask the public what it wants. As they are the people who will be using the data, they will likely have a good understanding about which data would be useful. Invite the public to suggest ideas via social media, surveys or on your own website. Hack events are also another great way to generate interest in your open data and find out what people want or need to make their ideas a reality.

Scottish Government Dialogue App

Between 8th June and 14th July 2015 the Scottish Government held an open data discussion on the [Dialogue App](#). The Dialogue App is a crowdsourcing software designed for government. It allows the public to suggest, rate and comment on ideas in a collaborative way. The most popular and important ideas can then be easily identified and viewed.

As part of the Open Data Strategy, the Scottish Government made a commitment to engage with the public about which datasets they would like to see released from public sector organisations. The Dialogue App was chosen to hold the discussion as the format enabled everyone to participate in an open discussion.

Over the course of 5 weeks a total of 18 ideas were posted from 9 individuals. Nearly a quarter of the ideas submitted related to the release of information about public sector assets, physical (buildings, land) and non-physical (information, asset registers).

More information about the findings from the Dialogue App discussion and lessons learned can be found in [Annex B](#).

Follow best practice

Open data is growing and there are many public sector organisations both in Scotland and worldwide that are beginning to release their data openly. **Don't reinvent the wheel, copy what has worked** for others and **build upon their success**.

Cities and departments all over the world are beginning to release their own open data catalogues. Spend some time browsing their sites, see which datasets are popular and which ones your own organisation could release.

Examples of Open Data Portals		
Scottish Official Statistics	Aberdeen Open Data	The City of Edinburgh Council
SEWeb	UK Data.gov.uk	EU Open Data Portal
New York Open Data	Open Glasgow	US Data.gov

This list is a very small snapshot of the portals available!

The [G8 Open Data Charter](#), [Open Data Barometer](#) and the [Open Data Census](#) have all published works detailing what should be considered high value datasets and considered consider priority releases. Of course, some of the datasets may not be relevant to your organisation and you may not be ready to release them just yet, but it is a good starting point if you don't know where to begin.

The following table lists the 14 categories which the G8 considers high value, priority releases. Examples of the types of data which fall under each category are also listed.

G8 High Value, Priority Releases

G8 Category	Example datasets
Companies	Company/business register
Crime and Justice	Crime statistics, safety
Earth observation	Meteorological/weather, agriculture, forestry, fishing, and hunting
Education	List of schools; performance of schools, digital skills
Energy and Environment	Pollution levels, energy consumption
Finance and contracts	Transaction spend, contracts let, call for tender, future tenders, local budget, national budget (planned and spent), international trade data
Geospatial	Topography, postcodes, national maps, local maps
Global Development	Aid, food security, extractives, land

Government Accountability and Democracy	Government contact points, election results (national and local), legislation and statutes, salaries (pay scales), hospitality/gifts
Health	Prescription data, performance data, doctor surgery locations
Science and Research	Genome data, research and educational activity, experiment results
Statistics	Data used to produce Official Statistics including the Census, sample surveys and administrative data. E.g. Datasets would include GDP, skills, unemployment
Social mobility and welfare	Housing, health insurance and unemployment benefits
Transport and Infrastructure	Public transport timetables, access points broadband penetration

Useful reading

[Socrata – The data plan](#)

[W3C Best Practice – Discover published information by site scraping](#)

[W3C Best Practice – Identifying what you already publish](#)

[W3C Best Practice – Understand demand for data](#)

[Sunlight Foundation Open Data Guidelines 1 - 7](#)

Step 3: Develop an Open Data Publication Plan

Once you have decided which data you want to publish as open data you should develop a publication plan. The benefit of an Open Data Publication Plan is the public will have a comprehensive list of the datasets you will be publishing open data and when they will be released.

The publication plan does not replace the publication scheme you are required to have under section 23 of FOISA. It should be part of your publication scheme which should:

- signpost your publication plan in your Guide to Information
- explain briefly how your open data will be published

Contact the Scottish Information Commissioner for more information about the [Freedom of Information \(Scotland\) Act](#) and [publication schemes](#).

The publication plan shows the authority's commitment to open data and demonstrates its understanding of the benefits which releasing data openly can bring. As a guide, it is recommended that any Open Data Publication Plan should:

- tell users what information is available as open data
- explain when the information will be available, if it is not already
- tell users the currency of the data, available formats and licensing conditions
- provide contact details should someone want to get in touch about the dataset
- provide details about how users can make recommendations for future

An aim of the [Open Data Strategy](#) is for all Scottish public authorities to have published their Open Data Publication Plans by December 2015. Annex A has a link to the [template](#) which has been designed to help you do this.

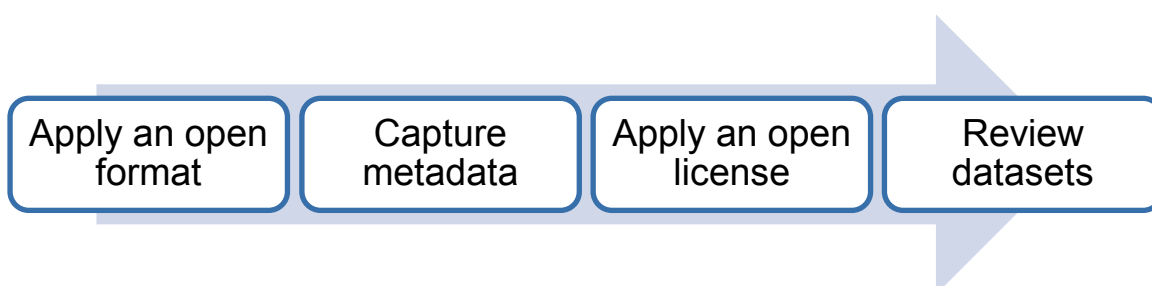
The template uses much of the information captured in the [dataset asset register](#). The main difference between the asset register and the publication plan is that the publication plan will only identify the datasets that your organisation has released as open data, or intends to release as open data in the future.

Completion of the publication plan will likely happen in combination with the creation of a dataset. Further guidance on creating datasets can be found in [section 7](#).

7. Create a dataset

After selecting the information you wish to publish you need to organise it so it can be made available for download in bulk and in machine readable formats. This is called creating a dataset. Creating a dataset is a quick and easy process. A dataset is a structured presentation of data, such as a spreadsheet or table.

The steps to for creation of your dataset are set out below. Annex A has a [checklist](#) to help you make sure you cover each of the steps.



Step 1: Apply an open format

One of the most common questions asked is ‘what format should I use?’ Open data should be in an open format and machine readable.

- **Open Formats** are non-proprietary and platform independent. They can be accessed by anyone and do not require access to licensed software. E.g. Microsoft formats are not open as they use proprietary software.
- **Machine Readable** formats allow a computer to read the data. Machine readable data is structured and easy to query using code.

The most appropriate format will depend on the type of data. Any type of data can be stored in an open format, but it is likely you will have to transform the data from its original format. Open, machine readable formats allow the data to be used and edited easily. It also allows for interoperability between different datasets. For example, a PDF publication may look nice but it severely limits the user’s ability to re-use the information.

You should be aiming to select a format which satisfies [3 star publication](#) requirements. Below is a table of common open data formats which satisfy 3 star release.

Examples of Common Open Formats

Format Name	Definition	Type of data to use this for
Comma Separated Values (CSV)	Comma Separated Values (CSV) is a great way of storing large amounts of data with just commas separating the data values. Often the CSV file will contain a header with names describing what data is populating the file.	Tabular data e.g. Use instead of Excel
Tab-Separated Values (TSV)	TSV is a very common form of text file format for sharing tabular data and is highly machine readable.	Tabular data Use instead of Excel
JavaScript Object Notation (JSON)	JSON uses human-readable text to transmit data objects consisting of attribute–value pairs. It is used primarily to transmit data between a server and web application, as an alternative to XML. The file size will be more compact or smaller than XML.	Complex structured data Multidimensional data Tabular
Extensible Markup Language (XML)	XML is a widely known markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. Users create and define their own tags.	Complex Structured data Multidimensional data Tabular data e.g. database extract metadata
Rich Site Summary (RSS)	RSS (originally RDF Site Summary), often dubbed Really Simple Syndication, uses a family of standard web feed formats to publish frequently updated information: blog entries, news headlines, audio, video. An RSS document (called "feed", "web feed" or "channel") includes full or summarised text, and metadata, like publishing date and author's name.	Use for announcements or events e.g. on websites
ATOM	The Atom Syndication Format is an XML language used for web feeds. The Atom format was developed as an alternative to RSS. Note RSS is the preferred standard.	Use for announcements or events e.g. on websites

