GOVERNMENT DATA SYSTEMS: THE BUREAU INVESTIGATES
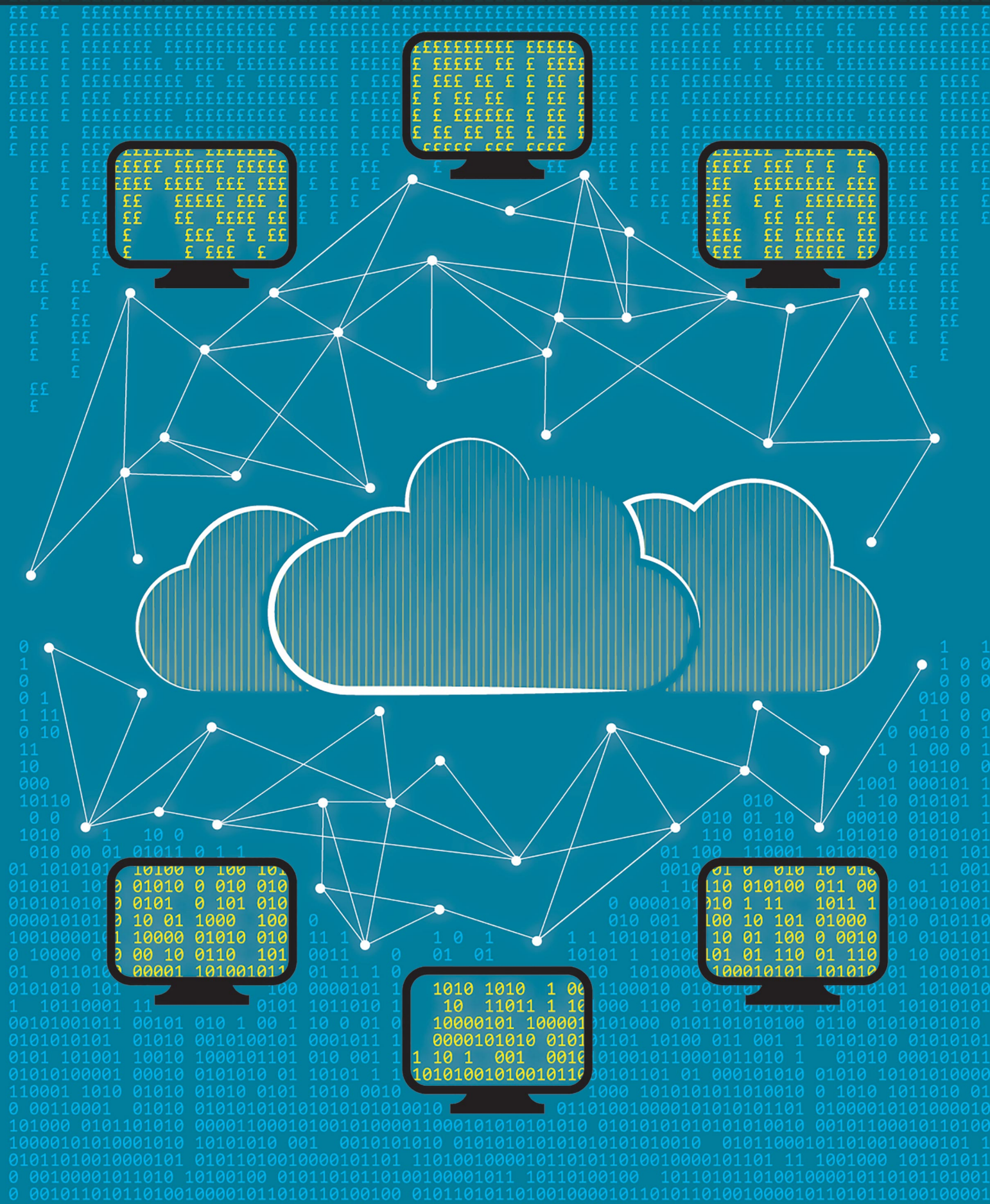
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THE BUREAU OF INVESTIGATIVE JOURNALISM

Summary

- Development of algorithmic and data-driven systems is frequently predicated on austerity - doing more with less.

