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A Theory Of State

For digital systems (Version 1.0)



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BIUS WORKING PAPER NO 12

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

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1 Introduction

1.1 Why a theory of state?

The report that this working paper was written in support of is designing new state structures to better support services based on digital systems.

The purpose of articulating a theory of state is to lay down some criteria that that design, and it's eventual implementation, can be judged against.

Estonia has shown that there is a better way to do digital systems, but like many first movers it is unable to articulate quite how and why it is successful. It falls to second movers to define a theory of state – in another world Scotland would simply copy some other countries, but that option is not open to us.

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.

1.3 Why should you read this?

Other working papers outline new proposed structures, this paper goes into how the new structures should work, their internal regime and their wider more diffuse impact on the civil service and civil society. You should read this to deep your understanding of how this new world will work.

2 The Blus Project

This is Working Paper No 12 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 0.2	<i>The locus of change</i>
Working Paper 1.2	<i>Data and the rule of law</i>
Working Paper 2	<i>Rules as code</i>
Working Paper 3	<i>The Lego state</i>
Working Paper 4	<i>The remixable state</i>
Working Paper 5.1	<i>Law reform for data</i>
Working Paper 6	<i>A solera for data cleansing</i>
Working Paper 7.2	<i>Experimental digital legislative processes</i>
Working Paper 8	<i>An Enabling Act</i>
Working Paper 9.1	<i>Reading legislation with a non-functional eye</i>
Working Paper 10.2	<i>Immediate hygienic measures</i>
Working Paper 11.1	<i>Jeff Bezos' API Mandate, but for government</i>
Working Paper 12	<i>A theory of state</i>
Working Paper 13	<i>The weak centre</i>

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.

¹ <https://digitalpolicy.substack.com/>

3 Why a Theory of State is required

3.1 The second mover

Scotland seeks second mover advantage as a digital state. We are at the back of the peloton. We require a theory of state to inform and structure our thinking. The first mover usually wins by luck and instinct and often lacks a clear understanding of why and how. So it was with the UK after the Industrial Revolution - and so it seems with Estonia in the Digital Age. The second mover must develop the theory of state, to do and for others to copy.

3.2 A statement of the problem

The problem is articulated in Working Paper 9 *Reading legislation with a non-functional eye*. Two sets of requirements or specifications inform the creation of digital systems: functional ones – **what** the system must do and non-functional/infrastructural ones, **how** it must do it. Legislation specifies the functional requirements. The task is to design institutions that allow the executive to develop non-functional/infrastructural ones and the parliament to supervise it.

3.3 The scope of this theory of state

This new theory of state deals with a narrow remit - things that pertain to services that are built on digital systems. The vast majority of the work of both parliament and government will not be affected by it at all.

4 Elements of the theory of state

4.1 Introduction

There are a number of key elements that inform this theory of state:

- basic characteristics of state systems
- functional versus non-functional or the democratic parliament versus a parliament of standards
- *contra* central planning
- organising in the context of complexity and opacity of digital services
- decentralisation
- diffuse boundaries of the state

And these imply a weak but guiding centre.

4.2 A parliament of standards

This proposal contained in Working Paper 0 *The locus of change* recommends a parliament of standards as one of its key institutions. The use of the phrase is quite deliberate. A parliament is an organisational form that maximises consent. In particular it seeks 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 paying men in 1832, then in 1918 returning soldiers and older women, before all citizens in 1928 and reaching its current form in Scotland of all residents in 2020 with the Scottish Elections (Franchise and Representation) Act².

The constituency of the standards body is not the citizenry, or even all civil servants, but the critical technical staff who both write and implement its 'laws'. Standards are not laws in the conventional sense, there is no judiciary and legal process, but they are things-that-must-be-done and things-whose-violation-will-have-consequences.

2. <https://www.legislation.gov.uk/asp/2020/6/contents/enacted>

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 say *that won't work*. *Speaking truth to power* in the civil service argot.

If parliament of standards seems like a grand description, be mindful that such a body 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.

These decisions and conversations and the seeking of agreement and consent already happens, in corridors and meeting rooms, on slack conversations and team meetings. The point of raising these conversations to the dignity of a parliament of standards is to make them visible and make them subordinate to a real parliament, a parliament of residents, a democratic parliament. And critically to make them enforceable.

There needs to be a single co-ordination point between the functional specification and the non-functional specification. The functionals are already in the bill and the non-functionals will be in a systems impact assessment as part of the bill pack. This will provide unity of specification. The minister brings to parliament both the *what* and the *how* at the same time.