Open Document Format for Office Applications (ODF)	The Open Document Format for Office Applications (ODF), also known as OpenDocument, is an XML-based file format for spreadsheets, charts, presentations and word processing documents. It was developed with the aim of providing an open XML-based file format specification for office applications.	Non-system generated metadata or additional information you release with your dataset. (replaces Excel, Word, PDF)
HTML	Used for formatting information on the web	Non-system generated metadata or additional information you release (replaces PDF, Word)
Keyhole Markup Language (KML)	KML is an XML language focused on geographic visualization, including annotation of maps and images.	Spatial/location data
Geography Markup Language (GML)	GML is the XML grammar defined by the Open Geospatial Consortium (OGC) to express geographical features. GML serves as a modelling language for geographic systems as well as an open interchange format for geographic transactions on the internet.	Spatial/location data
GeoJson	GeoJSON is an open standard format for encoding collections of simple geographical features along with their non-spatial attributes using JavaScript Object Notation.	Spatial/location data

Table taken from [Government of South Australia Open Data Process Guide](#)

Useful reading

[Government Service Design Manual – Choosing appropriate formats](#)

[Open Format Definition](#)

[Sunlight Foundation Open Data Guidelines](#)

[W3C Best Practice – Make the data available in a language people want](#)

Step 2: Capture Metadata

Your data can only be used effectively if you also provide some metadata. Metadata is descriptive information about the data. It can describe the content, format, currency, limitations and frequency of updates. Metadata provides the user context about the data and good metadata will allow interoperability with other datasets.

Your publishing portal may allow metadata to be displayed below your data, or you could create an accompanying file for the metadata.

What standard should be used



Feedback has indicated that public authorities are capturing limited metadata and are seeking ways to improve their metadata. In order to build capability and increase metadata maturity, you should decide within your organisation what metadata should be captured and begin to record it in a consistent manner for all data.

Over time it is expected that all public authorities will progress towards the Data Catalog Vocabulary ([DCAT](#)) standard. DCAT will be used to describe all public data in Europe. Its use will make public data searchable across borders and sectors. Progressing towards DCAT is an ambitious aim. DCAT is a high standard and captures much more than your organisation may have considered. It is recommended that you build your metadata catalogue slowly, embedding it within processes and ensuring that the metadata recorded consistently. The use of intermediate standards, such as [Dublin Core](#), is recommended as it will help your organisation progress towards DCAT.

Useful Reading

[DCMI Metadata Basics](#)

[Dublin Core Elements](#)

[NISO Understanding Metadata](#)

[The ODI – Marking up your dataset with DCAT](#)

[W3C Best Practice - Metadata](#)

Step 3: Apply an open license

A key requirement of making data open is applying an open licence. Prior to publication, all datasets should have an open license. The following applies to data and information which you hold the intellectual property rights for, if the data you wish to release includes third party IP rights please read the [Licensing and Third Party rights section](#).

Why is licensing important?

Licensing data is essential to provide potential users with clarity and certainty. When you create something, original works or photographs for example, you automatically obtain rights over the work and can determine how the work is used. Applying a licence to your work explicitly tells users what they can and cannot do with it.

Applying an open licence to your content or data should allow people and organisation to re-use, modify and share content in any way. It should allow others to use the data for commercial purposes. It is generally accepted that only two restrictions may be attached to an open licence:

- **attribution** – users must acknowledge the source of the data
- **share-alike** – users must publish any derived data under the same licence

Open licenses can have no restrictions (public domain – all rights waived), attribution or attribution and share-alike.

How to select a licence

The chosen licence should support your organisations open data strategy. You need to think about what you want to achieve by releasing your data. Requiring attribution will normally help promote your open data initiative as users have to link back to your original work. Share-alike restrictions will require users of the data to publish their work openly. This may deter commercial businesses and people who want to make profit from their use of the data, resulting in reduced innovation and use.

Whilst possible to create your own unique licence, it is advisable to use a standard re-usable licence as they provide greater recognition amongst users, increased interoperability due to the use of standard terms and increased user compliance.

There are two instances when you cannot choose your own licence –

- Crown Bodies - If your organisation is a [Crown Body](#), which covers most government departments and arms-length bodies, then any information you have

gathered or created is owned by the Crown. This information must be published under the Open Government Licence.

- Publishing data that has been derived from data published under a share-alike licence. You must publish that data under the same licence as the original data.

Open Government Licence 3.0

The [Open Government Licence 3.0](#) (OGL) allows anyone to publish, distribute, transmit and adapt the licensed work, and to exploit it both commercially and non-commercially. The user must acknowledge the source of the work and where possible provide a link to the OGL. The OGL was developed to be used by public sector bodies.

There can be no charge for data licensed under the OGL. The OGL is compatible with the latest versions of Creative Commons Attribution Licence (CC-by) and the Open Data Commons Attribution Licence (ODC-by).

Other popular licences

The Open Knowledge Foundation provides an [extensive list](#) of the licences which conform to the open definition. The most popular are:

Level of Licence	Creative Commons Licence	Open Data Commons Licence
Public domain (all rights waived)	CC0	PDDL
Attribution	CC-by	ODC-by
Attribution & share-alike	CC-by-sa	ODbL

How to write your attribution statement

If your license requires attribution, you must state how your work should be attributed. As your work may be combined with others who also require attribution you should keep the statement to a minimum. For example, your organisation's link to the data that is covered by the licence and link to licence.

You can also prescribe how the attribution should be presented (size, location, format etc). You will need to consider the users of the data and make sure any requirements are not too onerous.

Successfully apply your licence

You must signpost users to your licence by using both human-readable and machine-read-able descriptions. Your descriptions should be displayed prominently with your data so that users know they can use the data you are licensing.

The common standard licences – OGL, CC and ODC, all provide machine and human readable descriptions and logos that you should use.

- [Open Government Licence](#)
- [Creative Commons licence chooser](#)
- [Open Data Commons licences](#)

Licensing and Third Party Rights

You can only apply a licence to data which:

- you own the copyright/and or database right for;
- or the owner has given permission for it to be licensed.

If you do not own the intellectual property or do not have the owners authority, you cannot release the data openly.

Public sector organisations engage with and contract with many third parties in the course of its daily activities. Many of those contracts will grant third party rights. It would be an inefficient and costly use of public resource if all of those contracts were to be renegotiated. In the future we want to limit the existence of third party rights in public data. We expect when future contracts are negotiated and put out to tender that it will be made explicit in the contract that any data resulting from the contract will be subject to open data principles and may be release for free to the public for onward use.

If you require further guidance on any matters relating to third party rights you should speak to your organisation's legal department.

Useful Reading

- [The ODI Publishers Guide to Open Data Licensing](#)
- [Licensing Open Data A Practical Guide](#)
- [National Archives Guidance](#)

Step 4 - Review datasets

Every dataset will vary in completeness and quality, before releasing the data you should strive to ensure the data is as complete, accurate and up to date as possible. However, there is no such thing as “perfect” data. [Scotland's Open Data Strategy](#) emphasises both quality and quantity of data.

Imperfections should not deter you from releasing data. When you publish your datasets, be explicit about any limitations and add caveats which will help any re-user understand the limitations of the data. The clearer you are about the limitations, the more usable your data will be as re-users will have a greater understanding about what the data represents. Additionally, re-users will provide feedback on data quality and mistakes, which will help improve the quality of your data.

[ODI certificates](#) are a great tool to assess how open your dataset is. The tool also provides tips and information about how to improve the openness of your dataset.

8. Make your Data Available

The next step is to publish your data. This section will take you through the steps you should consider when making your data available to others.

Choose where to publish

Existing website

You can choose to use your existing website to host your open data. This may be a time and cost efficient option when you have limited datasets available. Your website team will already be familiar with making other data files available for download.

Depending on the layout of your site and the search facilities available, it may be difficult for outsiders to find your open data. This limits the effectiveness and reach of your open data. Thought would have to be given to whether the layout of your website would need to be altered to enhance the discoverability of your open data. You could have some really interesting datasets available, but if people cannot find them, then they cannot use them.

Data Catalogues or Portals

It is becoming the de-facto standard for open data portals or open data catalogues to host an entire organisation's open data. These are essentially websites where the host can upload and update datasets and the public can search for and download datasets.