- The adoption of such systems, the combining of legacy databases and the roll out of "digital by default" services is a major driving force in public policy.

- Information technology contracting for government is a flourishing area: although still dominated by traditional big names, many lesser known companies are also offering a wide variety of services.

- The Home Office's ambitious plans for new data-driven systems have required the assistance of over 40 companies in just the last two years.

- We traced several types of government purchasing activities for digital systems, finding over 1,800 companies selling simpler or shorter-term consultancy, software and storage services and almost 300 providing more complex requirements.

- Many authorities were unwilling or unable to specify how and why they purchased these services, however, or what their precise specifications were.

- Public authorities - national and local - are supposed to keep transparent and accessible records of the services they purchase (in part to comply with the Public Contracts Regulations 2015). We found that this was rarely the case.

- Government transparency datasets are an inadequate tool for understanding purchases, particularly in the case of highly diverse large companies which offer a multiplicity of services (true of many major government contractors). The UK lags massively behind the US's granular approach to public spending available through the Federal Procurement Data System, for example.

- Transparency - and therefore accountability - over the way in which public money is spent remains a very grey area in the UK. This is concerning, particularly at a time when the state is driving a complex data-driven revolution predicated on saving money through major digital transformation programmes and legacy system overhauls.

Introduction

AI, algorithms, deep learning, big data - barely a week goes by without a new revelation about our increasingly digital future. Computers will cure cancer, make us richer, prevent crime, decide who gets into the country, determine access to services, map our daily movements, take our jobs away and incarcerate us. Successive innovations spark celebration and concern. The UK should be "ready, willing and able" to profit from the economic potential of being a world leader in the artificial intelligence industry, a recent government report emphasises.[1] Academics and civil society, meanwhile, sound warnings over corporate accountability, the intrusiveness of personal data and the ability of legal frameworks to keep pace with technological challenges.

At conferences, during interviews, or over a pint in a pub, we've consistently heard one refrain: people are convinced that the growth of technology in the public sector has hugely important ramifications, but are baffled as to what exactly is going on and who is doing it. This report is a first step in remedying this. It gives a summary of some key findings from a six month scoping project into the use of algorithmic, data and digital systems in the UK public sector. We focus on how these systems are purchased, who from and who by, and we offer insights and tools for others to build further investigations on.

Our scoping exercise coincided with a number of events relating to the examination of government data systems. Two major reports were published: *Data Scores as Governance: Investigating uses of citizen scoring in public services* (Data Justice Lab, Cardiff University) and *Automating Society: Taking Stock of Automated Decision-Making in the EU* (AlgorithmWatch).[2] The UN Special Rapporteur on Extreme Poverty and Human Rights, Philip Alston, concluded a two-week mission to the UK with a scathing assessment of the implementation of the "digital by default" Universal Credit system.[3] A major cross-disciplinary workshop on "Algorithms and Society" was held at the Vrije Universiteit, Brussels.[4] The NGO StopWatch organised an event in London, hosted by Amnesty International, scrutinising the London Gangs Matrix, while Liberty released *Policing by Machine*, a round-up of public information on new policing technologies.[5] All these events attest to significant, and growing, interest in and concern for the role that data generated by or about citizens is playing in government systems which affect them. Among very many stakeholders, there is a strong feeling that the time has come for an urgent and wide-ranging debate.

Questions abound over how the debate is framed. What do we mean by an algorithmic or automated system? What is the difference between how such systems are designed and

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[1] https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf
[2] https://datajusticelab.org/data-scores-as-governance/ and https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/001-148_AW_EU-ADMreport_2801_2.pdf
[3] https://www.ohchr.org/documents/issues/poverty/eom_gb_16nov2018.pdf
[4] http://www.privacysalon.org/programme
[5] http://www.stop-watch.org/events/details/report-launch-being-matrixed-the-overpolicing-of-gang-suspects-in-london and https://www.libertyhumanrights.org.uk/policy/report-policing-machine

how they are used in practice, and how can each of these be evaluated? At what point does an advisory tool become unchallengeable revelation (or mysterious cargo cult)? Which potential issues lie in back-end processing and which in front-facing design and implementation? Are more problems caused by combining datasets or by failing to combine them? To what extent are the negative effects associated with new technologies actually indicative of persistent structural social ills? Are new approaches formalising inequalities that previously were less clearly defined and entrenched? Do data-driven systems perpetuate and codify unconscious biases, or do they offer a means for correcting formerly unarticulated prejudices?

