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Law Reform for Data

Providing legal clarity (Version 1.0)

Gordon Guthrie
RESEARCH FELLOW AT SCOTTISH GOVERNMENT
BIUS WORKING PAPER NO 5

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1 Introduction

1.1 Why Law Reform for Data?

Data is the foundation of the digital state – and a highly effective digital state must be built on clarity about data. Clarity about what it is, where it is, who may use and for what purpose, how it is to be used. But this clarity conceals wider and deeper problems. The law can only determine the ***will*** to use data, it cannot determine the ***means***.

An example would be the various registers[1] held by Registers of Scotland. The law ***wills*** that the registers[2], be available to the public in a joined up manner. However the ***means*** for that to happen are absent – despite parliamentary and ministerial commitments and support going back a decade. The registers are available, but remain unjoined[3].

The second element that this proposal addresses is the rule of law. Working Paper No 1.1 – ***Data and the rule of law*** focussed on the operation of the rule of law *when a case has got to court*. This paper also discussed understanding data in order to be able to mount a case – *the process of trying to get to court*.

Separation of powers applies to data. The legislature writes law, but the courts, and the courts alone, interpret and apply it. The legislature can define a *thing*, and a government department can *model* that thing in a data structure. But ultimately the model is subject to judicial review (this model violates my privacy, that model discriminates against you, yon model impacts her human rights).

The institutional architecture of the state must enable citizens and their advocates to make the case that a particular data model (and it use in process) violates the law. Obfuscation does not provide a veneer of legality.

There is a relationship between law and technical standards. Processes and procedures which create law and those which create technical standards need to be kept in sync and in harmony. It must be possible to reason both about the legal and technical use of data – and that requires that the legal and technical statements about data be standardised and they be unambiguously findable.

Data is a key building block of a Lego state[4] and it is worth thinking about law reform using the analogy of toys.

The law can state that the child must be able to build things from their basic elements – but it should not state if those elements should be Lego, Duplo, K'nex or Meccano.

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[1] https://www.ros.gov.uk/our-registers

[2] The Land Register, the Crofting Register, the Register of SSSIs, the Register of Applications by Community Bodies to Buy Land, the Register of Community Interests in Land, the Scottish Landlord Register, the Scottish Letting Agent Register

[3] https://davidhumeinstitute.org/research-1/2023/2/27/briefing-paper-scotlands-land-information-system-what-is-it-and-why-it-matters

[4] See Working Paper No 3 – ***The Lego state***

But the design of Lego, Duplo, K'Nex or Meccano all embody standards-as-law – a particular thing is either 'legal' Lego or it isn't, and if it isn't, it can't be used to build a Lego model – its just a standalone thing – its utility comes from its conformance with standards-as-law.

These twin parliaments – the parliament of laws and the parliament of standards – must be designed to work with each other. The parliament of standards seems, at first blush, to be a mere bagatelle – some techie nonsense – and yet it will make decisions that the state will be living with for a hundred years or more. The Register of Sasines has been with us for 406 years.

The use of the phrase 'a parliament of standards' is quite deliberate. A parliament is an organisational form that maximises consent: and, in particular, creating losers' consent. And historically parliaments have done that for different communities at different times.

The old Thrie Estaitis of Scotland were:

- the first estaite – prelates
- the second estaite – nobles
- the third estaite – burgh commissioners

Powers in the land all. After Union more communities were brought it – the big city rate payers (or male rate payers rather) in 1832, then in 1918 returning soldiers and older women, before all citizens in 1928 and reaching it's current form in Scotland of all residents in 2020 with the Scottish Elections (Franchise and Representation) Act[5].

The job of the standards body is to maximise consensus and to generate losers' consent (using loser in a fairly loose sense here) within its constituency. That is not the citizenry, or even all civil servants, but the critical technical staff who need to ensure its 'laws' are implemented.

The Thrie Estaitis of the digital world are:

- the first estaite – the data teams from all the departments and NDPBs
- the second estaite – the coders from all the departments and NDPBs
- the third estaite – the designers from all the departments and NDPBs

Like their predecessors these good burghers need to have their voice heard, and to see off unreasonable and unpayable demands from their sovereign overload and wanna-be despot, the power, in extremis, to say "that won't work" – speaking truth to power in the civil service argot.

This paper focuses on the particular mechanisms we need to service the needs of the first estate – the data specialists, and their obligations under the rule of law.

One of the superpowers of the big tech companies is their ability to automate procedures – and it is a superpower that the state must develop.

[5] https://www.legislation.gov.uk/asp/2020/6/contents/enacted

On first blush this paper proposes putting bureaucratic obligations on data specialists – an obligation to publish detailed data descriptions. But data systems are already self-describing - they have to be for the software developers working on them to do their job. The developers need to reason about data. The challenge for the state is to develop tooling that automates standards – that the obligations on data and discovery to be moved from the civil servants to the systems themselves. A properly structured data systems and API can cheerfully describe itself 10,000 times an hour at negligible cost.

Another reason data law reform matters so much is because of the implications of the data zip. There are a series of causal teeth that engage like, well, a zip.

If two datasets with the same definition (think person data or place data) have the same definitions in each of the 9 categories of Section 5 – then it follows that these two datasets can be merged into one.

If two datasets can be merged it implies that business processes that operate on them can be merged and consolidated (this reduces compliance costs for citizens and organisations and is a net win).