4.3 Basic characteristics of state systems

There are a number of basic characteristics that state systems must have. These derive from their being built on top of digital platforms:

Characteristic	Notes
being found and enumerated	digital systems are embedded in an URL space but that is not enough - the state and society needs a comprehensive and complete list of every digital system
being understood	systems needs to be understandable - the legal powers they operate under must be know and the data they contain and its meaning must be exposed
interoperating	individual systems should be able to work together and share data - under a rights and permissions regime the protects citizens privacy and autonomy
being extendable	both state data and state systems are the collective property of the citizen and society and they should be usable and extendable by them

Characteristic	Notes
being composable	systems (in the sense of things being exposed to the user) should consist of smaller technical subsystems which are composed to give the user experience
emitting desired outputs and interfaces automatically through tooling	as far as possible the requirements to comply with both law and standards must be baked into the technology and not be left to individual civil servants to manage. This implies the creation of libraries, tooling, frameworks that are law/standards made code
being able to be reasoned about	citizens must be able to reason about procedures and decisions armed only with the law and the underlying data - the system-as-implemented should not be required
being able to be consolidated and improved	there must be mechanisms to identify and eliminate systems overlap (substantially based on the same data and the same processes) and there need to be mechanisms to identify systems that hold similar data under similar processes and co-ordinate the end-to-end dance (law, organisation, resourcing) to align them with a view to consolidation
being able to be measured and assessed	systems must both have the technical ability to emit measurements and the legal duty to do so in an appropriate manner

The purpose of a standards regime and a parliament of standards is to build institutions and procedures that give life to that future state.

4.4 Functional versus non-functional or the democratic parliament versus a parliament of standards

The existing arrangement whereby the functional requirements of major systems are specified in legislation and implemented by functional departments must be augmented by new institutions³ that specify the non-functional requirements.

Non-functionals will be developed and approved by a government body acting as a parliament of standards, which is in turn under the supervision of a committee of the democratic parliament of law augmented by appropriate independent technical and social expertise.

3. These are discussed extensively in Working Paper X *The heart of the beast*, Working Paper 0 *The locus of change*, Working Paper 5 *Law reform for data* and Working Paper 9 – *Reading legislation with a non-functional eye*

The non-functionals include setting standards for:

- technical standards for interoperability and discovery
- data standards for data hygiene, maintenance, concordance with the rule of law and annotation
- UX Design standards for components, composition and use
- testing standards
- process standards and best practices for organisation and service design, team construction, project initiation, oversight
- development of tooling and components across software, testing, design and operations which embed and incorporate standards and enables push-button compliance
- development of plans for componentisation⁴ and the creation and promotion of patterns across domains

The publication of standards will be established in statute and there will be enforcement mechanisms. Ministerial approval will not be required for their enactment. (This is not the case with all the activities of the parliament of standards.)

The parliament of standards shall apply the principle of *de minimis non curat lex*⁵.

The parliament of standards will operate as a parliament with a constituency consisting of members of all the technical trades in Scottish Government, government agencies or statutory corporations of all stripes and local government.

It is not an elected or democratic parliament, it is a technocratic one. Democracy is applied through supervision by the elected parliament.

The government departments, government agencies or statutory corporations and local authorities, whilst being bound by the standards issued, shall decide the how and who of their representation in the standards process under their own recognisances.

Individuals, whether civil servants, local government staff or individual citizens within or outwit the jurisdiction will have the right of audience.

The parliament of standards will aim to work by maximum consensus and ensure losers consent. It will work in public using a RFC⁶ process.

4. See Working Paper 3 *The Lego state* for more details

5. The law doesn't concern itself with trifles – small systems will be exempt

6. <https://www.ietf.org/process/rfc/>

It will have responsibility for establishing its own working processes, having taken into account the operating models of organisations such as the Mozilla Foundation⁷, the Apache Software Foundation⁸, the IETF⁹, W3C¹⁰ and ICANN¹¹ with whom it is expected to rhyme.

The executive of the parliament of standards, who have the power to execute its decisions, will be appointed by the government.

Any tooling developed under its aegis will be released under an appropriate open source license¹² suitable for both other governments and commercial partners.

The mission of the parliament of standards shall be to continuously and incrementally increase the capability of the state, in particular the capability for joined up government, the *means* to data sharing, componentisation and remixability. The democratic parliament shall have an absolute veto on the permission to share data - the *will*.

Where appropriate the parliament of standards will work with its peers in other jurisdictions, it may establish joint procedures and issue joint standards in conjunction with any other parliament of standards it so wishes, or it may simply mandate use of an extra-jurisdictional standard. Common standards will enable shared development of the tooling that implements it. It will build on existing internet technical standards issued by the IETF.

