Review of the science and engineering profession in the Civil Service

Annex H – Scenarios for the future Civil Service

Scenario X: “Lean Government”

Summary
In 2022, successive governments have cut the size of the Civil Service every year since 2010, enabled by a regime of continuous improvement that delivered the same results ever-increasing workforce productivity. Professional expertise is now delivered much more effectively with fewer staff.

How this world came to be
For many years before 2012, public sector productivity had been static, but since then productivity has improved by over 30% to match the performance of the private services sector.

The success of the 2012 Civil Service Reform Plan showed that there was scope to reduce the size of the UK civil service without impacting on the volume or quality of its outputs. After 2015, government increasingly used the methods and philosophy of lean service delivery (itself derived from lean manufacturing) to drive down costs. It set itself and achieved the target of making the civil service 5% more efficient every year, year after year, without cutting outputs or the overall quality of those outputs.

This philosophy was applied at first to the 70% of the civil service that is concerned with operational delivery, but the principles were soon extended to include project and programme management, and then eventually on to advising on Policy and supporting ministers.

The size and shape of the civil service
The 2012 reform plan met its target of an overall cut of 23% in the size of the civil service from 2010 to 2015, and further reductions delivered similar proportionate cut over the following seven years to 2022.

Now in 2022, the civil service culture has changed markedly, embracing an “up or out” philosophy, like many other successful service organisations. Individuals who both deliver the required results and exhibit the required cooperative behaviours are richly rewarded; whilst poor performance is no longer just “addressed” but “fixed”. The worst-performing 2% of each level (or more - depending on grade) is weeded out of the organisation each year and the civil service must compete to attract and retain high performing staff.

As costs and overheads have been stripped out the system, the civil service has become more competitive when compared to alternative providers of service, and there is less
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financial incentive for work to be outsourced or contracted out. More work is now done in-house, where this gave more control over the costs of the whole supply chain.

Staff flexibility now also matches the flexibility of private contractors.

**Use of technology**
Technology has been widely applied across the civil service, to revolutionise ways of working internally. Many tasks have been automated and the “Gov2.0” programme has made full use of developments in social media, analysis of big data sets and expert systems to transform and re-invent much of the process of government.

Policy development has shifted from consultation and selected seeking of external expertise to a highly open and collaborative model. Technology is routinely used for crowd-sourcing, wikis to gather views and to make the available evidence open to all and simulate the likely outcomes of different policy choices.

Simulation and prototyping tools for government have developed well beyond their gaming origins in software like “Sim-City” and “Betaville” to the point where policy initiatives are routinely tested in an appropriate simulated model (e.g. “Sim-State”) as part of policy impact assessments.

Delivery of services to the public has been revolutionised with a single government App that handles the totality of public interaction with central government for 99% of the population.

There are rising expectations around public service delivery and a rise in new communications channels which are rapid and immediate. Improved understanding of cognitive and behavioural science combined with technology has led to policy responses which are more specific, tailored and efficient.

**The use of Science and Engineering professionals**
In 2022, the civil service now have an alternative delivery model for GSE expertise.

The civil service has learnt to use its specialist science and engineering expertise more efficiently. Scientific knowledge, education and networks are more easily accessed and specialist training is available online by those who need specific skills.

Scientists and engineers have got used to applying their expertise across departments to meet the work load. For one-off projects where specific technical knowledge is required for a short time, it can be brought in from other departments and deployed in very flexible ways. It is not uncommon for a particular specialist to “job-share” between two (or even three) departments where neither could justify employing a full time specialist in that role.
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As departmental affiliations have weakened, the affiliation of scientists and engineers to their professional network has strengthened.

**Background: Lean service delivery**

Lean services delivery uses a whole series of approaches to improve service efficiency. These include: the systematic elimination of wasteful activity (delay, duplication, errors etc); the simplification and elimination of intermediate processes; reducing the “failure demand” (the delivery or production of products and services downstream as a result of defects in the system upstream), and a philosophy of continuous improvement.

These approaches are built on the techniques of lean manufacturing. This includes six sigma quality management (making sure that things work first time); just in time supply chains (eliminating work in progress and increasing flexibility); whole supply-chain management (to drive down costs both upstream and downstream from their own operations); and continuous improvement.
Scenario Y: Slim Down and Divest

**Summary**
In 2022, much the work of the 2012 civil service has been privatised or outsourced to private contractors, and much of the rest has been divested to European agencies or local authorities.

**How this world came to be**
The Reform Plan of 2012 was targeted at the reforming the central civil service, and it more or less achieved its objectives to reduce the costs and headcount by 23% from 2010 levels by 2015.

Much of this was achieved by cutting back on the outputs of government. Perhaps surprisingly, the leading lights in this were local councils in the UK which had gone through a similar process of cutting back and making do with less. Their approach was typified by Barnet council which had earned the nickname easyCouncil – offering a no-frills service: “If you want the roads gritting, we’ll give you the grit”.

The new government of 2015 was keen to demonstrate further progress in cutting the size of civil service, delivered through challenging headcount targets and a radical contraction of civil service functions.

**The size and shape of the civil service**
After 2015, the new political agenda was strongly in favour of both localism and better European integration, A number of areas of competence formerly held in Whitehall were transferred down to local authorities or up to European agencies.

In other areas, central headcount was progressively reduced through outsourcing, though the associated costs were still incurred. Now in 2022, the outsourced work is done through a wide variety of routes – through private contractors and through third sector organisations.

Civil servants need strong skills in network governance and, with policy delivery increasingly through teams of transient advisers and agents, accountability is a challenge.

**Use of technology**
Technology has been widely applied across the civil service, to make internal working more efficient. Many tasks have been put on line (“digital by default”), so that many processes familiar in 2012 have been automated or at least delivered digitally.