If two sets of business processes are consolidated, then it implies that the organisational units that execute these processes can be consolidated (this generates cash savings and reduces government expenditure).

```
         many definitions          -> one definition
enables many database instances    -> one database instance
enables many business processes    -> one business process
enables many organisational units -> one organisational unit
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Zipping one lets you zip the next.

This implies that work that starts with consolidation of data definitions ends with machinery of government (MoG) changes. Traditionally MoG is a prerogative of the First Minister (or Prime Minister at Westminster). This is a non-trivial change to the way the state works.

1.2 Who are you?

This is of direct interest to you if you are a data or technical specialist, or parliamentary counsel, trying to figure out the best representation of data in law. But is should also be of interest if you are an MSP, Minister or Spad, a think-tanker or policy person, somebody in delivery trying to build out or drive joined-up government.

1.3 Why should you read this?

You should read this to help understand how we put in place the basic hygienic administrative measures that will unlock change in the structure and function of digital government whilst protecting the rule of law and respecting the separation of powers.

1.4 Acknowledgements

This paper greatly benefited from conversations with Richard Pope, formerly of GDS and the author of the Government As A Platform Playbook[6] and Gavin Freeguard, formerly of the Institute for Government.

[6] https://richardpope.org/publications/2019/11/01/playbook-government-as-a-platform/

2 The BIus Project

This is Working Paper No 5 of *BIus - Basic Law-Making For Legislative Computer Systems* which is a research project looking systemically at how the state creates the digital systems underpinning its services.

Working papers are being released gradually for comment:
Working Paper X – ***The heart of the beast*** (published)
Working Paper 0 – ***The locus of change*** (published)
Working Paper 1.1 – ***Data and the rule of law*** (published)
Working Paper 2 – ***Rules as code*** (published)
Working Paper 3 – ***The Lego state*** (published)
Working Paper 4 – ***The remixable state*** (published)
Working Paper 5 – ***Law reform for data*** (this document)
Working Paper 6 – ***A solera for data cleansing*** (published)
Working Paper 7 – ***Experimental digital legislative processes*** (forthcoming)
Working Paper 8 – ***An Enabling Act*** (published)
Working Paper 9 – ***Reading legislation with a non-functional eye*** (forthcoming)
Working Paper 10 – ***Immediate Hygienic Measures*** (published)
Working Paper 11 – ***Jeff Bezos' Memo for Government*** (published)

BIus working papers are designed to stimulate discussion about key elements of the relationship of the state to digital systems and their delivery. Your feedback, input, and particularly criticisms of this paper are most welcome. Feel free to distribute it however you wish.

Working papers are published via the *Digital Policy* SubStack.

Author/contact: gordon.guthrie@gov.scot or subscribe to Digital Policy | Gordon Guthrie | Substack[7]

The author is an independent Research Fellow at Scottish Government under the First Minister's Digital Fellowship programme. The views of this paper do not represent the views of Scottish Government.

[7] https://digitalpolicy.substack.com/

3 Data in context

3.1 Why is data so important?

Data is the foundation of digital systems - good hygiene in the management of data is fundamental to high quality digital public services – and data management is poorly handled in the public sector.

This paper focusses on one particular aspect of the story reasoning about data, and it has Working Paper 1.1 – ***Data and the rule of law*** as a companion piece – both addressing different legal moments.

A proper data foundation is necessary to be able to build out the state as platforms[8].

But a bigger picture is described in Working Paper 3 – ***The Lego state*** which this paper builds on and Working Paper 4 – ***The remixable state***. Without the ability to reason about data, the state lacks the capability to improve itself, to reduce the burdens it places on citizens and corporations which have a direct economic costs, to reconfigure itself as circumstances change, both changes within citizens that come with ageing, and changes in society that come from the success of failure of state actions.

Process and procedures, what the state does, are actions on data. Changing data representations enables consolidation of process and elimination of work.

Governing a state without being able to reason about data is like trying to play chess without a board. Moves are more theatrical than purposeful.

3.2 What this paper doesn't do.

Data is exceptionally long-lived, data decisions are 100-year decisions and it is critical that there is appropriate constitutional oversight over them.

And data is going to be a coming battleground in politics – who can see what, who can do what with it, how the government uses and shares data are all going to be hot topics for the foreseeable future.

These larger political questions are outwith the purview of this paper.

But these competing issues of citizens' rights and government utility are made more tractable by a data landscape that can be reasoned about.

[8] see for instance https://richardpope.org/publications/2019/11/01/playbook-government-as-a-platform/

3.3 Why is it difficult to do this?

In *Practical Legislation* Thring[9] wrote:

> *I will venture to affirm that what is commonly called the technical part of legislation is incomparably more difficult than what may be called the ethical. In other words, it is far easier to conceive justly what would be useful law, than so to construct that same law that it may accomplish the design of the law giver.*

There are two sorts of 'law' that apply to our data – from the parliament of law and the parliament of standards – and they differ in their application.

It is important to understand that these are formally different things – to use the language of semiotics the law (mostly) addresses the **`Signified`** and the standards only address the **`Signifier`**.

To the parliament and the courts I am the corporeal being, ***Gordon Guthrie***, flesh and blood and the **`Signified`**.

As far as the data systems are concerned I am just ***Firstname: Gordon, Surname: Guthrie, etc*** – a **`Signifier`**.

Notice that there is one **`Signified`** but many **`Signifiers`** – this is not an abstruse point as it speaks to the rule of law, particularly when the **`Signified`** are human persons – and is something that I will return to later.

	Law	Standards
Things vs models	Cares about the **`Signified`**, the thing itself. About the **`Signifier`** it only cares that it is small enough for the purpose (You don't need to disclose your HIV status to buy a TV license…)	Cares about the **`Signifier`**, the model and its ability to capture the relevant attributes of the **`Signified`** required to perform some process
Joins	Cares about joining **`Signifiers`** that refer to the same **`Signified`** – *Parking Gordon* and *Health Gordon* and *Sexuality Gordon*. Focus on yes/no permission to join.	Cares about technical ability to join, and not permission. If *Parking Gordon*, *Health Gordon* and *Sexuality Gordon* have a common identifier (ID card number) they can be joined technically.
Prohibition vs Enablement	***prohibits*** or ***approves*** joins.	Cares about ***enabling*** joins whether they are or are not prohibited. Deals with technical prerequisites – like common indexes, citizen id numbers, etc, etc
Powers of Judgement	Separation of powers - the legislator doesn't decide what the law means, the judge does	The standards setter can sit as judge, jury and executioner in their own court

[9] Introduction to the 2nd edition – *Practical Legislation, The Composition and Language of Acts of Parliament and Business Documents* – 3rd edition, Luath Press, 2019

Localisation of effect	Rule of law, general acts (like GDPR) and case law means legal effect is never entirely localised – comes from a range of sources	Standards are entirely localised – these standards and these standards alone apply to this data repository

It may seem superfluous to say, but the 'parliament of standards' is in no way an equal of the parliament of laws but subordinate to it. Parliaments of standards are technocratic and not democratic.

For different entities (people, companies, properties) there are historic ways of referring to different classes of **`Signified`**'s in law.

The translation of these into legally acceptable **`Signifiers`** is currently a bespoke and somewhat arcane practice – the Business Analysts sit down with the lawyers and unpick the legal requirements. A process of gap analysis then surfaces missing requirements. There is a back and forth between the operational team and the technical/design team brokered by the Business Analysts and blessed by the legal team. Code is cut.

It is important to note that the two cannot ever be cleanly separated – the principle of minimum sharing of data impacts the shape of the **`Signifier`** that we represent the **`Signified`** with in our computer systems.

A state servant can propose a particular data structure as representing a person or other legal entity, and someone with standing can legally challenge that and a judge will either bless the data structure and dismiss the case, or declare that it doesn't conform to law and send the state civil servant back to the drawing board. The final adjudicator of state data structures is the court[10].

Critically the various components are smeared across multiple places, a bit of law, some national standards, some organisational standards, some team standards, some developers personal way of doing things.

For many state computer systems it is not immediately apparent what law grants the power for their operation – and this is particularly true for systems that implement non-functional requirements – shared logins for example.

There is a also a tension between the standards work and legal work. If it is technically easier to join datasets there will be political pressure to do so, to generate 'efficiency'. It is important to remember that 'efficiency', 'liberty' and 'privacy' don't naturally align.

There is an apparent paradox here. To maximise reconfigurablility and reduce costs the standards process should lead to any data source being simply consumable by any other

[10] This is in essence the same argument that is made in Working Paper 2 – ***Rules as code*** about code annotations not being justiciable and that tests generated from them can only demonstrate that a system violates the law but never that it conforms to it. There is no format of law and standards that can ensure state data systems *a priori* conform to the law. The goal is to eliminate egregious violations and make adjudication and justice as simple and painless as possible.

