



20/02/2023

Reading legislation

With a non-functional eye (Version 1.0)



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BIUS WORKING PAPER NO 9

(THIS DOCUMENT DOES NOT REFLECT THE VIEWS OF SCOTTISH GOVERNMENT)

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1 Introduction

1.1 What is a non-functional eye?

The specifications of a digital system can be sorted into 2 categories:

- functional specs
- non-functional specs (a bucket for everything *not-in-the-other-bucket* and not *doesn't-work*)

The terms functional and non-functional are technical terms of art – a trade jargon. They are used in this paper- because of the analytical power that their use delivers.

In many cases legislation provides the functional spec¹ for state computer systems, and one of the working premises of the Blus project is that there are no mechanisms for creating pan-state non-functional specifications on the government side, nor for supervising them on the parliamentary side. This is laid out in Working Paper X – *The heart of the beast*.

A road map to putting those mechanisms in is described in Working Paper 0 – *The locus of change*.

Non-functional specifications are important because they include:

- joined up government
- data sharing
- public sector transformation

These are ramparts that government has tried to storm on numerous occasions over the last 20 years and failed.

This working paper will take the Social Security (Scotland) Act 2018² and map it to these principles and demonstrate the lack of appropriate institutions.

This paper is belt-and-braces, shoot the vampire with a silver bullet *and* stake it *and* expose the corpse to the sun. Having boldly stated that the functional/non-functional split was the key, then I damn well will read 3 pieces of primary legislation and 76 pieces of secondary legislation and prove to my satisfaction that this in indeed the case.

1.2 Who are you?

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 There is a long technical discussion of this in Working Paper 2 – *Rules as code*.

² <https://www.legislation.gov.uk/asp/2018/9/contents>

1.3 Why should you read this?

You should read this if the analysis of the problem in Working Paper X – *The heart of the beast* and the proposals to fix it in Working Paper 0 – *The locus of change* haven't convinced you – or if you are charged with implementing the new institutions and want better to understand how to do so.

2 The Blues Project

This is Working Paper No 9 of *Blus - 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 – *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* (published)

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* (this document)

Working Paper 10 – *Immediate Hygienic Measures* (published)

Working Paper 11 – *Jeff Bezos' Memo for Government* (published)

Blus 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.

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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.

³ <https://digitalpolicy.substack.com/>

3 Reading the legislation with a non-functional eye

3.1 Introduction

This section will consist of a definition of terms.

That will be followed with a quick outline of methodology – with an example. The bulk of the data analysis is confined to the Appendices which run to 83 pages and are as dull as can be imagined and are published separately.

Finally the results of the analysis discussed.

3.2 Definition of terms

Let us begin by defining the terms functional specification and non-functional specification. These are both fairly old-fashioned terms dating from earlier days in the software industry. The modern developer, writing code to be deployed in the cloud on Amazon Web Services, Google Cloud Platform or Microsoft Azure, is probably not familiar with them – as much of the non-functional lift is now done by the cloud providers.

Functional specifications are specs that describe the functionality of the system as experienced by the end users – and the functional specs are substantially different for different systems. The term non-functional specifications is a dump-bucket for everything that isn't in the functional spec but is still required.

The non-functional specs are harder to pin down on their own – they tend to be things that could apply to many systems. A typical non-functional spec would include staff sign-ons, use of a database and webserver, and more pertinently requirements around data sharing and joined-up government.

If you look at the functional specs for, say, a social security system and a tax system, it is pretty easy to see which one is which. If you looked at the corresponding non-functional specs for those two systems you would struggle at first blush to tell them apart. You would have to comb them for the specifics of the system to bleed through accidentally.

Unfortunately to the civilian ear – non-functional means not-working. Well all trades have their jargon and this is mine.

Systems in the pre-digital can be described in terms of functional and non-functional specifications (even if use of that trade jargon is, in and of itself, chronoclastic).

Examples speak louder than words, so here is a schematic outline of the sort of things you would find in both types of spec, before and after digital technology.

Type	Pre-digital	Digital
Non-functional specs	Buildings Staffing Location Plumbing Transport Electricity	Buildings Staffing Location Plumbing Transport Electricity Sign-on DB/backup Data Sharing Joined up government
Functional specs	Paper form design Algorithms Required information Decisions to be taken	Digital form design Algorithms Required information Decisions to be taken

The key point to notice is that there are new non-functional requirements in the digital age that are tightly coupled with the functional requirements.