If you go down this route, your options will be:

- build your own platform in-house
- buy an existing platform
- use an existing open source platform

Where possible you should resist the urge to invest money and resources to build a system from scratch if there is a suitable existing model. For example, [CKAN](#) is the most popular open source platform in the UK and has been used successfully by many organisations. It is the UK Government's chosen platform for [data.gov.uk](#). DKAN is a drupal based open source system that was based on CKAN's key features. Both platforms allow for the easy publication and visualisation of data.

Regardless of the route chosen it is essential that your platform:

- allows authorised users to make uploads and updates
- supports your chosen [metadata standard](#)
- supports the uploading and downloading of your data in bulk
- supports common [open formats](#)
- allows the public to search metadata and download datasets

When choosing your option other factors you should consider are:

- **Total cost** – not just initial cost of building or buying system, but on going costs such as hosting support, maintenance and update costs
- **Satisfaction with features** – in addition to the essentials your organisation may value other tools such as data visualisation tool and API compatibility
- **Sustainability of option** – is there enough support? Is there enough in-house resource or will you need to contract out? Will you need to invest in training?

Examples of Open Data Portals		
Scottish Official Statistics	Aberdeen Open Data	The City of Edinburgh Council
New York Open Data	US Data.gov	EU Open Data Portal
SEWeb	Open Glasgow	UK Data.gov.uk

This list is a very small snapshot of the portals available!

Useful Reading

[Open Data Handbook – How to open up data](#)

[Sunlight Foundation Open Data Guidelines](#)

[Open Government Data Toolkit – Technology options](#)

9. You've published, now what?

Publishing your data isn't enough. For your open data to have positive societal and economic impact you must be committed to improving, updating and engaging with the public.

Improve your data

Continuous improvement should be a key feature of your open data initiative. As well as acting upon external feedback about your data, you should also have an internal review to see what areas you can improve.

[ODI certificates](#) are a great tool to assess your published data. They ask useful questions and give you clear targets to aim for in order to improve your data.

Promotion

Tell everybody! Let people know that you have opened up some datasets. Consider your audience. If there is a certain group of people you want to target, what would be the best way to get the message to them? A few simple promotion ideas are:

- press release
- announcement on website
- inclusion in your [Guide to Information](#)
- social media promotion
- post on third party sites - contact popular sites/blogs with an interest in this area and offer to write an article or post
- contact leading organisations who have an interest/work in this area – they will likely be happy to spread the word
- use any relevant internal mailing lists/contacts to directly contact people

Generate interest

Making people aware your open data exists is an essential step, but it isn't enough. You need to encourage them to use your data. It is worthwhile investing time and money in this stage because it means success: people actually using your datasets is the outcome you should be aiming for. It also brings many other benefits including:

- Greater civic participation in your organisation – your relationship with your customers and the wider public will become more open

- Potential positive impact on society and economic benefits if a new tool or app is created from the data
- Efficiencies – time and cost savings. Users will also be happy to give feedback to help improve data quality.
- You will know what to release next – as users start to understand what data you have available and what they need, they will begin requesting more datasets

Hack Events

Hackdays are a great way to engage with the community and bring together developers, open data enthusiasts, the local community and your organisation. These events allow developers and citizens to work creatively to solve issues. Promotion of your event is key to generate excitement and interest. Apps developed at hackdays can be very successful (see [EdinburghApps case study](#)), though the main aim should be to increase interest and participation.

Socrata has developed a [comprehensive guide](#) to planning a hackathon.

SEWeb Hackathon

SEWeb organised a hackathon event. Students from universities throughout Scotland were invited to come up with fresh new innovative ideas to make better use of available data, and to collect new local environmental data that can help further our understanding, and encourage people to get interested and get involved in Scotland's Environment. Feedback from all who attended was overwhelmingly positive and the next step is to see how ideas can be supported beyond the prototype stage.

More information about the event can be found in the [case studies section](#).

Competitions

Competitions give developers a slightly longer time frame to showcase what can be developed from your data. A prize will normally be awarded to the winner.

NYC Big Apps

Over five months, BigApps challenges developers, designers, and entrepreneurs to create functioning, marketable technology tools that help solve pressing civic challenges. In 2015 the 4 key areas are affordable housing, zero waste, connecting cities and civic engagement. Over \$125,000 in cash prizes and product development support is available to finalists and winning teams. More information can be found on [BigApps](#).

Conferences and Meet-Ups

Face-to-face events are a great way to encourage use of data. Conferences are a traditional way of engaging with others where you set the agenda and arrange presentations on set topics. It is a great way to show what you have been doing and share your future plans and developments. Due to the topic and audience you are trying to attract, it is best you try and include interactive elements where possible. This will allow you to find out more about them, discover interest level and enable re-users to connect with each other.

Instead of the traditional conference, you could host a more informal, participant driven event. A meet-up could allow participants to form the agenda, give presentations and lead sessions on their areas of interest.

Any event will increase exposure and potentially increase likely users.

Develop an App

Get creative and make something yourself! One of the best ways to show what your data can do is for you to make something yourself. If you have the time and technical resources you could develop a user-friendly app which addresses an issue in your organisation or community, or even just demonstrates what your data can do.

Clacks Kids

As part of the [Open Data Scotland](#) programme run by Nesta and Code for Europe, Clackmannanshire Council developed an app, Clacks Kids, which would help parents and carers access personalised childcare resources. The app has been developed to support the councils Making Clackmannanshire Better Programme.

More information of Clackmannanshire Councils experience developing the app can be found in our [case study section](#).

Run the City App

Run the City is a guided tour for runners and winner of the 'wild card' challenge for [EdinburghApps](#) 2014. Runners will always get their run in, even when away on business, but running in a strange city is difficult when you don't know where to go. Run the City solves this challenge as the app, through audio messages, not only gives runners directions but also highlights their attention to the city sights and makes their run in Edinburgh more engaging with anecdotes about the areas they are running through.

It utilises the Council's open data as content for the app and will also create data we can make open. More information can be found in the [case study](#).

Make it sustainable

Holding hack events and competitions are ideal in the short term, but are not sustainable. You need to make open data become the norm in your organisation. To do this you need to appoint someone, whether existing or additional, to be responsible for your open data efforts. You will then require others to support this role by being responsible for open data in their own division or departments. This does not need to be a new person, but could be delegated to existing employees. These individuals should work together to co-ordinate open data efforts in your organisation, publish data, engage with public and address feedback.

[Helsinki](#) is a great example of how open data can transform public services for the better.

Useful Reading

[Code for America Planning for sustainability](#)

[Open Data Handbook](#)

[5 Stars of Open Data Engagement](#)

[Open Government Data Toolkit – Demand and engagement](#)

[The ODI – Engaging with reusers](#)

10. Training and Resources

To help get you started we have pulled together all of the useful resources referenced throughout this pack, plus a few extra.

Scottish Government Training

In July 2015 the Scottish Government ran a procurement process for the provision of open data training across Scotland. Once a successful supplier is selected, it is expected that training courses will begin in September 2015. Training courses are expected to be on offer until September 2016, at which time the training offering will be reviewed.

More information about the training available will be provided [here](#).

Online Resources

The open data guides cover most elements of open data and you may find it helpful to refer to them first before using more specific guidance.

Open data guides – For those new to open data
Open Data Handbook
Open Data White Paper
8 Principles of Open Data
Open data guides – Further information
Open Data Field Guide
Open data value framework
Open Government Toolkit
Open Data Playbook
W3C Best Practice
Asset register
National Archives Asset List Guidance
National Archives Identifying Information Assets and Business Requirements
National Archives Information Asset Register Guidance
National Archives Public Sector Information Guidance
Engagement
How to run a hackathon
How to run datapalooza or data jam
5 Stars of Open Data Engagement
The ODI – Engaging with reusers

Formats
5 Star Schema
Choosing formats
Licensing
Guide to Open Data Licensing
Publishers Guide to Open Data Licensing
The Open Government License
Open Data Commons Licenses
National Archives Guidance
Creative Commons licence chooser
Licensing Open Data: A Practical Guide
Metadata
The ODI – Marking up your dataset with DCAT
Data Catalog Vocabulary (DCAT)
Dublin Core Elements
DCMI Metadata Basics
NISO Understanding Metadata
Selecting Data
Socrata Top Datasets

Annex A Templates and Checklists

3 supporting resources have been developed to help authorities develop and implement their own open data plans.

Selecting Data Checklist – can be used to make sure that all of the steps for selecting data are covered.



Selecting Data
Checklists.doc

Open Data Publication Plan Template – simple template designed to help authorities list what open data they plan to release and when, along with some other key metadata.