When patterns are promoted to actual services¹³, they shall pass from the remit of the parliament of standards to the government - having become a functional body. They will be a normal government department which might in some circumstances be put on a statutory basis. The role of the parliament of standards shall then be reduced to mandating their use in new and existing systems design.

The parliament of standards will not have the *strong powers* required to allocate resources, define tasks or control programmes of work necessary to achieve compliance. It will enforce its will through the *weak power* of setting a future compliance date with an appropriate time to enable autonomous departments, government agencies or statutory corporations and local government to comply. It is not a centralising command and control body.

The expectation is that standards compliance will be funded out of the 15% of technical OpEx (operational expenditure) that is already spent on maintenance activities and not on CapEx (capital expenditure). The parliament of standards may propose work programmes that require their own dedicated funding. Such proposals would need to be adopted by the government to proceed.

7. <https://foundation.mozilla.org/en/>

8. <https://www.apache.org/>

9. <https://www.ietf.org/>

10. <https://www.w3.org/>

11. <https://www.icann.org/>

12. <https://opensource.org/osd>

13. Examples would be single government authentication or payment systems. These are sometimes referred to as cross-cutting functions in Whitehall

The parliament of standards will also have the responsibility of studying the data model of the state and proposing data consolidation exercises that might result in Machinery of Government (MoG) changes. Such proposals would need to be adopted by the government to proceed. This is a departure from constitutional norms in the UK and Scotland.

The parliament of standards may take suggestions as to changes to primary or secondary legislation that would enable better and more effective state systems from any quarter. It will have the responsibility for instructing parliamentary counsel to draft legislative instruments¹⁴ to that effect - and will need to be staffed appropriately. Such instruments would need to be adopted by the government to be introduced into the elected parliament and will be under the direct remit of a new proposed overseeing committee of that parliament. That overseeing body will be appropriately supported and staffed to discuss deep technical matters in an overarching social, legal and ethical context.

The remit of the parliament of standards in this matter will be *policy effect*, with *policy intent* reserved to the elected government.

The parliament of standards shall have the right to address both the Scottish and Westminster parliaments, and the obligation to publish an annual report. The Scottish Government shall have the right to comment on both.

4.5 *Contra* central planning

Declaring yourself against central planning smacks of accidentally finding yourself in a costume drama, resisting the mores of days long gone.

State expertise lies in the vasty deep of the departments, in the operational teams. Communication, now made so simple, can slide into micro-management.

When combined with a fetishisation of management, data and analysis this can tip into state central planning¹⁵.

Dashboards and measurements are by their nature retrospective, and often proxies for what matters and not the thing itself. They can only shakily be projected into the future. When the future suddenly changes, as events interpose, whether Covid, the financial crisis or the wars in Ukraine and Palestine, the retrospective loses its utility.

The past is knowable and observable at least slightly, the future is unknown and only slightly predictable - data and management fantasies notwithstanding.

14. See Working Paper 8 *An Enabling Act* for a more detailed discussion

15. Innes, A. (2023) *Late Soviet Britain: Why Materialist Utopias Fail*, Cambridge University Press, 2023

The asymmetry of information between operations and the centre remains and attempts to manage the relationship by contracts, legal obligations, targets and incentives become gambles.

Healthy ecosystems consist of droplets of order with an ocean of disorder. The miracle of life is contained within individual animals, but the development of those miraculous forms was driven by death and natural selection. Companies succeed when they can promote and create organisational miracles.

The delusion of socialism was that if a company can create order within itself by scientific planning that order should be extended to the whole economy. Capitalism brings with itself pointless destruction, bankruptcy, sudden market shifts. How much better everything will be when those are removed and pure order reigns!

The point of course is that the destruction and bankruptcy is far from pointless, anymore than beast-eat-beast has no good effect. The death of the system is what keeps the companies honest. The absence of death leads to lethargy, corruption and decay, not more life.

A centrally controlled and planned system is less resilient, less able to respond to shocks and changes of circumstances than a free market one. Death cannot be outrun.

So it is with state functions. Death is more indirect - usually expressed in elections in the modern world. A rich variety of elected bodies with powers appropriate to their niche subject to electoral death is the best option. But individual state functions exist as drops of order in an ocean of disorder and unexpected events. The resilience of the state is the sum of the capabilities of its components, its ability to adapt and shift to different circumstances, and unexpected events.

The dream of a single government system, a single user journey, that touches all citizens in all their relations with the state is a cousin of the fever-dream of the centrally managed economic state.