Electricity is quite interesting as it is a non-functional requirement that pre-dates digital but is handled in the same manner as I will be proposing in my final report – by standards.

What do I mean by electricity is a non-functional requirement? Well, its simple, computers require 12V DC electricity to run – and buildings normally are supplied with 230V AC.

There is a requirement to convert the electricity before a new government department can set up. How do we ensure this at the moment? Well we don't, we just plug kit in. There is a long and historical standard around electricity, plugs, etc, etc and everybody involved just 'knows' what they need to do without communicating.

If electricity was governed in the same manner as joined up government (ie left up to each team to decide) you wouldn't be able to take your kettle from St Andrews House to Victoria Quay because SAH runs American electricity and American plugs, whereas new modern VQ has all LED lights and runs 12V DC over USB C cables from desktop sockets.

The premise that I am testing here is that the format of legislation that leads to the creation of digital systems will reflect the clean separation of the pre-digital era and there will be little or no non-functional specification in the legislation – and delivery teams will be left to define non-functional specs themselves – to choose their own electricity and plug sockets.

3.3 Methodology

The methodology used was fairly primitive. I selected every relevant piece of secondary legislation by searching for key words on legislation.gov.uk. There is no formal way to definitively get every piece of secondary legislation issued under an Act⁴.

I used the words “social security” and the keywords of each of the title headings in Part2 - Chapter 2 – Types Of Assistance To Be Given⁵.

I then went through the 3 primary acts⁶ and the 76 bits of secondary legislation, put my business architect/technical architect/code monkey hat on and read them.

I read every section and asked the question “Do I gotta cut some code or do I gotta no?” If yes it’s a spec, if no, its non-spec. Then for each spec was in functional or non-functional and if it was non-functional was it endo- or exo-. An endo-non-functional spec would be a non-functional requirement that only pertained to the Social Security systems in the round, and an exo- one would specify how Social Security systems should work in the round of Scottish government systems.

Picking an example at more or less random - The Social Security (Iceland) (Liechtenstein) (Norway) (Further provision in respect of Scotland) Order 2023⁷

Introductory Text	Classification
1.Citation, commencement and interpretation	Not specs
2.Application of article 2 of the 2023 Order	Functional spec
3. Application of article 3 of the 2024 Order	Functional spec
4. Amendment of the Social Security (Iceland) (Liechtenstein) (Norway) (Further provision in respect of Scotland) Order 2023	Functional spec
	Not specs 1
	Functional specs 3
	Endo Non-functional specs 0
	Exo Non-functional specs 0

⁴ to the best of my knowledge

⁵ <https://www.legislation.gov.uk/asp/2018/9/part/2/chapter/2>

⁶ Social Security (Scotland) Act 2018, Carer’s Allowance Supplement (Scotland) Act 2021, Social Security (Amendment) (Scotland) Bill

⁷ <https://www.legislation.gov.uk/ssi/2024/62/contents/made>

SCOTTISH STATUTORY INSTRUMENTS

2024 No. 62

SOCIAL SECURITY

The Social Security (Gibraltar) (Iceland) (Liechtenstein)
(Norway) (Further provision in respect of Scotland) Order 2024

Made - - - - 21st February 2024
Laid before the Scottish
Parliament - - - - 23rd February 2024
Coming into force in accordance with article 1

At the Court at Buckingham Palace, the 21st day of February 2024

Present,

The King's Most Excellent Majesty in Council

His Majesty, in pursuance of the power in section 179(1)(a) of the Social Security Administration Act 1992(1) and all other powers enabling Him to do so, is pleased, by and with the advice of His Privy Council, to order as follows:

Citation, commencement and interpretation

1.—(1) This Order may be cited as the Social Security (Gibraltar) (Iceland) (Liechtenstein) (Norway) (Further provision in respect of Scotland) Order 2024.

(2) This article and article 4 come into force on 11 March 2024.

(3) Articles 2 and 3 come into force on the first day of the month after such time as each party to the Agreement has notified the other that domestic procedures for entry into force have been completed, in accordance with Article 61 of the Agreement(2).