Open Data



Open Data

Publication Plan Temp Publication Plan Temp

Creating a Dataset Checklist – can be used to make sure that all key steps are considered when creating a dataset.



Creating a
dataset
checklist.doc

Annex B Case Studies

The following is a collection of case studies which demonstrate the value that open data is bringing to individuals, companies and public authorities in Scotland.

1. [Clackmannanshire Council: Open Data Scotland and Code for Europe](#)
2. [Crichton Institute: Regional Observatory](#)
3. [The City of Edinburgh Council: ARC-E App](#)
4. [The City of Edinburgh Council: EdinburghApps](#)
5. [The City of Edinburgh Council: Run the City App](#)
6. [Royal Commission on the Ancient and Historical Monuments of Scotland – SENESCHAL](#)
7. [Registers of Scotland: Cadastral data for the INSPIRE directive](#)
8. [Scotland's Environmental Web: Ecohack](#)
9. [Scottish Government: Dialogue App](#)

If you have a case study you would like to share or you would like to be put in touch with the case study subjects, then get in touch – stuart.law@scotland.gsi.gov.uk

1. Clackmannanshire Council: Open Data Scotland and Code for Europe

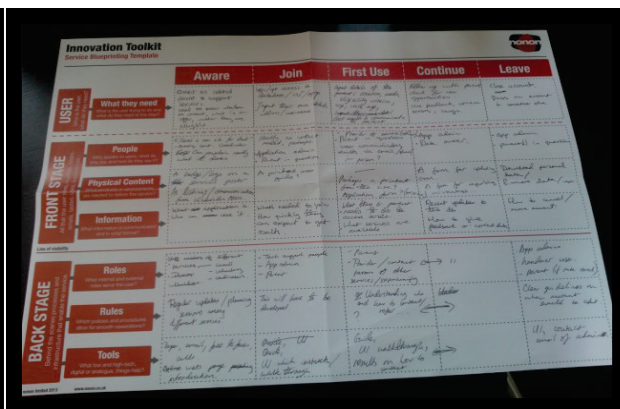
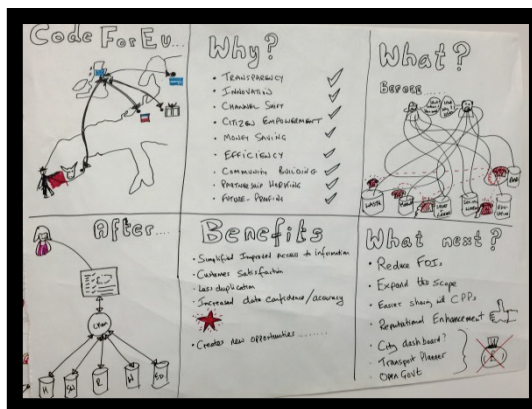
Many of the problems which Open Data is typically used to solve don't exist in a small Council. Mass transportation isn't an issue with only 3 bus routes. There isn't a developer community taking part in hack events and generating innovative applications. Why then should a small Council pursue Open Data?

Open Data affords opportunities to be more efficient, whether through being nimble by adopting freely available Civic Apps to improve service delivery or by reducing the time spent responding to information requests from the public or partners. In time, it is likely that we will be required by statute to share more data anyway.

Location based services will become increasingly important. In the near future citizens will expect to be able to use their personal device and using the tools of their choice, see and interact with services which are nearby. In order for Council services to be part of this world, data about those services must be published openly.

Background

'Open Data Scotland' is a programme which has involved over the last year, four of Scotland's local authorities - Edinburgh, Aberdeen, East Lothian and Clackmannanshire. Aberdeen and Edinburgh City Councils have been at the leading edge of nascent open data work in Scotland and can be seen as 'mature' players, willing to share their knowledge and expertise with others. East Lothian and Clackmannanshire came to the programme with little or no experience of open data, but with an ambitious attitude and a willingness to experiment and embrace innovation.



Each local authority was appointed a 'Code Fellow in Residence' (a technologist) who has worked intensively with the local authority staff over 12 months to open up data sets, publish these on a portal so they can be re-used and created new digital public services - apps and web content to enhance both citizens and visitors experiences of the local authority. A 'Designer in Residence' also worked with the technologists and local authority staff across the four authorities.

We have been part of the wider 'Code for Europe' programme which has involved designers and technologists across Europe working with civic authorities to increase the use of open data sets to enhance civic transparency and improve decision making.

Clackmannanshire Council is Scotland's smallest mainland local authority and their learning from the programme below demonstrates that this is not beyond the reach of any government agency or public body in Scotland, with the right culture and access to skills.

Approach

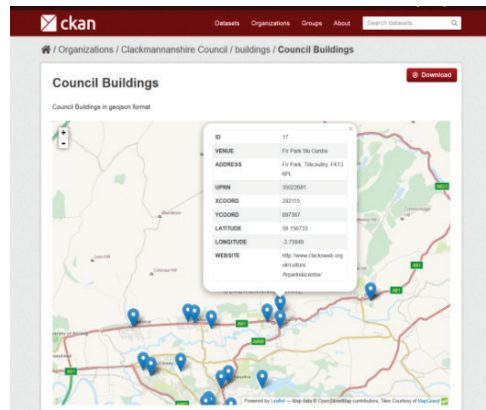
With little prior knowledge of Open Data, our initial ambition for this project was to develop a mobile app which would provide personalised access to childcare resources as part of the early intervention strand in our 'Making Clackmannanshire Better' change programme.

As the project evolved we focussed on three main areas: Knowledge Transfer, Developing a Portal and our Childcare Application.

Knowledge transfer provided Council officers with information about standards and systems used in Open Data, the ecosystem of agencies involved in Open Data and the sources of existing Open Data applications which were available for re-use.

Outcome

We successfully built a CKAN Open Data portal and developed an app called Clacks Kids which is a location based service directory. Spin-off activities have lead us to develop an open GIS mapping portal which is likely to inform our future GIS Strategy and a reporting platform based on the Open311 standard.



Lessons learned

- The biggest lesson is that even a very small Council can engage with Open Data. The key components are having access to people with the right skills and attitudes, easy access to servers and software with which to tinker, and permission to experiment.
- Developing an Open Data infrastructure is important if the project is to be sustainable. While the “app” may be the most high impact product, without the infrastructure there will be no data to use in the app. Apps are also transient, they will be replaced by other apps in future.
- Follow your nose! We have revamped our GIS infrastructure opening up the opportunity of significant future cost savings as a direct consequence of our need to provide mapping tools for this project.
- Civic Apps are not as easily transferrable from one Council to another as you might expect.
- In a shrinking Council, persuading others to prioritise your project can be difficult especially when there is nothing concrete to demonstrate. You need to have something to show people. Once we had a working app, we then found services coming on board as they could see how it could be used.

2. Crichton Institute: Regional Observatory

In promoting this project both within and beyond the region, both local and global issues have collided. It is clear that new technology has created an accelerating hunger for information and we have observed with interest the parallel dialogue around Open Government and the 'Smart City' agenda. It seems to us that there is something of a gap in strategic thinking and policy and we have been asking the question: '...if there is such a thing as the Smart City, what would the Smart Countryside look like...?'. So there is a dialogue that needs to take place about rural-specific opportunities in the open sharing of data and service improvement and provision which we feel should follow.

The above issue is compounded by the overall capacity constraints which rural agencies face. While an obvious plea would be for more resources for rural areas in this field, there are perhaps more immediate advances that can be made by better sharing of experience and existing resources currently being directed to urban areas/solutions.

Raising this issue has gained us some exposure. We have, in addition, been cited as an example of regional-level data innovation in the recently published SG Open Data Strategy. We have also been encouraged by the fact that others, including those much better resourced than us, have had to grapple with the same issues and that we are seeing emerge a community of like-minded people who are prepared to provide advice and support.

Background

The objective of the regional observatory (RO) is to provide an information and knowledge portal that acts as a one-stop open access service for open data, information and intelligence on a wide range of social, economic and environmental factors across Dumfries and Galloway and the South of Scotland.

Rural areas have in general been poorly resourced in terms of data gathering, access and usage and D&G and the South of Scotland are no exception. In many cases, public and 3rd sector agencies have had to resource external consultancy to assist with even the most basic of regional data gathering and interpretation (the exception being the local NHS Board which has a well-resourced public health intelligence unit). Effective data sharing has, as a consequence, been somewhat the exception.