By switching our focus from single monolithic outcomes to the capability to refocus and reassemble state systems from smaller components we can break out from the centre-knows-best fantasies. And that requires us to embrace decentralisation both within the Scottish government and from Holyrood downwards.

4.6 Organising in the context of complexity and opacity of digital services

Digital systems are opaque and hard to reason about at the best of times. Under daily releases and constant change, doubly so. *Contra* popular belief this opacity extends to technical experts and people who work in the field – nobody is blessed with some magical x-ray vision to peer into the abyss and see the skeleton, muscles, tubes and organs of large digital systems.

It is not for nothing that the dominant technical methodologies focus on getting systems with limited functionality into the hands of users quickly. The use of systems is comprehensible even when the system itself isn't. Engineers only truly know what they are building when they can watch people using it.

This opacity can be mitigated a bit. Source code can be released so it can be inspected. But digital systems will always be hard to reason about even when they have use-tangibility, *it does these things on these screens*.

For the development of new systems, or the design of standards that create new capabilities that is not the case. And the loss of comprehensibility is increased by simple overload - the state now does so many sophisticated functions, each of which requires intense engagement with to understand.

In a phrase made popular by Ronald Reagan in the context of nuclear disarmament *trust but verify* is the watchword of the day. As in the case of the mobile phone, we need to focus on what is comprehensible, the roles and responsibilities of parts of the state, and the definition and management of interfaces with each other - which is principally data sharing.

The overriding problem with state opacity comes in the context of low citizen trust. The journey from *this is hard to understand* to *conspiracy* is but a step.

A key consideration in handling opacity is transparency - and this requires the state to be open about data structures and services.

This requires a fundamental information architecture - registers of systems, registers of powers, registers of standards, mandatory reporting of data structure and their history over time, public metadata on data structures - the state needs to be put under the microscope holistically as a matter of legal rights not favour.

4.7 Decentralisation

There is no ship but instead a fleet of state. There is too much going on to be under the control of a single central authority.

Centralisation is the enemy of resilience. Everything is flawed, to some degree. Policy is built around models of society and citizen behaviour. There is an aphorism named after the British statistician George Box which states:

All models are wrong, some are useful.

If the models are wrong then the systems built on them are wrong - errors and defects are not edge cases but normal working behaviour. But wrongness comes in many forms and is of many degrees. Models can be slightly and incidentally wrong¹⁶ or importantly wrong, better

16. This working paper, and the report in whose orbit it revolves can only be at least slightly wrong, touching as they do on several areas of deep expertise that require a whole working life to master.

the former. Good enough is good enough. And wrongness can be corrected to a degree by observation and adjustment.

And sometimes models are good enough until the world changes underneath them. With highly coupled systems model collapse can lead to contagious collapse across the piece. Better to have loosely coupled systems which can tolerate partial failure.

So it is with the state, a failing social security system can be counteracted (in part) by a robust schools system. Different parts of the state stepping up as other fall down.

States capabilities should be organised on the assumption that some state functions will always be in crisis, because some will be. Belt and braces, overlapping areas of concern, the ability of A to ride to the rescue of B. Instead of bone-paired efficiency, the state needs to maintain a reserve of capacity that can be sent to the battle when the front collapses, for there will always be a collapsing front.

And states need better to be equipped to deal with success.

Building technical subsystems as composable components will enable the citizen-facing super-structure to reorganise itself and reprioritise - to wind down in light of success as well as chase down in light of continuing failure.

Decentralising also means decoupling, reducing the communication and decision radius. Small teams deliver better, faster results. That requires giving government departments, local authorities and health boards stable funding, technical and control over their spending - holistic and stable autonomy which needs to pass down through them to projects and teams at the sharp end.

Loosely coupled systems also serve as the gravestone of the *single user journey* - the design utopia which is close kin to the panoptical data delusion.

Systems must know their boundaries, and be optimised and organised in such a way that citizens can construct their own single user journey out of them with ease.

4.8 Diffuse boundaries of the state

Digitalisation, open data, delegated permissions and the exposure of services as APIs enable a blurring of the boundaries of the state. Using remixability¹⁷ the state will encourage that blurring and the provision of alternative customer journeys by the 3rd sector and state and semi-state bodies.

17. See Working Paper 4 *The remixable state* for a detailed discussion

4.9 The weak but guiding centre

In this theory of state the centre guides transformation weakly. Standards are a mechanism for establishing co-ordination without communication - a foundational and transformative power shared¹⁸ with few other mechanisms outside written law and pricing mechanisms.

The departments and bodies will continue to be funded in the normal way and their functionals will continue to be defined in law as they currently are.