To guide our work, we decided to focus in particular on the interface between public sector buyers of data systems and private sector sellers. Past experience has shown us that government procurement, and the traces it leaves in public (or at least potentially public) data can usefully be leveraged as a starting point for understanding diverse, and sometimes hidden, state activities.[6] The strategy through which a service is procured can illuminate the context and thinking behind the project, while documentary traces left by the process can point to concrete and specific details which are often obfuscated in official narratives.

Media, NGOs and academics in the UK have illuminated a number of private-public technology initiatives, but it has remained hard to assess the landscape in general. Conversations with sources suggested to us that this wasn't simply a shortcoming of our own perspective, but that, even within government, knowledge of what is going on remains fragmentary.

What we offer here is not a map, which would be a massive undertaking, but rather some practical methods which interested parties can use as starting-points for investigating their own areas of focus.

In the course of preparing this report we carried out dozens of interviews with experts and insiders. We are not publishing details of these interviews, but they have informed our approach and we are grateful to all those who agreed to talk to us. We have been particularly assisted by Swee Leng Harris, Tom Longley, Amber Marks and Sam Smith.
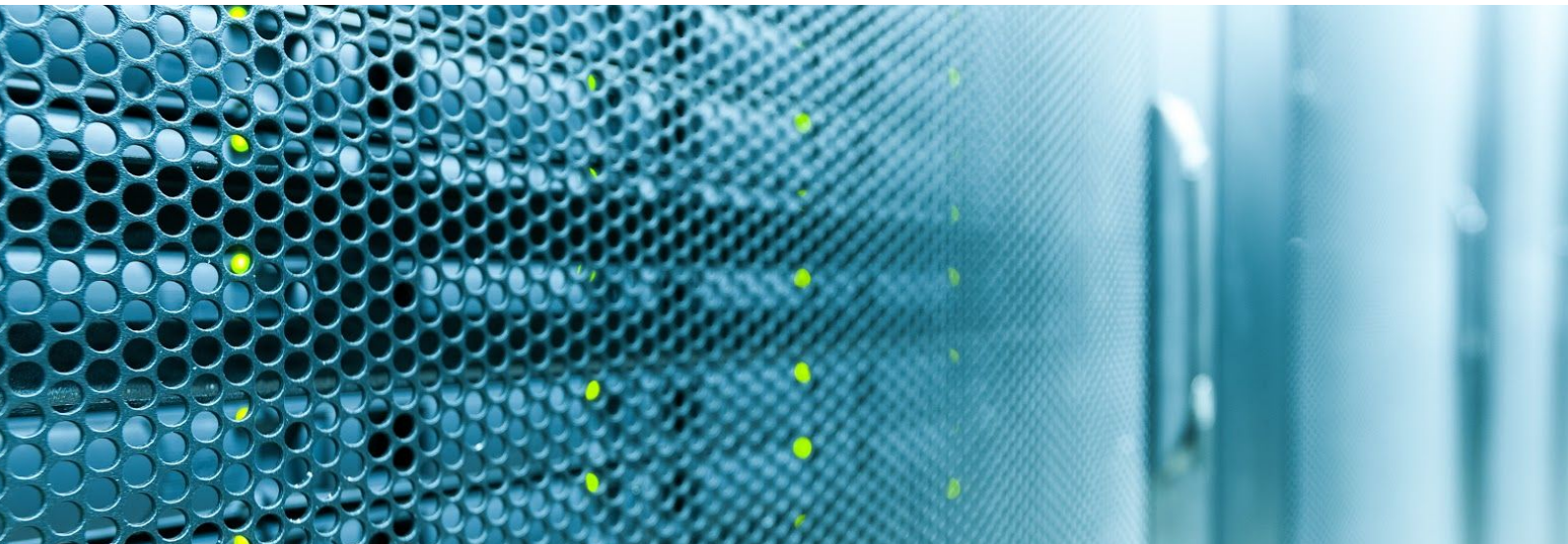