Delivery of services to the public has been mostly made digital, with each department offering multiple websites that automate the process of creating the equivalent paper form.
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This is known as the “Gov1.0” model, and often comes across as disjointed. The high level of subcontracting has made it more difficult to unify the government’s interaction with the public. Technology is important within the civil service for knowledge management and to retain and access the ‘corporate memory’.

The Use of Science and Engineering expertise
In 2022, the civil service now have an alternative sourcing model for GSE expertise. Many jobs using specialist scientist and engineering skills have been outsourced to specialist providers.

- Some of the larger GSE tasks, or ones that require fieldwork or a physical presence, are now done by contractors, where the headcount conveniently does not come under the central civil service totals; or by EU agencies which enjoy economies of scale.
- Other smaller tasks are often contracted out to small consultancies. There are many cases where individuals who used to do a science job in the civil services now find themselves doing the same specialist job, but working for a consultancy instead.
- The biggest changes have come in areas that do not require years of experience and good local knowledge. Much of the work here is now actually done by outsourcing organisations in India, China and elsewhere. Contracting out directly to service firms based abroad was politically unpalatable, so the contractor is invariably a well-known UK name, such as a big-four accounting firm or a well-known British University. But these are now all multi-national or trans-national organisations with Indian subsidiaries or Chinese campuses. They have learnt to internally subcontract the routine aspects of GSE contract work to low-cost subcontractors where the is work performed by well-qualified science and engineering graduates working for one fifth of UK wage rates.

Most of the remaining GSE professionals that are left in the central civil service are used in commissioning roles for which they needed to acquire negotiating and project management skills and now mainly use their science or engineering expertise as a useful background to help them be intelligent customers.

Some GSE professionals still in the civil service work in an cross-departmental internal consulting capacity or on fixed term contracts. The GSE professional network acting as an informal co-ordinating service in competition with external contractors.

The GSE professional network is now smaller, as the number of centrally employed scientists and engineers has fallen. It also looser and wider, including advisers to government as well as civil servants and now has more external activities, helping to facilitate a greater interchange between internal and external scientists and engineers working directly and indirectly for the government.
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Scenario Z: Investment for growth

Summary
In 2022, the focus of government has changed to an intensified industrial strategy with an emphasis on targeted investment and partnership with the private sector. Civil service capacity released by implementation of the 2012 and subsequent reforms has been redirected to support this programme.

How this world came to be
The success of the Olympics in 2012 brought home to people that there were some things that the public sector could do better than the private sector.

The civil service reforms of that year did not achieve the desired transformational effect. During the period 2012–15 it became clear that reductions in public spending were contributing to a fall off in the consumption component of GDP. Private sector production was not filling the gap.

Industries that were needed to pull the UK out of recession were reporting severe constraints due to lack of infrastructure, poor education and skills, lack of basic research in the universities that underpinned more applied R&D by industry, and a brain drain to countries with a more interventionist industrial policy.

With the return of economic growth in 2015, financial commentators and the ratings agencies started fretting less about the deficit and more about the UK's long-term competitiveness. Given the long term nature of most UK gilts, this was becoming more of an issue to the UK's credit rating than was the (now reducing) fiscal deficit.

In response, the political landscape slowly shifted to a stance supporting investment in those public goods that were increasingly being seen as necessary to underpin economic growth: infrastructure, education, the country's science base, and other economically productive investment.

Rather than lending yet more money to the banks in the hope that this would be used to fund industrial expansion, the government has moved towards a more direct funding model.

Shape and size of the civil service
The size of the civil service was reduced significantly in the period 2010 to 2015, during the first phase of reforms. After this, further reforms led to efficiency gains and further reductions in the headcount needed to deliver the outputs of 2012. But the overall size of the civil service has been roughly constant since 2015, as these reductions through efficiency have been offset by the need to deliver a programme of increased partnership with industry and targeted public investment.
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Now, in 2022, financial, contracting and commercial skills, and industrial experience, are highly prized within the civil service. Getting the job done and achieving value for money is emphasised over other competencies and the SCS is increasingly accountable to Ministers. Public/private partnership models are increasingly common and senior figures in the business and financial spheres are courted as advisers or to lead delivery. There is an increasing use of arms length bodies to manage funding programmes and collaborative investment in centres of expertise outside government.

**Use of technology**
Technology has been widely applied across the civil service, to make internal working more efficient and to enable internal and external collaboration. Many tasks have been put on line ("digital by default"), but only to the level where processes familiar in 2012 are reproduced digitally.

Delivery of services to the public has been mostly streamlined and automated, with each department offering multiple Apps (for PC’s, iPhones, webpages etc.) that automate the process of creating the equivalent paper form.

Though more integrated than the multiple website “Gov1.0” model, this can still be seen as not-joined-up government.

Technology (modelling, wireless sensors and actuators, smart materials) is also used to make existing and new infrastructure more resilient, flexible and better managed. Improvements in IT infrastructure, data management and processing capability are driven by partnerships with academia and industry.

**The Use of Science and Engineering expertise**
The civil service must compete with industry for highly skilled workers. There is increased demand for science and engineering expertise to identify and understand the implications of new technology for government policy and provide technical assurance to de-risk investment decisions. Engineering expertise is in great demand for commissioning and managing the large infrastructure projects (schools, transport etc.) that have been introduced.

Though the overall size of the civil service has been roughly constant since 2015, the emphasis on infrastructure, education, and investment in the country’s science base means that the proportion of scientists and engineers in the civil service workforce is now greater than it was in 2012.

The GSE professional network fills the same role as it did in 2012.
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