With a lack of capacity and no consistent track record of high level collaboration, the benefits to be derived from sound data management and data sharing have not been fully understood or exploited. While individual agencies are striving to take advantage of new information and communications technologies, the absence of effective data management is inhibiting the genuine desire to move to a more 'open government/open data' culture. Change in recent developments in Community Planning, a move towards better understanding the needs of service users and service integration (within and between agencies) is however supporting the drive towards a culture of open government/open data in the region.

Approach

The setting up of the RO was approached as much as an organisational development and trust-building issue as simply an exercise in data management/sharing. Hence the RO has been developed in close collaboration with the Dumfries and Galloway's Community Planning Partnership. The objective from the outset has been to ensure buy-in to the concepts of Open Government, collaboration, service improvement and data sharing across institutions, communities and businesses across the region.

The first step was to engage in discussions with the local Community Planning Partnership to ensure that there was a view that such a thing as a data observatory was needed, but also that there was high level cross-agency support for its development. The proposal was greeted with enthusiasm and two tranches of support funding for the early development stages of the Observatory. With support secured, an initial Technical Group was established which included representatives from Dumfries and Galloway Council (DGC), NHS Dumfries and Galloway (NHSDG), Scottish Centre for Enabling Technologies (SCET) and the Crichton Institute (CI).

This group worked together to agree on the vision, look and feel of the online portal, the process of populating it, maintaining it and promoting it. As part of this some desk research was done to look into what other observatories and open data portals offer. Some of these were approached directly to inform us whether we were heading in the right direction. Armed with this background, a Project Initiation Document was agreed and specialist part-time consultancy engaged to convert the vision into reality.

One issue we struggled with was '...when do we go public...?' We were confident with the basic functionality/feel of the portal, but less assured on content issues. We have made life difficult with the notion that our customers would not just be the usual professional data-users. Our vision also included, for example, local P6 pupils using

the portal for a project on “Jobs in our Region”, complete with map-building and visualisation tools.

We decided to opt for a ‘soft launch’ of the RO website in June 2014 and we plan to go fully public in early summer now that we have circa 130 reports/data sets etc uploaded. The Technical Group has now become a Data Suppliers Group. With the key technical issues addressed and the portal functioning it was felt that the ‘harvesting’ of data and documents should now widen to include others.

Outcome

Phase 1 of the project is complete. We have a well- functioning and attractive portal. It is still fairly one-dimensional although we have now started to upload spatial data. We are now looking at how best to enhance the portal. Discussions at a Crichton Institute Partnership Board meeting and at the autumn workshop showed a great interest in RO providing access to a regional economic dashboard, providing instant, up-to-date access to key economic performance data for Dumfries and Galloway. Further wishes include access to interactive mapping and which is based on raw data.

Suppliers Group now also includes representation from Third Sector Dumfries & Galloway. Approaches have been made to Police Scotland and other local community organisations. These discussions have served a dual purpose. As well as serving to promote the RO and secure further data access, they have opened up dialogue about the promotion of data sharing, better understanding, and more effective service delivery. Feedback has been overwhelmingly positive and encouraging. People like our vision and the objective, non-partisan approach. This was supported through a workshop in the autumn of 2014, which was also attended by Scottish Government. It also provided us with confirmation that we are moving in the right direction, that we have the same issues as other open data projects, but also provided us with a list of priorities on what to do next.

Lessons learned

Over the last 18 months, in addition to achieving our technical goals, we have significantly improved the level of inter-agency dialogue around the issue of Open/Shared Data and its benefits. In what has been co-incidental good-timing, we set out on the journey at the same time as the Scottish Government was addressing the whole Open Government/Open Data agenda and it has been both helpful and re-assuring to share in the SG networks as we drove the project forward.

We have also come to see our limitations, which are beginning to affect the further development of the project:

Manpower and Commitment:

CI has been able to give direction and drive to the project with (very limited) financial support from the Community Planning Partnership and the allocation of 2 part-time posts. Since we do not have any authority over our partners and stakeholders, we have had to rely on goodwill and individual commitment to the project. This has worked well but has its limitations and has impacted on pace of delivery. To address this we are looking to now support individual data-related projects to demonstrate more widely the practical benefits that flow from shared/added-value use of regional and national data. It is a process of building enthusiasm! It takes time to bring people together, to enthuse them and to get them to see and understand the benefits of open data; as part of this increased/improved reach of coverage across the South of Scotland to assist regional awareness and intelligence;

The maintenance and development of the portal requires a dedicated person to ensure continued expansion of high quality, user-friendly data and reports available. CI is providing this on a temporary basis but our support is 'generalist' and we have had to buy-in technical support. We also have no direct data analyst support and have sought to secure this through partner engagement.

Technical expertise

During phase 1 we bought in technical expertise through one of our academic partners. However, being more familiar with the technical requirements to access open data and in turn to visualise it etc. we have become aware that other technical skills are needed.

Technical expertise in software development is now a real need and here we require someone who can also interact well with non-technical users to translate needs ideas into reality. (Having the job and person specification of the Nesta Code Fellow would be useful)

Finance

Public bodies are facing cuts and staff reductions, hence money for development of open data platforms is difficult to obtain.

Even when working with open source applications there are costs attached to the development, therefore it is vital to show efficiencies and other benefits, i.e. improved location based services, early on in the project

A sustainable model for on-going delivery of RO through dialogue with the strategic partners is vital and this will be a priority over the next 12 months. The recent publication of the Scottish Government's Open Data Strategy will assist in making the case for continuing support.

3. The City of Edinburgh Council: ARC-E App

The app enables the service area (Health & Social Care) to open up data of services. Previously service information for addiction recovery support groups in Edinburgh had only been available through leaflet and PDF formats. An API was created with this data and can be shared with the app and other applications.

The app has been built so that it is scalable and more features can be added. The framework of the app can also be redeveloped to suit other groups with similar needs.

Background

ARC-E App was created by TM&R Ltd (Anne-Marie McMann and Ella Robbins) and developed by David Morrison as part of the [EdinburghApps](#) 2014 civic challenge programme.

The application, the Addiction Recovery Companion - Edinburgh app (ARC-E app), is aimed to support those in the process of recovery from an addiction. The app allows users to document and reflect on their progress, becoming a constant companion and supporting them as they help themselves. It will make it possible for people who already have some support from Council services to use their mobile device to help them in their recovery from addiction.

Approach

The approach taken to develop the app was an agile, co-creative approach. Through working this way the team have been able to develop the app with the Council service area and services users to ensure that the deliverables are being met and a worthwhile product is created.

Design & Build

The approach of the design was to put the needs, wants and limitations of the users at the heart of the design process. From the start, the project ran focus groups with potential users of the app to inform on how to move forward. First the team made sure that the objectives reflected problems that impact recovering addicts and then tested and iterated on potential solutions using low-cost prototypes before implementing them.

To build the product, a version of the Scrum agile development approach was adopted and adapted to fit the small and distributed team. This approach recognises that requirements often change during a project and the team has to be in a position where it can quickly adapt to these changes.

The project was divided into objective themes. Each objective theme contained a collection of user stories and at the end of every iteration the team produced a build of the app. This build was tested against the user stories for the iteration and used as an artefact for user testing. This allowed the Council to assess the current build for milestone acceptance and potential users to test and feedback on its value to them. The outcomes of testing influenced the planning of future iterations e.g. new user stories maybe added to the backlog or remove ones that have been shown to be invalid. This ensures that a meaningful product is being built at every stage.

Outcome

ARC-E App was developed in order to:

- improve access to appropriate local support services and information about the service.
- make it straightforward for users to reach out for immediate support in times of crisis.
- help users keep track their appointments and commitments, related to managing their recovery.
- keep users up-to-date on events organised by the council or by members of the recovery community that might be relevant to their recovery.
- allow users to look back at daily messages to support motivation to stay on track.
- allow users to access mindfulness activities, particular during a crisis/emergency.

The app is currently being tested and will launch in September 2015 therefore the actual user outcomes and benefits cannot be measured until after the app is released.

Lessons Learned

The main lessons learned have been around working co-creatively. The client (Health and Social Care) and the end user (people in recovery from addiction) have been involved at every step of the process. Working this way has ensured that milestones have been hit on time and on budget whilst creating an app that meets the user's needs and achieves the objectives set out by Health and Social Care.

4. The City of Edinburgh Council: Edinburgh Apps

This programme is completely transferrable to any other organisation and sector. We did not create something that was untried – civic challenge competitions take place all over the world, and are very successful. Supporting events, hack weekends, data days etc. are also happening widely, and are not expensive to do. All of these events add to learning and increases awareness of the power of open data. It is a new way of working, but it is already the way many companies work, and something the public sector needs to do to find efficient and cost effective solutions.