Investigating Procurement

Spending taxpayers' money comes with strings attached - including the need, at least in theory, to be somewhat transparent about where the money goes and why it goes there. As a result of this, a focus on government procurement can offer useful insights into state activities.

We split our investigation into two phases. First of all we looked at what existing transparency data could tell us about UK public sector investments in IT projects of potential interest. We used various portals and datasets, which we discuss below. Our investigation was carried out partly through automated techniques, including building scrapers to extract information from websites. We give a snapshot of our results, relating to contracts with the Home Office, in the appendix.

We then filed a group of Freedom of Information requests to test how public authorities maintained records of what they had purchased and why, using the data we had gathered in the first phase as source material.

We found that hundreds of companies are selling digital services to the government, but that the mechanisms which supposedly keep track of what services are being sold are far from effective. This is in striking contrast to the government's public commitment to open and transparent data.

Exploring Transparency Data

Public authorities in the UK make some information on their past and future purchases available for download and analysis. The UK likes to portray itself as a model for open data

standards.[8] We tested various portals used by the government to see which ones offered a useful insight.

Digital Marketplace

The Digital Marketplace is a gov.uk search tool which helps purchasers "find technology or people for digital projects in the public sector."[9] It offers streamlined procurement of digital services ("outcomes") and individuals ("specialists"), as well as a menu of pre-existing cloud services (hosting, software and support) and data storage.[10]

Digital Outcomes and Specialists (DOS) Framework

Registered users can create advertisements with written requirements for a particular "outcome" using the Digital Outcomes and Specialists framework. They are supposed to follow a series of steps: locating a list of suppliers, budgeting, writing and publishing requirements and evaluation criteria, answering supplier questions, evaluating and shortlisting supplier applications and finally awarding a contract.[11] The process is meant to take around four weeks.[12]

Suppliers (and members of the public) can access the advertisements posted using this framework via a keyword search box, some simple filters and a .csv download.[13] The search results as displayed on the website give project title, buyer, opportunity dates and a summary paragraph about what the project is intended to do. Clicking on the title leads to a new page with a more detailed description following a consistent structure. Each advertisement has an ID number, which is used to construct its URL ("https://www.digitalmarketplace.service. gov.uk/digital-outcomes-and-specialists/opportunities/1111").

The .csv download offers metadata for opportunities (ID number, title, buyer, category, dates, link to advertisement etc.) but does not include the summary paragraph which explains what the work will do.

The government publishes "statistical data sets" of DOS spending.[14] These provide aggregated monthly figures, since June 2016, of how much each supplier has been paid by each authority, but do not separate spending out into projects. A third-party website,

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[8] See, e.g.,
https://www.gov.uk/government/publications/uk-digital-strategy/7-data-unlocking-the-power-of-data-in-the-uk-ec onomy-and-improving-public-confidence-in-its-use: "The true potential of data can only be harnessed if it is open for use by others. The UK leads the world in open data, and the government is committed to building on this and being open by default."

[9] https://www.digitalmarketplace.service.gov.uk/

[10] https://www.gov.uk/guidance/digital-outcomes-and-specialists-buyers-guide

[11] https://www.digitalmarketplace.service.gov.uk/buyers/frameworks/digital-outcomes-and-specialists-3 /requirements/digital-outcomes

[12] As our findings below show, buyers sometimes find even this quite short process too arduous.