system across the entire public sector. The ***means*** to share data should be as wide and as general as possible. By contrast the drive to standardise the law around data management is driven by a desire to enable the minimum reuse of data proportionate to the legal requirements. The ***will*** to share data should be as locked down and restricted as possible.

The police do not need and should not get access to ***Health Gordon*** and ***Sexuality Gordon*** to deal with ***Parking Gordon***.

If the data that various state systems holds is opaque, and the legal basis for them is opaque and the legal basis for joining them one to another is opaque, then access to justice is impaired and the rule of law is eroded.

The purpose of this proposal is both to drive efficiency, more effective joined up government and also embed the rule of law in computer systems. Clearer processes for converting **`Signified`** into **`Signifiers`**, publication of data schemas so the data held by the state is open, a mapping of systems to powers that includes the legal basis of joining them up, all these things are necessary if the citizen is to be able to challenge the state in court, if state administration is to be subject to the rule of law.

Defining process and institutions that enable law and standards to run in harmony will not be trivial.

3.4 Why only sketches of the future state and implementation plan?

Unfortunately, it is not possible for me to create the final state – I am not a parliamentary draftsman nor lawyer, nor am I a data management specialist, at best I am a marriage broker. My role is as a synthesiser and not an innovator. This working paper is a sketch, some suggestions, of how the final state might look. The law reform process needs to be defined in detail and executed by qualified people.

This is a complex process that ties together a lot of disciplines with plenty of opportunity to go wrong, to make things worse.

The focus on the implementation sketch is therefore an iterative process with all the requisite professionals in the room and the ability to advance incrementally, enter and leave short dead ends, to make and correct small errors.

In parallel, Working Paper 6 – ***A solera for data cleansing*** explores some technical proposals for building an iterative framework in which the process of executing law reform on data can be executed. Any systemic codification of the law, such as advanced here, will be an extended process, a journey, and not the work of a summer.

4 Final state – definition of the necessary capabilities

4.1 Overview

It is important to define what abilities our final state needs to support so that an analysis of current defects can be made, a final state can be defined and an appropriate roadmap created.

Capabilities involve a range of disparate factors above and beyond law and standards, including resourcing and delineation of responsibilities. And capabilities span the parliament of law and the parliament of standards, and the executive, often times with a foot in more than one camp – which is one of the core complicators of this work.

4.2 The Capabilities

4.2.1 Introduction

This section will discuss all the capabilities:

- the ability to reason legally and parliamentary composability
- the ability to reason technically
- findability
- consumability
- reliability
- auditability and securability
- diachronically and synchronically queriability
- automatability

4.2.2 The ability to reason legally and parliamentary composability

Reasoning about data repositories to see if they can be joined should not require hunt-and-peck through the statute books – each system should have a single point of statement about its legal and technical wrap.

There are 9 aspects of data that need to be known to create a database.

Action	Description
Defining	Where the **`Signified`** is defined, could be legislation, regulation or ad-hoc. The definition of the **`Signifier`** is always in the system, it is a property of the database. Technical restrictions on the **`Signifier`** will lie in standards.
Auditing	This is general looking at the data for **`Signifier`** data quality, conformance with human rights, and data protection, checking that **`Signifier`** data is not available to the wrong people, weeding and bulk deletion activities for all **`Signifier`** data that applies to a **`Signifed`**.

Action	Description
Appealing	The process and procedures whereby a **Signifed** person or organisation or thing gets onto or gets taken off the database
Partitioning	Where and how the data is partitioned, across local authorities, across health boards, internally within SG and its agencies
Creating	The point of creation - and who, how and why the **Signifier** data must be created
Reading	Access rights to use and see all or any of the **Signifier** data about a **Signified**. This spans both full data access and the rights to see depersonalised and/or aggregated data for research purposes.
Updating	The processes for updating an element of the **Signifier** data in place[11].
Deleting	The processes around the deletion of a data item inside the **Signifier** data envelope[12].
Refreshing	Is the **Signifier** data once and done, or is it supposed to be up-to-date, and who is responsible for keeping it so, the state, or a citizen?

Any digital system will have these 9 things baked into it. Either the delivery process leads to a formal definition of each and every aspect of them all, or a software developer, in standing up the system, will make a series of assumptions and encode them in the implementation.

In order for this to have the property of legal reasonability, all nine should be in a single place, standardly expressed. Thring again makes the point[13]:

> *The same thing should invariably be said in the same words*