Our track record speaks for itself – our agile approach to development means we can build quality products quickly and we know they meet customer needs. Most of our products are shareable which means the public sector can use them right now.

Background

Launched in 2013, EdinburghApps was the first event of its kind in the UK, a civic challenge programme that works with the Council and other partners, encouraging developers, designers, creatives and small businesses to take part, and offering winners business support and the potential opportunity to work with the Council to develop their concepts further. Participants choose from challenges set by the Council around a number of key themes.

At its core is a vision to change the city through encouraging innovation with technology, design and user-centric development. Edinburgh has exceptional design and tech communities and a large number of young companies in these areas whose fresh thinking mean that Edinburgh has great opportunities to produce original and cutting edge solutions to city challenges.

The programme of challenge events:

- supports growth of and partnership with new IT, design and other related businesses and partners in the city
- encourages a digital culture change internally, supporting skill development for council officers
- delivers innovative and efficient solutions for the Council's customers, in line with the Council's priorities and the ICT and Digital Strategy objectives.

Edinburgh Apps was developed to support the Council's Open Data strategy. For each challenge, data sets are shared, increasing the Council's delivery of open data and opportunities for innovation EdinburghApps wants to change the city by

providing creative, customer driven solutions to city challenges. It aims to work with everyone interested in making this change happen.

Approach

EdinburghApps began as an annual once a year competition with the Council providing challenges and teams taking part over 6/7 weeks to develop strong concepts or/and prototypes which are then judged in a final event. The winners then have the opportunity to work with the Council to develop their ideas, and deliver products.

EdinburghApps now runs a range of events to encourage solution finding working with key partners, Council officers and customers

- Annual challenge competition
- Subject hackathons
- Service area mini events

All of these events aim to support partners in finding innovative solutions to business and city challenges. Data is a core requirement in all of this, and is published as open data whenever possible.

Winners of these events have the opportunity to take forward their proposal for development with the appropriate area.

The benefits of this approach are:

- Delivery of new digital products which meet a clearly defined need
- Delivery using an agile approach, and at a far reduced cost to working with larger companies
- Customised solutions, co-created, which are built directly to meet requirements
- Building longer term relationships with local IT & Digital companies
- Opportunities to support the growth of the city's business economy

The competition event is now in its third year and has been very successful encouraging a wide range of entries and the delivery of a number of products. These include:

- Tend – routing tool which optimises planning and deliveries for Health and Social Care's Equipment Store
- Recycling Edinburgh – a location app for recycling facilities in the city

- Run The City – an app aimed at visitors looking to explore the city using running routes, offering a commentary on places of interest
- ARC-Edinburgh – a buddy app to support those in recovery programmes for addiction

In two cases the Council helped winners to start their business from scratch, and also supporting participants to find other business opportunities. We recently launched Edinburgh Up Close, working with technology developed by a winner from EdinburghApps 2013.

The event runs in three events – a kick off weekend, midway workshops and the judging final.

Outcomes

When EdinburghApps was first launched it was intended to bring about a number of benefits, including:

- new thinking to solve city challenges
- innovation in technology and design
- the sharing of civic data
- development of new businesses
- social change for the city

The programme has achieved these outcomes, but it has also brought about much more:

- innovative and cheaper solutions
- improved sharing and publishing of open data
- ongoing relationships with new businesses
- change to ways of working
- awareness raising for open data
- new business thinking
- benefits to customers

Lessons Learned

EdinburghApps' first year was a proof of concept – this is a good approach, it allows learning on format, process and outcomes. We have tweaked the main event and expanded to include a June event to build interest in the main competition. Longer term (funding permitting) having three a year is our aspiration, to continue to build relationships with the tech community and increase traction and knowledge sharing in the Council. We are working with other partners now as a logical progression in

identifying 'city' challenges, not just service challenges. There are synergies for organisations both in terms of challenges and for product and data usage. We expand the sharing of data as well as the sharing of ideas.

- **Build support:** it is important to have a suitable sponsor in your organisation (and some funding) to do this. Our first year proved it was possible – but we also could demonstrate it was being done elsewhere and this helped us find supporters. Align with relevant strategies in your organisation, this will also build support.
- **Changing business thinking:** when we started this programme we didn't realise the impact of bringing business change into the Council. Inviting developers and designers to work with us brought fresh thinking and new ways of working. This has had an interesting internal ripple, and we now find service areas keen to see what can be achieved, not just with a product development, but for their service generally.
- **Data:** this is the central component and takes time to find, cleanse and publish. This can be challenging and service areas may need help with this work. Ideally a data resource should be available to do this.
- **For the competition itself:** we have discovered that a mix of skills works better for teams, and builds better prototypes, so we now advertise across a number of sectors. You need developers to support the whole event, provide mentoring and knowledge sharing, so build relationships with your local tech and design communities. Some teams have no idea how to deliver their idea – we are now offering a midway workshop to help them learn how to build a proposal, cost and plan their concept
- **Challenges:** Whoever submits a challenge must now take part in the whole event, providing further information and advice for teams. This means that, whoever wins, the challenge owner is already engaged with them and it makes it easier to take the project forward.
- **Funding:** funding has to be flexible. You run the competition, and then agree funding. Sometimes this may mean putting a bid into a particular call. Whilst it's very helpful to identify funding beforehand, it's not always possible. As it's a competition we meet procurement rules and this has made it easier to deliver projects.
- **Sponsors:** a range of sponsors and types of sponsorship are required and this is time consuming to achieve. It is never too early to start working on this.

- **Communications:** communication has to be regular and continue throughout the year, not just around events. This requires resource and should not be underestimated. Engagement is essential to keep your audience interested and encourage them to come back each year.

Finally, and most importantly, look for any opportunity to work with others in this area. This is one approach but there many other methods for engaging and changing thinking, and developing open data. Build partnerships to make it easier to accomplish more. We work with individual developers and creatives as well as companies, and we do look for those who have the same goals for data and innovation and want to see change happen.

5. The City of Edinburgh Council: Run the City App

The Run the City App solves a challenge faced by running enthusiasts who are new to the city by providing routes. It increases users engagement with both the city by highlighting city sights and providing engaging an anecdotes.

The app has been built so it is scalable and with the intention that other cities and routes will be added.

Background

Run the City is a guided tour for runners and winner of the 'wild card' challenge for [EdinburghApps](#) 2014. Runners will always get their run in, even when away on business, but running in a strange city is difficult when you don't know where to go. Run the City solves this challenge as the app, through audio messages, not only gives runners directions but also highlights their attention to the city sights and makes their run in Edinburgh more engaging with anecdotes about the areas they are running through.

It utilises the Council's open data as content for the app and will also create data we can make open.

Approach

The project was undertaken over two main stages the Build Phase, and the Beta Phase. The initial build phase allowed us to deliver a minimum value product which can be tested to ensure that we are on track to deliver our objectives before full build is complete. This also ensures we are building a valuable product that people want to use.

The team that are developing the app have been working co-creatively with the Council service area to ensure that the deliverables are being met.

Build Phase

The build phase developed the main components of the app (login, cities, routes, tracker, activity, settings, activity timer and location tracker pages.) In this phase, before building the user-interface of the app we created a route planning functionality, which allowed us to design and record routes to be uploaded into our app. The milestone for this phase will be the delivery of the MVP (Minimum Value Product)

Beta Phase

This phase involves both production of the audio for the tour and device testing and user testing. The test app will be shared with runners/walkers around the city and asking them to use it and report back any ideas or issues they have. We anticipated that user testing of that app will take about three to four weeks but this is the most difficult phase to estimate as the results of these tests may determine that extra work will be required to complete.

Outcome

An engaging running app, which considers routes which would appear to walkers, has been created using Council open data. The app has been aligned to [Edinburgh Outdoors](#) and has created the additional benefit of creating data which can be shared.

The app is currently being tested and will launch in September 2015 therefore the actual user outcomes and benefits cannot be measured until after the app is released.

Lessons Learned

So far lessons learnt have been around troubleshooting issues with the technology. There have been issues with calibrating the app and therefore as anticipate the testing the beta phase is taking longer than expected.

6. Royal Commission on the Ancient and Historical Monuments of Scotland - SENESCHAL: Semantic ENrichment Enabling Sustainability of arCHAEological Links

Adopting Linked Open Data can benefit the wider heritage community through improving standards and introducing efficiencies. The benefits of publishing controlled vocabularies are starting to be realised. Simply by adding a [SENESCHAL RESTful service](#) into their [Collections Management System](#), the Archaeology Data Service, University of York were able to access the authoritative controlled vocabularies remotely. This not only eliminates errors that inevitably creep in through free text typing but improves the consistency of indexing records.