[13] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities

[14] https://www.gov.uk/government/collections/digital-marketplace-sales#digital-outcomes-and-specialists-sales

govspend.org.uk, offers a .csv download of DOS opportunities with the convenient addition of the contract amounts, where these have been published on the DOS website.[15]

We built a scraping tool to extract all the summary paragraphs from the DOS website. We combined these with the .csv download of opportunities and with the contract values derived from Govspend. This meant that we could filter opportunities by keywords appearing in the summary paragraphs, to give a more useful insight into past opportunities.

We also scraped the full webpages for each individual opportunity as separate .txt files, allowing keyword search across full tender descriptions.[16]

In November 2018, using this method, we created a dataset of 2,389 opportunities, ranging in date from 28 April 2016 to 6 November 2018. (By 3 April 2019 there were 2,754 opportunities listed on the website.)

This method offers a useful snapshot of services that public authorities are looking for, and a more limited insight into which companies were awarded DOS contracts. 1,613 of the 2,389 opportunities in our combined dataset do not indicate which company received the contract award. In most of these cases, the website states merely that applications are closed and gives the number of companies which completed applications (but not their names). In some cases the website states that a contract was withdrawn, cancelled, or no suitable suppliers responded. 776 tenders in our dataset do state which company won the award. These 776 awards went to 292 companies. Those which are recorded as having received more than 5 awards are:[17]

Methods Business and Digital Technology Limited	24 awards
Interact Consulting Limited	18
Kainos Software Ltd	16
People Source Consulting Ltd	15
FUTUREGOV. LTD	14
Keystream Healthcare Resources Limited	14
PA Consulting Services Limited (UK)	13
LA International Computer Consultants Limited	13
Deloitte LLP	11
Engine Partners UK LLP (The Engine Group)	11

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[15] https://www.govspend.org.uk/dos.php
[16] We found Sublime Text to be a useful tool for searching across files: https://www.sublimetext.com/
[17] Company names are drawn from the data as is, without attempting to adjust for consistency.

Lucid Support Services Ltd	11
The Dextrous Web (trading as dxw digital)	10
Made Tech Ltd	9
John White PM Ltd	9
Malikshaw Limited	9
Capgemini UK plc	8
Softwire Technology Limited	8
IBM United Kingdom Ltd	7
Valtech Ltd.	7
Redweb Ltd	7
Mercator IT Solutions	6
Agilesphere LLP	6
BAE Systems Applied Intelligence Limited	6
Rainmaker Solutions	6
CGI	6
COMXPS Limited	6
Unboxed Consulting Ltd	6
Lagom Strategy Ltd	6

G-Cloud Framework

The Digital Marketplace also offers a large number of off-the-shelf purchases. In such cases, suppliers list pre-existing software or services for the buyer to choose from, rather than the buyer writing an advertisement describing a bespoke service. These off-the-shelf services can be bought via the G-Cloud framework.[18] They are divided into three categories: cloud hosting, cloud software and cloud support, and are simpler to purchase than Digital Outcomes because the service descriptions already exist: buyers just need to make a search for the type of service they require, assess the results and award a contract to whichever supplier they deem appropriate.[19]

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[18] https://www.gov.uk/guidance/the-g-cloud-framework-on-the-digital-marketplace
[19] https://www.gov.uk/guidance/g-cloud-buyers-guide

As with the DOS framework, the government publishes a statistical dataset of G-Cloud spending, which gives aggregated values for spending by supplier and purchasing department per month.[20] Since some suppliers offer dozens or even hundreds of services on G-Cloud this is not helpful for determining what the government has actually bought.

We scraped the G-Cloud search website to give us a .csv file of nearly 25,000 services offered by over 3,000 suppliers. As with the DOS framework, our scraped data included summary paragraphs and links to full descriptions of each service, but not the complete text of each full description.

The data highlights a significant number of companies offering IT services within areas of particular interest.[21] We located

- 88 companies offering 101 separate "machine learning" services

- 73 companies offering 89 separate "big data" services

- 47 companies offering 50 separate "predictive" services

- 41 companies offering 56 separate "artificial intelligence" services

- 17 companies offering 19 separate "biometric" services

- 8 companies offering 6 separate services relating to facial recognition and expression analysis

Some of these companies are well-known government suppliers. Many are not.