(4) In this Order—

- (1) 1992 c. 5. Section 179(1) has been amended by S.I. 2020/1508. Section 179(2) provides that an Order made by virtue of subsection (1) may, instead of or in addition to making specific modifications or adaptations, provide generally that legislation to which section 179 applies shall be modified to such extent as may be required to give effect to the provisions contained in the agreement, or as the case may be, alterations in question. Legislative competence for some welfare benefits was devolved to the Scottish Parliament by Part 3 of the Scotland Act 2016 (c. 11), which inserted exceptions into the Scotland Act 1998 (c. 46), schedule 5, Part 2, Section F1. By virtue of section 27(2) of the Interpretation and Legislative Reform (Scotland) Act 2010 (asp 10), the function of His Majesty of making an Order in Council, so far as the function is exercisable within devolved competence, is exercisable by a Scottish statutory instrument.
- (2) Upon the parties having notified each other that their respective domestic procedures for entry into force have been completed in accordance with Article 61 of the Agreement, a notice will be published in the Gazette by the Department for Work and Pensions of the Government of the United Kingdom of Great Britain and Northern Ireland.

Rinse and repeat for all 1,149 sections and count them up.

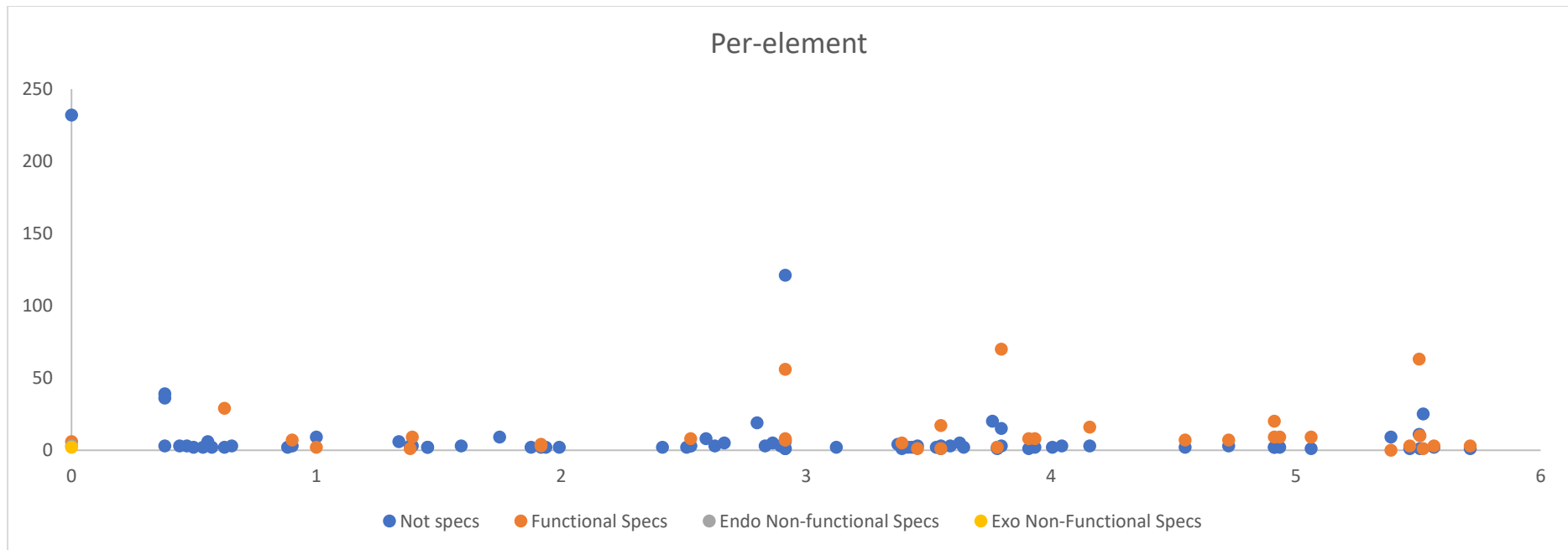
This methodology has a couple of weaknesses. First up, perhaps I have missed some bits of secondary legislation. Secondly quite a few of the sections I declared non-spec I could sort of see with a squinty-eye that they might tangentially include elements of functional specification. Given that the goal of the exercise is to look at the relationship between non-functional and functional specifications with the expectation that there would be little or no non-functionals I didn't regard the fuzziness in the functional spec/non-spec boundary to be significant. Looking at the overall results I can see how a full review of specs cross-checked to business architectures might increase the precision of the count in respect to non-spec/functional spec but that in itself would not increase the accuracy of the final judgement – non-functional specs are almost non-existent.