As much as possible the 9 things we need to know should be built around definitions added to the Interpretation and Law Reform Act (2010)[14]. It is not enough that the same words be used to describe the same thing in a single statute or ministerial order – they should be the same across them all[15].

[11] this is generally partial deletes or updates-in-place of items and not total delete/weeding of a set of collated data which is covered by Auditing – this is one of the messier parts – deleting all the data, the entirety of a **Signifier** that points to a particular **Signified** is not the same as deleting or updating a data field within a particular **Signifier**. For a detailed discussion of update and delete within a Signifier please see Working Paper 1.1 – ***Data and the rule of law***.

[12] see previous footnote

[13] *Practical Legislation, The Composition and Language of Acts of Parliament and Business Documents* – 3rd edition, Luath Press, 2019

[14] https://www.legislation.gov.uk/asp/2010/10/contents

[15] one of the great theological debates that roiled left wing politics in the 20th century was the question of *Socialism In One Country* – Stalin's great conception, as opposed to the Trotskyist notion of global socialist revolution. Among the far fringes of Trotskyism was the Argentinian Juan Posadas who (as well as looking forward to the coming nuclear war) wrote the book *Les Soucoupes Volantes, le processus de la matiere et de l'energie, la science et le socialisme* (*Flying Saucers, the process of matter and energy, science and socialism*). In it he pondered if socialism could be built on one planet alone or if we should seek the help of our Communist comrades on other planets. In the true maximalist spirit of Posadas – perhaps we should aim for a shared

One of the problems is that while every data system needs these 9 definitions and treats them as equally important – parliament and ministers don't. Legal powers are granted in different ways. Parliament usually cares about how somebody gets on or off a database (but sometimes delegates that to a Minister). It rarely cares about auditing data or is indifferent as to the data being partitioned.

When this single statement about data properties is created to enable data and services to be reasoned about, there must be flexibility so that the whole, the single data definition, can be composed from primary legislation, secondary legislation and general regulation – with power split between parliament, ministers and operational staff if appropriate.

4.2.3 The ability to reason technically

Technical reasonability is about all the things that are required to reason about data, so data definitions, machine-readable meta-data, data schemas (both synchronic and diachronic views), date standards, geospatial standards and so on – everything that is required to asses and maintain data hygiene.

4.2.4 Findability

Data needs to be holistically findable, which means findable as one or more of:

- a raw data set
- a depersonalised data set capable of being securely made available to external researchers (under appropriate research protocols – the Research Data Scotland model)
- publishable open data
- an API capable of being integrated into a product
- a full-blown service encapsulating some data that can be integrated into a product

It is not only the data that must be findable, but all the attributes required to reason technically about it.

4.2.5 Consumability

Consumability is all about the ***means*** and not the ***will***. Different mechanisms of consumption have radically different costs and opportunities. Emailing a named person to send you a million row spreadsheet is not the same as having a high-volume API that your administrative system can call. Invoking APIs requires you to have defined authentication. If data is personal, but also important for research purposes, depersonalisation needs to be baked into business process. Patterns need to be identified and promoted into law (see Working Paper No 3 – ***The Lego state*** for more details of encapsulation, exposure and publication of data as services).

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section of the Interpretation And Law Reform Act across many countries to enable international reuse and joining of data? Fair makes ya think.

Data access needs to be wrapped in a common access control model – which might be at a line level[16].

Where appropriate data should only be visible in a depersonalised form in data safe havens (the Research Data Scotland model).

Nominally the Digital Economy Act (2017) solves the data sharing problem – with Chapter 1[17] granting wide powers to Ministers to enable data to be shared. In theory.

In theory, theory and practice are the same, in practice they are not – as we can see by the story of data sharing during Covid. Gavin Freeguard's expert testimony[18] to the Covid Inquiry makes for an interesting read as to the type and scale of the data sharing problem.

The legal powers to share didn't eliminate the technical ability to share in any way.

4.2.6 Reliability

Data services need to be declared in terms of reliability. The Scottish Government has a single source of Post Office Address (PAF) lookup. Scottish local authorities use it to get a common matchable address format for many different services. It is a critical service. Such an operation needs to be wrapped in a declared set of Service Level Agreements – and process to define SLAs and assign appropriate levels of resourcing to maintain that capability need to be in place.

4.2.7 Auditability and securability

Historically separation of powers is applied to data at a security level – with external Tiger Teams looking for weaknesses and so on and so forth. Data needs to be held securely, and access to data needs to be audited to detect hacking.