The public sector as a whole spent over £3bn on G-Cloud purchases in 2016-18. The top ten buyers over this period were:

Home Office	£446,575,353
HM Revenue & Customs (HMRC)	£229,396,059
Ministry of Justice	£213,446,086
Department for Work and Pensions	£201,058,135
Cabinet Office	£87,981,583
Department for Education	£87,211,839
Student Loans Company	£74,453,356

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[20] https://www.gov.uk/government/collections/digital-marketplace-sales#digital-outcomes-and-specialists-sales
[21] As discussed below, shortcomings in the transparency data mean that without (and sometimes notwithstanding) further investigation it is impossible to know which of these services have been purchased.

Driver and Vehicle Standards Agency	£57,241,306
Driver and Vehicle Licensing Agency	£56,953,412
Office for National Statistics	£48,847,066

Other Tendering Data

The Digital Marketplace offers a relatively streamlined mechanism for government departments to buy IT products and services, but it is only one of many existing portals for government contracting work. All projects on the Digital Marketplace are digital, but not all digital projects are to be found on the Digital Marketplace.

Spend Network

To assist in our investigation we were kindly provided with access to the tender database collated by Spend Network.[22] This offers some 270,000 tenders from across local and national government, from 2016 onwards.

We built an API query to extract tendering documents containing specific keywords. On an initial test run we extracted documents containing 11 basic key terms (algorithm, automated, big data, decision making, decision-making, match, predictive, profile, risk based, risk-based, regression). This produced 3,874 tenders over 61 domains. The most frequently occurring domains for this search were

- www.contractsfinder.service.gov.uk   1,484

- www.sell2wales.gov.wales   593

- www.digitalmarketplace.service.gov.uk   467

- in-tendhost.co.uk   318

- procontract.due-north.com   243

- irl.eu-supply.com   181

- www.publiccontractsscotland.gov.uk   102

12% of all the tenders located appeared on the Digital Marketplace. 38% came from the Contracts Finder website.

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[22] https://spendnetwork.com. We are grateful to Ian Makgill of Spend Network and George Brown of Open Opps for facilitating access for us.

We subsequently ran a much broader extraction with a list of 59 terms, focusing not only on types of technology or methodology (as in the first list) but also on service areas in which IT systems are being used (e.g. biometric, housing, fraud, arrears). This provided a much larger dataset of over 30,000 tenders from over 100 domains.[23] The top 10 domains by frequency in this list were

- www.contractsfinder.service.gov.uk   13,571
- www.sell2wales.gov.wales   5,603
- procontract.due-north.com   2,099
- irl.eu-supply.com   1,984
- www.digitalmarketplace.service.gov.uk   1,548
- in-tendhost.co.uk   1,480
- www.publiccontractsscotland.gov.uk   1,105
- www.competefor.com   453
- www.defenceonline.co.uk   265
- etendersni.gov.uk   231

Digital Marketplace accounted for a much lower percentage (5%) than on the previous extraction - unsurprisingly, since the search terms were much less narrowly focused on digital processes - while Contracts Finder slightly increased its share (44%).

Contracts Finder

Our analysis of Spend Network tenders indicated that the dominant data source for the type of information we were looking for was Contracts Finder, a search engine for public sector contracts run by the Crown Commercial Service (CCS).[24] At time of writing, Contracts Finder contains a database of over 159,000 open, closed and awarded government tenders, accessible via a search bar and a series of filters. Some tenders have linked contracting documents. The site also offers a .csv download.

Unfortunately, Contracts Finder's search and download features make it difficult to use the site to perform the type of analysis we required.[25] The download facility is limited to 1,000

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[23] We excluded results from TED (the EU's Tenders Electronic Daily), although some of these would have related to UK purchases. The resulting dataset included 5,818 tenders dated 2016, 10,904 dated 2017, 11,551 dated 2018 and 2,658 dated 2019.

[24] CCS is described as an executive agency "sponsored by the Cabinet Office" and "providing commercial services to the public sector": https://www.gov.uk/government/organisations/crown-commercial-service.