3.4 Results

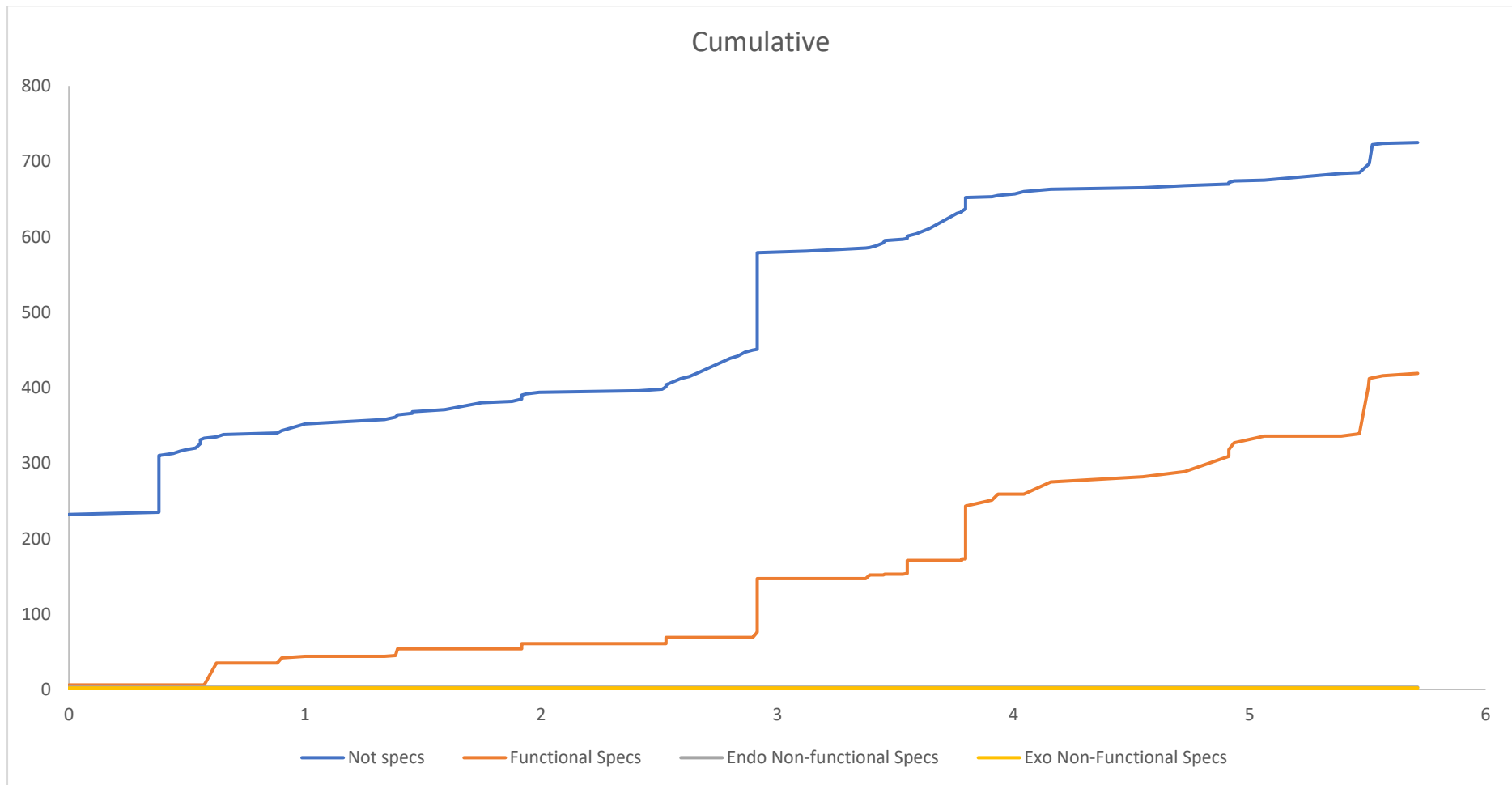
The final totals are:

Taxon	Total No Of Sections
Non-spec	725
Functional Spec	419
Endo Non-Functional Spec	3
Exo Non-Functional Spec	2

We can plot the results as a time series – with the x-axis being years from the first reading of the Social Security (Scotland) Act 2018.



And also cumulatively on the same x-axis.



Only the original Act gave any thought to non-functional specifications – and even then it was cursory.

4 Conclusion

We don't specify non-functional requirements in law. If we want them specified we need to define institutions and processes to do them.