Background

Controlled vocabularies are key to both the storage of information in the database and its discovery online. In particular, we use thesauri to help classify the types of monument, object and maritime craft associated with each site record. We encourage the use of thesauri standards amongst local Historic Environment Records (HERs), who maintain databases about the historic environment for local authority areas across Scotland, and more widely amongst the profession. For cultural heritage, demand for Linked Open Data came from the research community. They saw the absence of controlled vocabularies as limiting opportunities for combining data from different providers through semantic links.

Major controlled vocabularies should act as hubs for the Web of Data, but publication as free text strings limits opportunities for connecting to data published elsewhere. Although we publish our controlled vocabularies online as thesauri, they are not particularly visible. The thesaurus for architecture, implemented in 2005, limits the potential of the terminology as the terms lack the persistent Uniform Resource Identifiers (URIs) that would allow our resources to act as hubs for the Web of Data. Adopting a Simple Knowledge Organisation System, or [SKOS](#), using the [Resource Description Framework](#) (RDF) provides a more flexible approach enabling the vocabulary owner to define a concept rather than the term. Each concept is expressed as a URI. The concept may then be expressed in any number of ways including alternate labels, dialect terms or in different languages.

The development of Linked Open Data for cultural heritage is part of good practice, helping to deliver Government policy towards transparency and Open Data. Scotland's Open Data Strategy encourages Public Data to be published in reusable,

machine readable form under an open licence which enables free reuse, including commercial reuse to open standards following relevant recommendations of the World Wide Web Consortium. Moreover, Public Data from different departments about the same subject will be published in the same, standard formats and with the same definitions. Defining the concepts used to index records about cultural heritage is a first step towards meeting that goal. It introduces the standards and machine-readable formats necessary for interoperability. However, before becoming operational, it requires acceptance of the standards, investment in research and development time beyond the day-to-day operations of many organisations.

Approach

The solution was to find partners who understood the Linked Open Data requirements and to secure funding to enable the research and publication of Linked Open Data. We were fortunate that colleagues at English Heritage already had an established relationship with the Hypermedia Research Unit at the University of South Wales and that there was a shared recognition of the need to publish our vocabularies as Linked Open Data.

The partnership approach between a university research department and public bodies enabled a successful application to the Arts and Humanities Research Council for a one year Knowledge Exchange project. This made it significantly easier for vocabulary providers, such as RCAHMS, to make their vocabularies available as Linked Data and for users to index their data with uniquely identified (machine readable) controlled terminology that is semantically enriched and compatible with Linked Data.

The resultant SENESCHAL project (Semantic ENrichment Enabling Sustainability of arCHAEological Links) brought together vocabulary providers from English Heritage, RCAHMS and RCAHMW, together with the Archaeology Data Service University of York with the domain experts, Doug Tudhope as Principal Investigator and Ceri Binding as Research Fellow, at the University of South Wales.

Outcomes

Intended Outcome	Actual Outcome
<p>Freely accessible and reusable persistent vocabulary resources as linked data, the techniques to achieve this being made freely available.</p>	<p>Achieved: http://heritagedata.org established as the home for Cultural heritage reference vocabularies and concept schemes published for RCAHMS Monument Type, Archaeological Objects and Maritime Craft Type</p> <p>Each concept has its own unique reference indicator.</p>
<p>Web Services to SKOS representations of the vocabularies and semantic enrichment services, along with web application components</p>	<p>Achieved: Downloads, Services and Widgets published. Users are able to download the vocabularies in various flavours of RDF (N-Triples, Turtle, JSON or XML). A series of REST URI calls have been developed for the vocabularies with results returned in a JSON structured string which permit AJAX callbacks for use in browser based applications.</p>
<p>Knowledge exchange tools to facilitate semantic enrichment (via URIs) within data entry. Development of downloads, Services and Widgets.</p>	<p>The project has also developed a suite of predefined visual user interface tools, or widgets.</p>
<p>Mechanism for feedback of supplementary terms to augment existing vocabularies</p>	<p>Not Achieved: candidate terms are still submitted through RCAHMS own thesaurus management system and data periodically uploaded to heritagedata.org website</p>
<p>Raising the profile of Linked Open Data with Historic Environment data curators in Scotland</p>	<p>Achieved: through a workshop was held in Edinburgh at the end of the project for stakeholders and presentations on Linked Open Data to stakeholder groups.</p>

	<p>Additional outcome:</p> <p>Demonstrating application of approach to handle multi-lingual expressions of concepts: During the course of the project we were able to make use of Gaelic translations of the monument type vocabulary provided by Historic Scotland from a Bòrd na Gàidhlig funded project.</p> <p>So a concept may now be expressed in English or Gaelic, with a preferred or alternate label.</p>
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Lessons learned

Publishing the terminologies as Linked Open Data is the first tentative step toward delivering cultural heritage data as [5 star data](#). Maintenance and update of the terminologies is not seamless and requires periodic data uploads, so the vocabularies may not be up-to-date instantaneously.

Exposing controlled vocabularies is inevitably organisation-driven and there is a need, where appropriate, to align vocabularies by theme to deliver further efficiencies in maintaining and developing resources. Through our membership of [MEDIN](#) we are exploring opportunities to develop more marine and maritime-related Linked Data vocabularies with colleagues in Belfast and Dublin.

The benefits of Linked Open Data have still to be fully realised within the business and more widely across the heritage community. However, making the terminology more openly accessible as Linked Data should encourage wider adoption of standard terminology, develop interoperability with other related resources, and encourage community feedback on possible improvements to the vocabularies. Opportunities will continue as part of the new organisation Historic Environment Scotland when RCAHMS and Historic Scotland come together in October 2016 to form the new lead body for Scotland's historic environment.

7. Registers of Scotland (RoS): Cadastral data for the INSPIRE directive

Scotland has made significant progress in publishing spatial data in a prescribed format driven by the EU INSPIRE directive. The local government sector is also currently developing a project to support a more collective approach to the management and publication of spatial information, providing access to all spatial data created by local government in a consistent form.

RoS is proud to be at the forefront of the provision of spatial data. We would recommend any approach that supports collective management and publication of spatial information. The challenges faced internally are far outweighed by benefits realised in the short and longer term.

The experience we have gained over the last seven years with INSPIRE has led us to increasingly identify considerable benefits of a coherent, trusted, and consistent set of information on land and property in Scotland. Enabling access to core land and property information in one place where it can be made available to all is increasingly important for Scotland as a whole.

Background

European [Directive 2007/2/EC](#), better known as 'INSPIRE,' was transposed into UK law in December 2009. The aim of the directive is to establish a spatial data infrastructure (SDI) for Europe. In general terms, this means providing an IT infrastructure which allows access to harmonised spatial data (data collected to the same standards and requirements) via the internet. In theory, an SDI should improve the access and use of data at local, regional, national and international levels, improve data sharing between public authorities, and improve public access to spatial data.

INSPIRE instructs EU member states to make spatial data available in a consistent format which come within the scope of the directive, as well as providing network services (mostly internet access) and metadata to support the data. You can read an informal consolidated text of the Scottish INSPIRE regulations [here](#).

The Scottish government is responsible for the management of INSPIRE in Scotland. The management is coordinated by the [Spatial Information Board](#) and work has been broken down into five main areas. The two areas of interest to RoS

are land, property and addressing; and service delivery and technical implementation. All EU member states are required to submit a monitoring report with details of available datasets to the European Commission every May. You can read the UK's most recent monitoring report [here](#).

Approach

Our first step was to establish a project and project team to handle the legal, commercial and technical aspects of INSPIRE.

During the lifetime of the project we consulted widely with other European and UK organisations, both within and outside our domain. Colleagues within the Scottish government and UK geographic community provided an excellent and knowledgeable resource. This enabled us to overcome a wide variety of challenges and allowed us to improve our own expertise in a number of crucial areas.

As well as the technical requirements, we had to consider the wider implications of INSPIRE on our business and staff. These included the effect on our commercial activity and the types of services we offered, our IT infrastructure, and any legal impact on our day-to-day activity. Each of these requirements was processed by a small multi-disciplinary team reporting back to the project board who led the overall INSPIRE strategy.

The nature of the legislation naturally broke the project into a number of phases, each of which required an increasing level of resource and budget.