[25] Without going into exhaustive detail, the search bar struggles to parse boolean searches alongside precise word formulations.

rows. We requested access to the full dataset in .csv format from CCS at the start of February 2019, but had not received a substantive response by the end of April. Daily .csv downloads of Contracts Finder data are available, but hard to use because they do not consistently maintain the same column configuration and therefore cannot be easily combined with each other.[26] Furthermore, there is no simple way of correlating entities in the downloaded datasets with the website search results.[27]

Third-Party Datasets

A number of free or commercial websites offer access to data drawn from Contracts Finder and other government portals, some with better accessibility than Contracts Finder itself. We found Bidstats to be a useful resource for keeping up with new tender opportunities.[28] Bidstats combines data from Contracts Finder and the Official Journal of the European Union (OJEU). The tenders are organised by sector, but can also be filtered according to company, government department, sector or a wide variety of hyperlinked tags.

As noted above, we incorporated data from Govspend,[29] a website offering analysis of transparency data relating to the Digital Marketplace. Unlike the aggregated transparency data released by the government, Govspend in some cases includes individual contract amounts.

Another such initiative is Appgov,[30] which offers search functionality on collated spend data and a list of major central government projects with links to annual reports associated with them.

Audit Trails

Principles

When civil servants buy services from the Digital Marketplace, they are supposed to maintain accessible audit trails of how they made those purchases. The G-Cloud buyer's guide states that "if you award a contract through the G-Cloud framework, you must be able to show that your assessment of services was fair and transparent."[31] As a G-Cloud buyer, "you should keep your own record of your communications with suppliers, including any early market engagement, clarification questions, emails and face to face conversations you have." The guide's recommendations extend to including in the audit trail the search terms used when looking for services.

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[26] https://data.gov.uk/search?filters%5Bpublisher%5D=Crown+Commercial+Service
[27] The .csv has a "notice identifier" but this does not correspond to the URL for the tender and needs to be searched for in a two-stage process in the search engine.
[28] http://bidstats.uk/
[29] https://www.govspend.org.uk
[30] https://www.appgov.org/
[31] https://www.gov.uk/guidance/g-cloud-buyers-guide

Likewise, the Digital Outcomes and Specialists Audit Trail Guidance stipulates that buyers need "a record of all the activities and decisions you make at every stage of the buying process ordered by date."[32] This is necessary to ensure compliance with the Public Contracts Regulations 2015.[33]

The Public Contracts Regulations are a statutory instrument which require, in part, that "contracting authorities shall document the progress of all procurement procedures, whether or not they are conducted by electronic means," and that "contracting authorities shall ensure that they keep sufficient documentation to justify decisions taken in all stages of the procurement procedure," including "communications with economic operators and internal deliberations", "preparation of the procurement documents", "dialogue or negotiation" and "selection and award".

DOS publishes clear and simple principles underlying audit trail maintenance, stating:

"Your audit trail must:
● be kept for at least 3 years
● be stored in an accessible format, in a place that other people in your team have access to, for example a shared folder
● keep a record of the buying process from your first contact with suppliers, for example from early market engagement until the contract (or 'call-off') ends"[34]

We found, however, that many departments appear not to follow these principles, and that as a result public understanding of what services the government is buying, and how it is buying them, is greatly curtailed.

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[32] https://www.gov.uk/guidance/digital-outcomes-and-specialists-audit-trail-guidance
[33] http://www.legislation.gov.uk/uksi/2015/102/contents/made
[34] https://www.gov.uk/guidance/digital-outcomes-and-specialists-audit-trail-guidance

Findings

Only a quarter of authorities we asked were willing or able to provide some form of audit trail for their G-Cloud purchases.

In January we sent requests to 40 authorities asking for titles, ID numbers and audit trails of G-Cloud purchases from specific companies. We knew, from our data analysis, that these authorities had purchased some services from these companies under the G-Cloud framework, but owing to the shortcomings of the transparency data, outlined above, we did not know which services they had bought.