They will have maximum autonomy and the ability to choose technologies, plan development and maintenance activities, allocate resources, specify work sequencing and perform other policy, development and operational activities.

The centre will set the rules of the game and focus on developing capability in the round and in the particular. The centre will remain responsible for securing the powers and funding required for state organs to have the maximum capability, and for the ensemble of state organs and the appropriate allocation of resources across that ensemble.

The centre will have direct control in the gross and for leadership and direction. It will be responsible for setting overall integrated *objectives*, but the state organs will have the duty and autonomy to develop their own *plans* to achieve those objectives.

The centre will have the responsibility for determining how different state bodies work together, their interfaces and interactions, with less say over their internal organisation.

Legislation concerns *things*, and data represents a *model* of that thing - and this is not a deterministic relationship¹⁹. There are many possible models and the boundaries of models are determined by case law.

The focus on interactions is about transfer of standard data between organisations and not reports coming from them. Reporting is intimately tied with the operational arrangements that a service or system has in place. Reports should be expressed as objectives (*health boards shall publish appropriate waiting time statistics*) and not specifications (*health boards shall report waiting times under the following categories of treatment with this resolution*). Specification of system by reports is the worst of all worlds. A central and incomplete specification that pretends to accord the subject under reporting autonomy. Autonomy means autonomy or it means nothing.

Running a health board is hard. Reconciling inconsistent reports due to differences in internal organisational issues and priorities of health boards occasioned by different facilities, resources, social factors in the catchment area is very much a second order consideration.

18. There is an argument that standards as described here are just another form of written law, with weaker and more indirect enforcement mechanisms

19. See in particular Section 3 of Working Paper 5 *Law reform for data*

Unifying reporting is often cited as way of creating direct political pressure. Democracies have another mechanisms to achieve that: elections. Where there are autonomous institutions they should be aligned with appropriate democratic oversight.

The centre will have responsibility for proposing and leading learn-through-building strategic projects where the final systems are unclear and need to be discovered iteratively. This will involve tripartite co-design with parliament, government and appropriate citizen constituencies.

4.10 As small as possible, but no smaller

A core purpose of this proposal is to enable decentralisation by decoupling – and use standards which enable co-ordination without communication as a core organisation device.

To support this the standards regime must be as small as possible, but no smaller. Each standard must be constrained likewise.

This is not an exercise in bureaucracy but empowerment.

5 Operational considerations

5.1 Introduction

These new institutions operating inside existing processes and departments and due care and consideration must be given to all aspects of state operations: pay and rations, accounting, management lines and so on.

5.2 Decoupling

The core element of this theory of state is the conscious uncoupling of streams of work in different departments and strong departmental, systems-level and even team-level autonomy to deliver and improve state services built on digital and other systems.

It is important to recognise that the state must go where the citizen is, and most citizens are on screens, but some aren't. By contrast, all civil servants are on screens. The blast radius of these proposals extends beyond screens to wherever citizens are.

But the fundamental systems specifications – *what* the system does and *how* it does it, are intrinsically decoupled. The cycles of specifying standards is different to that of making laws.

Similarly the proposed law and the proposed standards in the Bill and Bill Pack that are presented with unity of specification are of different temporal effect. The law is the law until it is changed, but the commitment with regards to standards might adherence to an existing standard, or adherence to an as-yet unwritten one.

Existing systems may have standards retrospectively applied to them.

The operational implications of these differences need to be recognised in the day to day organisation of departments of state.

5.3 Lines of responsibility

The Armstrong memorandum²⁰ is the closest thing the UK civil service has to a constitutional basis and it has this to say on the duty of departmental staff:

The duty of the individual civil servant is first and foremost to the Minister of the Crown who is in charge of the Department in which he or she is serving.

The creation of these new institutions violates that precept. The purpose of this institutional redesign is to rebalance specification, to fly a plane with two wings, not one.

Legislation is functional, departments are functional, Cabinet Secretaries have functional titles, oversight is provided by functional committees. The Armstrong view of duty is

20. https://www.civilservant.org.uk/library/1996_Armstrong_Memorandum.pdf

functional duty. This theory of state implies that the ordinary civil servant has two duties – to the minister for fidelity to the functional components – and to the standards body (a pan-governmental body) and via that to the parliament for the non-functional/infrastructural aspects.

6 Conclusion

This theory of state is a consolidation and codifying exercise of activities already being done – in a partial, haphazard and unsupervised manner. Standards are issued at all levels of the state. Compliance is voluntary and driven by political heat. Cyber security is hot, data standards are cool.

Nothing unprecedented is being proposed, with the partial exception of Machinery of Government changes and dual mandates for Civil Servants.