4.2.8 Diachronically and synchronically queriability

One of the major problems that digitisation creates for the rule of law is the mutability of software system. When a dispute arises about administrative decisions (whether you get or don't get a particular benefit) it is important to be able to reason about how that decision was made – and that can be difficult to do if the systems, and the underlying data representation is changing underneath the feet of the claimants. Due consideration must be given to being able to understand data diachronically[19] (as it changes over time) and synchronically (holistically at a point in time) – both for individual data items and for data schemas.

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[16] see Section 6c of Working Paper 1.1 – ***Data and the rule of law***.

[17] https://www.legislation.gov.uk/ukpga/2017/30/part/5/chapter/1

[18] https://covid19.public-inquiry.uk/documents/inq000260629-expert-report-by-gavin-freeguard-for-the-uk-covid-19-public-inquiry-titled-module-2-political-and-administrative-decision-making-in-relation-to-the-covid-19-pandemic-dated-26-09-202/

[19] These issues are covered in Working Paper No 1.1 – ***Data and the rule of law***

4.2.9 Automatability

Putting the necessary information management around the production of necessary artifacts (metadata, change logs, APIs) brings with it a cost. The best way to mitigate that cost is to invest in tooling that generates the artefacts organically as part of the software development and deployment process, to build depersonalisation into systems at the design stage.
Both the consumption and production of data and data standards can be automated, but the state needs to invest in tooling to make this all easy. That tooling should, of course, be open source, reusable and developed collaboratively with other governments in other jurisdictions.

4.3 Summary

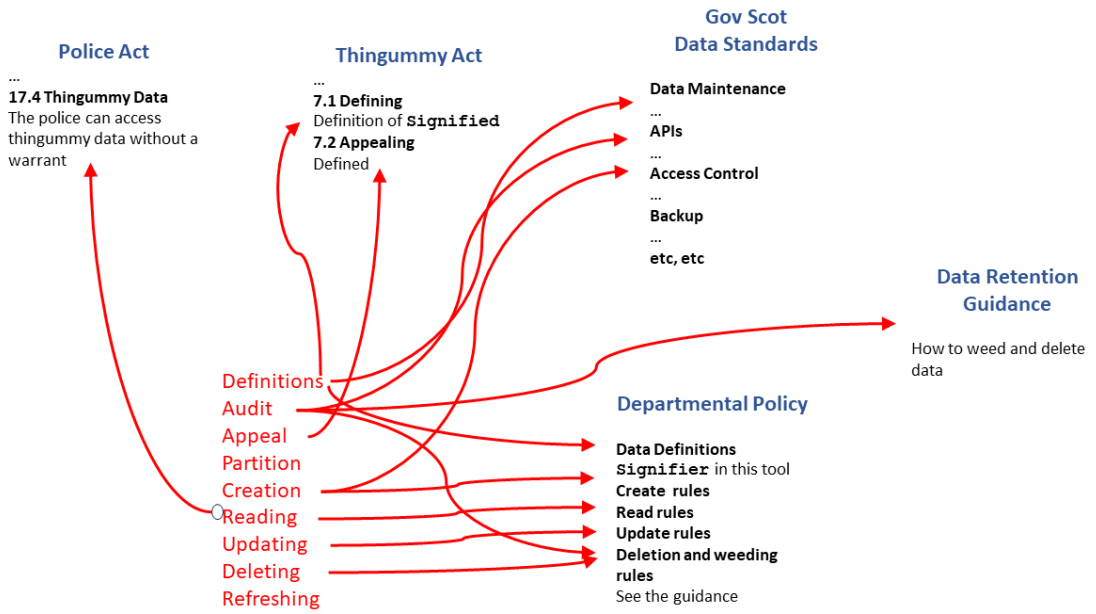
Enumerating the capabilities makes clear the scale of the problem. Lots of cross-cutting and interacting components. The parliament of laws and the parliament of standards are a pair of Siamese twins and the task of the law reform process is to gingerly separate them – ***in as far as it is possible***.

The separation process will be incremental and partial – focussing on the areas that matter most and with generous *de minimis* to exclude smaller and less important systems. A final state will be defined and then extant digital systems will be migrated to the final state over time.

And the separation process cannot and must not be seen as a technical thing – it is also critically a legal and political thing.

5 Current State

At the moment the 9 core definitions of data are smeared all over the place:



Data access rules are in a variety of places, the power to amend data access rules likewise. For instance, Section 35[20] of the Digital Economy Act 2017 gives very wide powers to vary rules around reading state data. Attempting to reason about whether or not a particular use of data is legal is difficult and expensive.

[20] https://www.legislation.gov.uk/ukpga/2017/30/pdfs/ukpgaen_20170030_en.pdf

6 Sketches of the future state

6.1 Introduction

This section will first recapitulate the final state institutional architecture that will support the new world.

This institutional architecture will be supported by a legislative architecture and an information architecture each of which will be explored separately.

The purpose of these architectures is two fold. Firstly it is to support the government in thinking about how it builds it services and how it can simplify and improve them. But the 2nd element is equally important – how to enable the citizens and organisations to get justice about administrative systems.

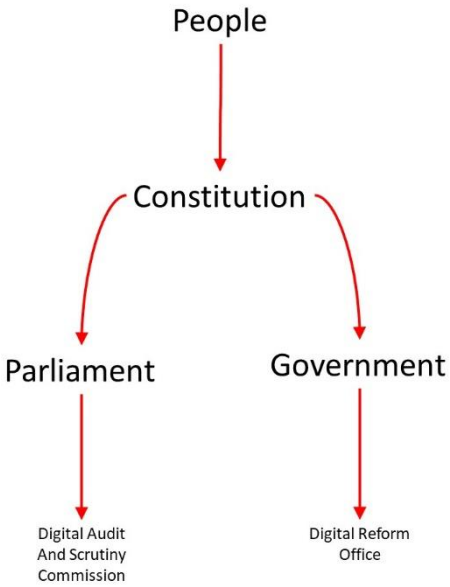
To that end, the recourse to justice cycle that the information architecture is designed to support will be outlined at the end.

6.2 Institutional architecture

The future state starts with the institutional structure outlined in Working Paper 1 – ***The locus of change***.

The enforcement mechanism proposed in this paper are standards, which are formally non-functional specifications of the technical systems. Working Paper X – ***The heart of the beast*** goes over the importance of this classification.

There will be a government body called the Digital Reform Office and a parliamentary body called the Digital Audit & Scrutiny Commission:



These two bodies are key. The DA&SC is a scrutiny and oversight body, and the DRO is a strategy and standards body.

The final state capabilities that are required span two architectures:

- Legislative architecture
- Information architecture

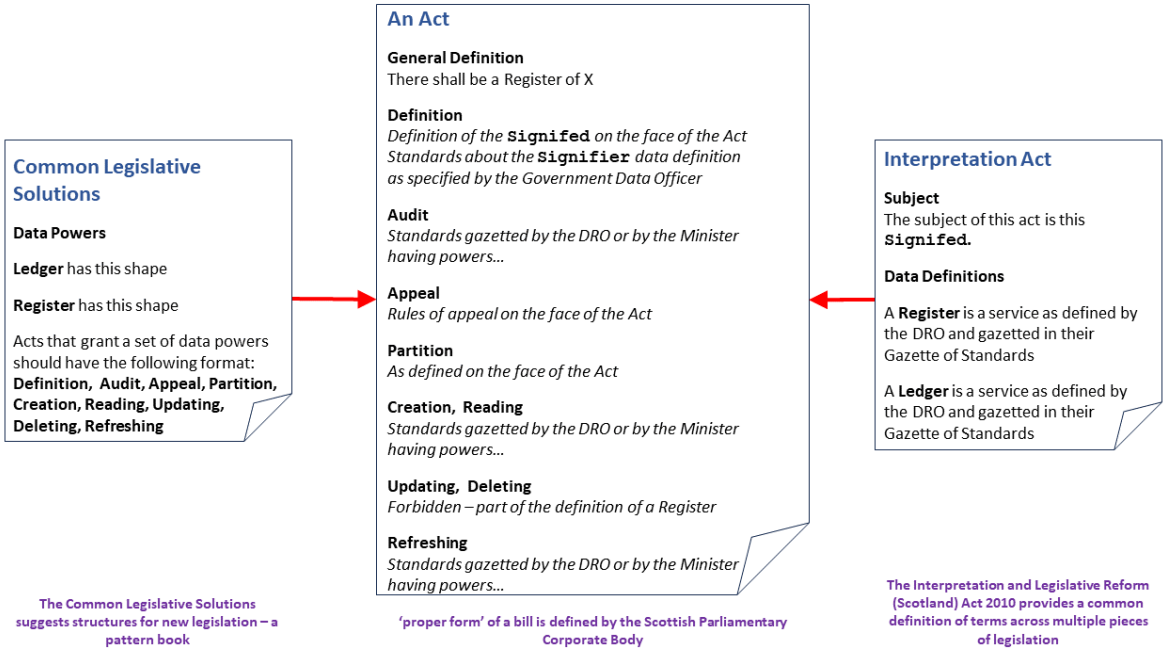
Capability	Legislative architecture	Information architecture
Legal reasonability and parliamentary composability	X	
Technical reasonability		X
Findability	X	X
Consumability	X	X
Reliability		X
Auditability and securability		X
Diachronic and synchronic queriability	X	X
Automatability		X

6.3 Legislative architecture

The proper form for the section of a bill that grants powers to run a digital system will be standardised to reflect the 9 required attributes.

The discontinuity as to what the legislator and the standard-writer care about as discussed in Section 4 is handled by the double-nature of the ***Definition*** – the law defines the thing, the **`Signified`**, the Government Data Officer specifies the standards that the data definition must match, but the operational team define the actual data structure of the **`Signifier`**.