- **Phase 1:** metadata – in May 2011, we complied delivering GEMINI 2.1 metadata describing our land register data and the future web mapping service (WMS).
- **Phase 2:** discovery and view services – in November 2011, RoS provided access to the metadata created in phase 1 to the Scottish Spatial Data Infrastructure. At the same time, RoS provided a view of its initial cadastral parcel data. For the deadline, RoS chose to use the services of a third party (ThinkWhere) to host the WMS element of the service.
- **Phase 3:** download – RoS delivered a service that will allow a customer to download all or part of our land register dataset. RoS again chose to use professional services of a Think Where to host the download service. Licensing considerations on the reuse of data were investigated and led to the creation of an INSPIRE download license.
- **Phase 4:** fully compliant – this phase will deliver full inspire compliance by supplying parcelled cadastral data by November 2017.

Outcome

RoS has delivered the first three phases and is on course to fully comply by November 2017. The service is being increasingly used by customers and has sparked wider thinking about our data within RoS.

Lessons learned

The majority of the challenges that RoS faced were based on technical and compliance issues as well as data re-engineering. Our recommendation for any organisation with an INSPIRE obligation would be to ensure your internal domain expertise is brought together to guarantee you have a firm grasp of the issues and technical requirements required. For RoS, this meant a multi-disciplinary team drawn from IT, Geographic Information Systems (GIS), senior management, legal, commercial and core business. RoS consulted widely with fellow organisations and took part in a number of UK and European working groups to make sure we had an understanding of our responsibilities, as well as having an opportunity to influence those discussions. We would recommend that organisations seek advice, support and best practice from professional bodies, as well as learning and investigating best practice from examples throughout the world, including RoS and the Scottish Government.

Although the investment in INSPIRE can be onerous, there are considerable benefits that can be accrued if your organisation is committed to INSPIRE. For RoS, this meant spatial data has been brought to the forefront of the business, improved our expertise, developed staff, and led to several customer-focussed initiatives. The core aspect of INSPIRE, data, and access to it, led us to re-evaluating data and data quality, as well as influencing a wider digital transformation project.

8. Scotland's Environment Web: EcoHack

Scotland's Environment Web wants to help people discover and understand more about the environment. Environmental data is really important – to provide context to reports on the state and quality of the environment, to improve our understanding of the challenges and opportunities our environment faces, and encourage communities, school children and individuals to investigate their own local environment further, observing what is happening around them, collect their own data and take action to protect and improve their local environment.

Background

Putting our objectives into practice, a hackathon event was organised over the weekend of 30th and 31st May 2015. Students from universities throughout Scotland were invited to Edinburgh, to come up with fresh new innovative ideas to make better use of available data, and to collect new local environmental data that can help further our understanding, and encourage people to get interested and get involved in Scotland's Environment.



Interest was generated in the event via a number of routes:

- We had university lecturers and students on the steering group and who also helped out as mentors so were able to help spread the word to their students and peers.
- A leaflet was sent to all universities and posted on their facebook pages.

- For students one of the most accessible forms of quickly sharing information is on social media, with a lot of co-ordinated information sharing posts on facebook and twitter (#ScotEcoHack) in the run up to and during the event that were shared and retweeted to an extended audience, bringing lots of new twitter followers to @ScotEnvironment following #ScotEcoHack

Examples of the interest generated on twitter can be found [here](#).

Approach

The EcoHack challenge

During the weekend event we challenged teams of students and mentors to explore data and develop ideas that could make a real difference in helping people observe, monitor, educate and take action in the environment. Ideas were encouraged around exploring new data relationships to help analyse the state of our environment and the impact it has on us, develop apps that use and visualise data to help explain and view the environment, and provide new ways of collecting and viewing data.

A wide range of open source data was available to the teams - dataset list – and they were allowed to choose any platform and programming language and spent the weekend collaborating and being creative, innovative and inventive.

In the run up to the event, we provided links to information about a range of environmental issues to inspire new Ecohack ideas, covering topics such as Air Pollution, Water, Soil, Young People and Citizen Science, Environmental data, Nature, data visualisation, EcoSchools, Climate Change and communities, mobile apps, infographics.

EcoHack mentors

We couldn't have run the event without the help and support from our mentors. With a wide range of skills and experience, they were on hand to provide advice and guidance to the students throughout the development of their ideas from initial scoping and definition right through to the development and presentation of the prototypes. Some of the mentors saw some real opportunities in using some of their own data and tapping into the expertise of their mentor colleagues, and worked together to develop some of their own ideas to share with us at EcoHack.

Outcome

Feedback from all who attended was overwhelmingly positive and we hope to keep in touch with many of those who supported the event – judges, mentors and students. The standard of ideas was very high and in the end the judges selected 2 winning ideas and 1 runner up. More information on the winning ideas and a video of soundbites from the event on the [EcoHack webpage](#).



9. Scottish Government: Dialogue App

In the digital age you need to find new and innovate ways to make the public want to engage with you. They are being inundated everyday with information and you need to make your requests stand out. If you want the public to respond you need to make it simple, quick and easy – people will be put off if they have to jump through hoops.

People are generally positive and keen for public authorities to try new ways of digital engagement. Don't be afraid to experiment with new tools, find what works best for your organisation and its needs.

Background

The [Open Data Strategy](#) made a commitment that we would engage with the public to discover what types of public sector data and formats would like to see released as open data. The Dialogue App to enable everyone to participate in an open discussion about what types of data they would like to see released. The format of the Dialogue App also encouraged users to fully explain why they thought the release of that particular data was important, allowing us to gain a better understanding of the viewpoints submitted.

Approach

The wording of the question was specifically chosen to be as open as possible. This was to ensure that we did not influence the ideas submitted and it gave users the freedom to submit any ideas they may have had. Succinct background information on open data and that strategy was provided to ensure that users understood what we were asking and why.

Outcome

- Dialogue App discussion took place between 8th June and 14 July.
- A total of 18 ideas were posted from 9 individuals which in turn received 8 comments.
- A further 11 individuals signed up to the Dialogue but did not contribute to the discussion.

This summary will not explain the ideas in detail, you can read all ideas in full [online](#). The ideas covered a wide range of topics. The image below shows the areas the topics broadly covered.



This image shows the ‘tags’ submitted by users to describe their idea

Of the 17 ideas submitted, 10 of them received ratings from other users (18 ratings in total) and 4 received comments. Due to the relatively small number of submissions the ability to analyse, obtain insights and conclusions is limited. The following analysis should be read with the limitations in mind.

The following table lists the ideas submitted by users:

Title	Formats (if mentioned)	Average Score (if rated)
Release data set of Polling Station Locations and coverage		4.0
MSP and Scottish Councillor expenses		4.0
Release data set of candidates standing at election as soon as possible		4.0
Recently validated planning applications - GeoRSS or similar.	GeoRSS feed	5.0
Shape files of administrative boundaries	Shapefile, KML	4.5
Join up existing sources - encourage use of linked data		
Boundaries and details of common good lands and assets	Shapefile, Geojson	4.5
Local authorities register of assets		4.5

Rental statistics		5.0
Heritage Change Data		
Town Centre Access Standards		
Elections Information		
Parking Bay Information		
Asset Registers		
Community Centre Information		3.0
Public authority abandoned buildings		3.0
Nursing Home Information		

The above summary shows that there were a wide range of ideas, covering many topics. Whilst many of the submissions had a clear idea about what type of information they would like to see released (and what information the dataset should contain), very few made any suggestions about format. The only suggestions around format concerned spatial data.

The most popular idea in terms of both comments and ratings was '[rental statistics](#)'. This idea concerned the release of data concerning the private rental sector and the user provided ideas of the type of information which would be useful. This idea received a full 5 star rating based on 5 votes. It also received 3 comments which were in full support of the idea.

Nearly a quarter of all ideas submitted concerned the release of information on public sector assets, both physical (land, buildings etc) and non-physical (asset registers). This suggests that the release of this information would be popular and well received by the public, although with the caveat that only a small number of people responded to the discussion.

Lessons Learned

This was the first time that the Dialogue App had been used by the Scottish Government, so we didn't know what to expect. The main 'lessons' were:

- Invest time in promotion – even if you think you have done enough, do more! The public are being inundated with information everyday and you need to find a way to make your work stand out from the rest.
- Timing – feedback indicated that the response rate may have been low because it was held over the summer period. Think about the audience you are trying to attract and then consider when they are most likely to engage.

- Be careful not to word your question too wide – trying to get the balance right is tricky. You want to give participants enough scope to answer how they want but not too wide as to put them off.



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