This structure should be backed off by new entries in the Interpretation and Legislative Reform (Scotland) Act 2010[21] as well as entries in the Parliamentary Counsel's *Common Legislative Solutions* handbook[22].



[21] https://www.legislation.gov.uk/asp/2010/10/contents

[22] https://www.gov.scot/publications/guidance-instructing-counsel-common-legislative-solutions/

The newly defined entities in the Interpretation and Legislative Reform (Scotland) Act 2010 would just be the legislative equivalent of permission masks:

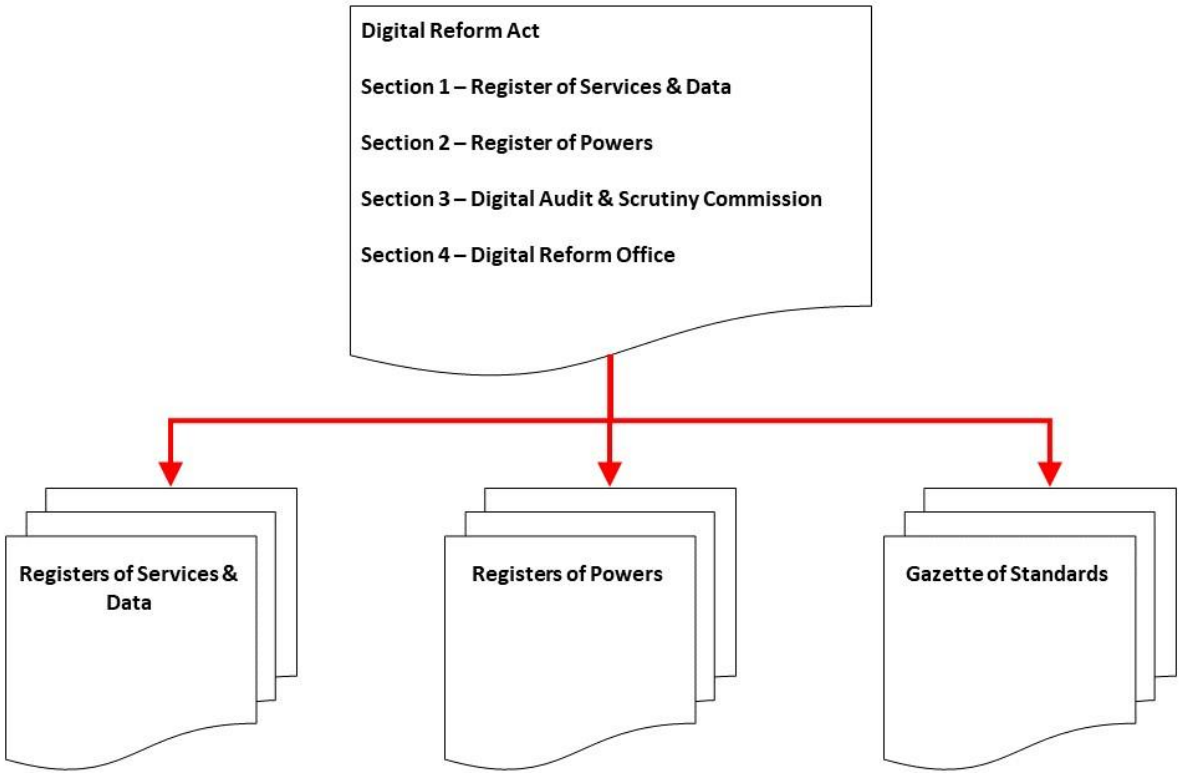
A Ledger	A Register
Definition *blank*	**Definition** *blank*
Audit *blank*	**Audit** *blank*
Appeal *blank*	**Appeal** *blank*
Partition *blank*	**Partition** *blank*
Creation *blank*	**Creation** ***Obligation on citizen/org to register***
Reading *blank*	**Reading** ***Public***
Updating an element in the `Signifier` ***Forbidden***	**Updating an element in the `Signifier`** ***Forbidden***
Deleting an element in the `Signifier` ***Forbidden***	**Deleting an element in the `Signifier`** ***Forbidden***
Refreshing *blank*	**Refreshing** ***Obligation on citizen/org to maintain***

The rationale for these patterns is discussed in Working Paper 1.1 – ***Data and the rule of law***.

There will need to be some sort of commencement dance so that existing registers named in extant legislation can be brought in line with the new world. Perhaps using the powers proposed in Working Paper 8 – ***An Enabling Act***.

6.4 Information architecture

The legislation that sets up the institutional structures of 6.2 can also create the information architecture that we require:

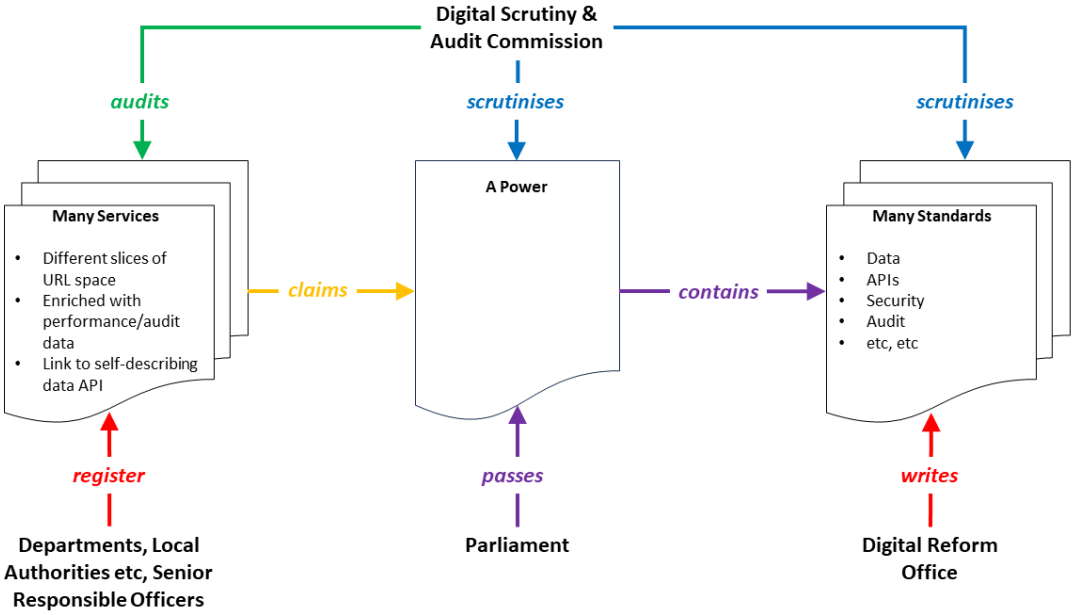


One of the tasks of the DRO (under the supervision of the DA&SC is to gazette standards) – the gazette above.

It is neither obvious to me, nor my place to say what the correct legal description of the gazetted standards. A maximalist line would be they are akin to the Acts of Sederunt that the Court of Session (with the advice of the Scottish Civil Justice Committee) lays at Holyrood to make the Rules of Court. Laid to be brought to the attention of Parliament but not in anyway amendable or changeable by them – a self-regulating arm of the state.

I suspect a more loosey-goosey legal basis would be appropriate. But an official publication they must be – the sheepdog must have teeth.

Once the registers and gazettes are created they must be populated. Lets start by looking at the final state – and address getting there later.

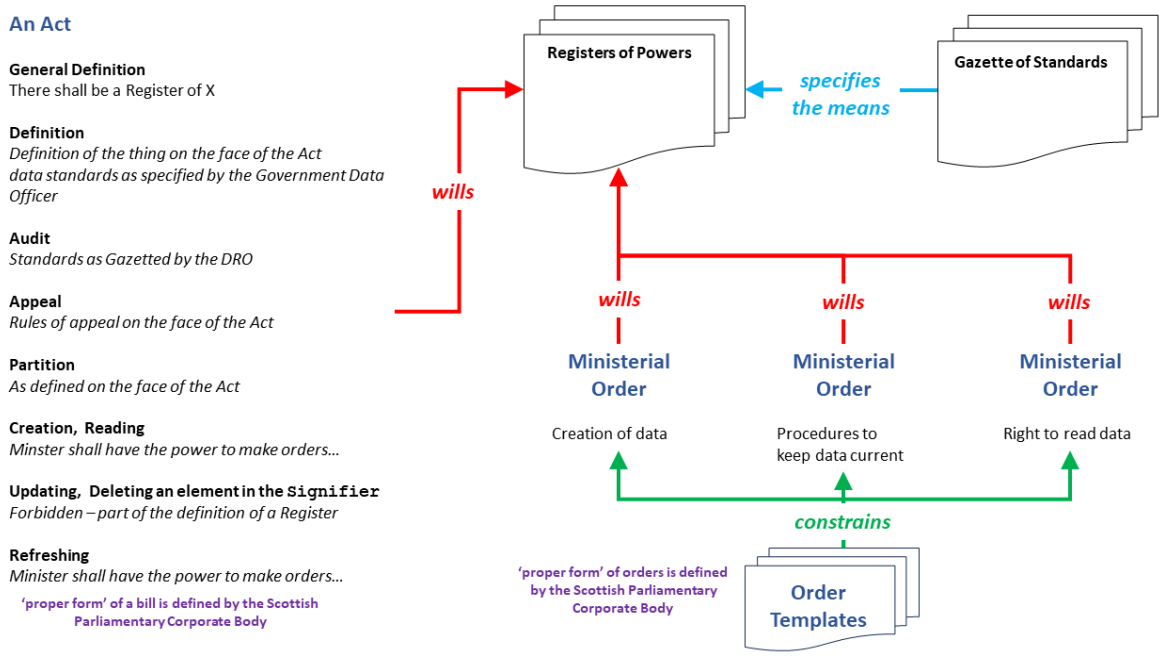


Let us step through the process:

- The Digital Reform Office writes standards which (after scrutiny by the Digital Audit & Scrutiny Commission) it writes to the Gazette
- The parliament creates a power to run a digital system – with the legislative architecture of Section 7.1 and that is published in the register of powers. This is a machine-readable register. Machine readability is key because the supervision of the registers (who is conforming to what) should be machine driven. Automating processes and turning compliance/supervision from something-that-people-do to something-that-machines-do is one of the superpowers of Big Tech – and it needs to become a superpower of government. Powers may be registered in advance of their commencement dates – this power will come into force at some unspecified time in the future. Under the changed parliamentary process it is scrutinized by the DA&SC.
- The DRO attaches standards to the power – anyone exercising this power must adhere to these standards.
- A government department, or sub-state body, or NDPB creates a new digital system (it might be a user-facing service, might be a managed data set) and it registers it with the Register of Services & Data). In the register it asserts a claim to be using one (or more) of the powers. (There may also be one or more system using a single power). The service register entry includes a link back to the system with the URL of the data self-description.
- The DA&SC audits the service to ensure that it is indeed complying with the standards it needs to follow.

This process enables the harmonisation of two things:

- primary and secondary legislation to give flexibility to the parliament as to the importance of core data operations.
- ***wills*** and ***means*** – what the parliament wishes to do, and what is necessary that it be done.



6.5 The recourse to justice cycle

Let us step through the recourse to justice cycle:

- a citizen is disgruntled by an administrative decision made with the support of a government digital system.
- they go to the register of services and type in the URL of the service – it takes them to the service entry.
- from the service entry they go to the system data self-describing URL which tells them the data structure that the system supports – and provides a change log so that they can see the entire release history of the software and how the data schema evolved over time
- from the service entry they go to the Register of Powers which tells them the legal basis of the system – both what laws (primary and secondary) currently apply, and the diachronic history of when regulations changed.
- they can go to the system itself and ask for a dump of their data (as should be their right). The data should be implemented as a ledger - as per Working Paper 1 – ***Data and the rule of law***.
- armed with their data, a data description and powers (all in both diachronic and synchronic form) they can then seek legal advice

7 Sketch of a deployment process

7.1 Introduction

A law reform process must have a number of different components:

Phase	Notes
Call for collaboration	See if any other parliament has started, is planning, or wants to collaborate on such a process.
Design and Development	The specification of the formats of all the components: • Interpretation Acts • Common Legislative Patterns • Register of Powers • Register of Services • Standards • etc, etc The Register of Powers needs to be able to cope with <raw> or unrefined statements of powers as well as <cooked> or post-law reform ones
Testing	Taking a bill through the process – might be rerunning an existing bill in a new format, might be a new bill, might be both
Forward looking implementation	Adjustment of parliamentary procedure to bring these components to bear on new legislation
Retrospective implementation	The actual reform of the law – going over existing powers and making the necessary legal amendments. There need to be criteria for bringing powers into line retrospectively – which will be de minimis to the size and scope of systems that claim them

The process of law reform will be entangled with the process of creating the institutional framework outlined in Section 11 of the Working Paper 0 – ***The locus of change***.

The mechanisms in that paper include an Enabling Act as well as temporary Standing Orders that can be used to constrain the application of the new world to a fragment of the statute book whilst the details are being shaken out.

The bodies being proposed in that working party are so critical to the wide range of other proposals that the law reform process cannot but help getting entangled in them.

7.2 Call for collaboration

The problem that data law reform is trying to address is not specific to Scotland, and as always an appropriate effort should be made to try and eliminate or reduce the work that needs to be done to achieve it. It would be better if there was a working example to be copied.

To that end, there should be a structure appeal to other democratic legislatures to see if similar transformation has been applied, and to collaborate with any other government that is interested in the topic.

7.3 Design and Development

It is important that the elements of this law reform are developed iteratively and in the round. Each part depends on all the others – the various statutory bodies, the associated statutory registers, the technical standards, the amendments to the Interpretation and Law Reform (Scotland) Act 2010, the changes to *Common Legislative Solutions*.

The process of executing law reform needs to be first designed and tested before the actual law reform can begin. This should be a paper exercise that takes a section of the statute book through a law reform process with the appropriate components implemented as dummy systems. The paper exercise should involve all interested parties in the cycle, from policy, Parliamentary Counsel's office, the relevant parliamentary committee, technical specialists and appropriate external parties.

7.4 Testing

Once an agreed format and law reform processes has emerged from the design exercises it is important to test the process by taking an existing Act or Acts through it.

Temporary Standing Orders can be used to restrict the first elements but there remain problems with standardising things and amending the Interpretation And Law Reform (Scotland) Act 2010. Bringing existing systems into the new world will require some sort of commencement mechanism.

It is important that the testing includes both the clean forward-looking implementation process and the dirty backward-looking one. Not least because until the depth and impact of dirtiness can be ascertained it will not be possible to prioritise law reform in the optimal manner.

For instance, a general definition of the word register or ledger is likely to sweep up legislation that accidently uses those terms, or uses them in a looser sense that is now intended.

Mechanisms need to be found to enable the gradual harmonisation of language across the statute book[23].

7.5 A Janus-faced implementation

The implementation is janus-faced, one element is forward looking for new legislation and one backward-looking for transforming old legislation.

7.5.1 Forward looking implementation

The forward-looking implementation should be fairly clean – new Acts are born in the new world, designed to be citeable in registers of powers, with the correct format and appropriate clarity.

7.5.2 Retrospective implementation

For retrospective implementation the situation is somewhat messier. It would be appropriate to bring existing systems into the Register of Systems as quickly as possible – and to get a sense of how many systems there are, and some quantification of their size and impact. The retrospective programme should be shaped by size and impact – some systems are already time limited and will eventually die, some are already planned to be replaced and should not be updated.

In order to accommodate this both the Register of Systems and the Register of Powers will need to support 'dirty' registrations – registrations that don't meet the full final state standards – systems without self-describing databases and meta data. Powers that are smeared across many statutes or missing.

[23] the research team at legislation.gov.uk have a range of corpus-based information tools that can make this task manageable and reasonably quick.

8 Conclusion

The process of law reform for data is complex in both its conception and implementation – but is fundamental to the building the capability of the state to evolve and change in the digital world. In the overall programme of changes proposed it should be embarked on at the end, after a degree of institutional capability and maturity has been achieved.