By the end of April, 35 of these authorities had replied.[35] 13 of them refused the request entirely, while a further 5 provided some service titles but no further information. In most of these cases, the authorities stated that the request exceeded their cost thresholds because, contrary to the guidance, they did not maintain their audit trails either centrally or accessibly.

One authority - Central Bedfordshire Council - claimed to be unable to provide even a list of services purchased because "the Officer responsible for Procurement activities is no longer with the Organisation [and] information has not been transferred to Procurement system." Cambridge Constabulary stated that "we do not have access to an audit trail." The Defence Infrastructure Organisation - part of the Ministry of Defence responsible for training facilities - replied that it would take them at least 48 days to locate and extract audit trails on purchases from two companies between 2015 and 2019.

Aylesbury Vale District Council explained that "The information related to G-Cloud contracts were kept on specific projects filing structures; and not necessarily available for projects and contracts that were concluded and/or terminated. … It is unknown the number of documents to review, and the document management structure changed in the recent years. There would be a requirement to dedicate an officer or two engaging with many departmental managers, project managers and possibly former employees to fully respond to this request."

The Serious Fraud Office stated that "our initial search has made it apparent that it would not be possible to respond to your request without referring back to archived backup tapes. The data requested is not actually stored in a central location and in order to find it we would have to conduct an extensive search across these backup tapes to find and collate it. So far we have already spent over seven hours of work determining exactly what data is held. We estimate that to recall and restore the backup tapes would require in excess of 18 hours of work. Furthermore, if the tapes were fully restored, it would take considerable staff time to conduct searches across the material and to identify any relevant information."

Two authorities argued that they could not release their audit trails because of commercial sensitivity. Two authorities declined to disclose the services they had purchased on the

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[35] Requests were made on 24 January or before, with the statutory reply period expiring by late February. One authority - the National Crime Agency - anomalously falls outside the FOI law.

basis that the information was already publicly available on the Contracts Finder website; we did not find this to be reliably the case, however.[36]

In four instances, authorities claimed that they had not made the specified G-Cloud purchases, even though we had made our requests on the basis of G-Cloud spending data. It is unclear how to account for this.[37] Two authorities stated that purchases attributed to them in the spending data had actually been made by other authorities; in one instance, the other authority then denied that it had made any purchases.

Some authorities were seemingly able only to identify a fraction of the services that G-Cloud data recorded them as having bought. The government's statistical dataset states that in 2016-8 Transport for London bought G-Cloud services from BAE Systems Applied Intelligence, IBM, Deloitte and BravoSolution (among others), whereas TfL claimed only to have located one purchase out of this group. HMRC initially declined to provide a list of services purchased from five companies. Following a request for internal review, they listed services bought from three of the five companies. No explanation was given as to whether or why they had failed to locate services from the other two companies.

One authority - Staffordshire Police - did not technically refuse the request, but responded without giving any of the information requested, stating merely that the information we asked for was part of a broader contract with Boeing Defence UK.

Five authorities provided only the titles of the services they had purchased.[38] Nine (23% of those originally asked) provided some form of audit trail in response to our first request, ranging from very sparse to quite detailed.

At time of writing, five authorities (Peterborough City Council, Islington Council, the Metropolitan Police, City of London Police and Nottinghamshire Police) had failed to finalise a response, more than three months after the request was first made. The Met said they were working on it but that "the information is currently 'dispersed' and it is taking time to find 'what we hold, and to collate it'."

We also made some requests for purchases under the Digital Outcomes and Specialists framework. In response to our request for audit trails of three purchases, the Ministry of Justice stated that "we believe that the cost of extracting the information would require manually going through [an] estimate of 84 contracts files (manual & electronic) … This information is not held centrally and the cost to obtain some of the information from various units and directorates within the department would exceed the appropriate limit." In response to a request for internal review, the MOJ upheld its refusal: "The MoJ stores all commercial documents on one central and accessible system; however, the full audit trail

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[36] The Cabinet Office asserted that "details of call-off contracts are published on Contracts Finder." A search for "North Highland" on Contracts Finder produced one contract between GDS and that company, awarded in March 2015, but this did not appear to match the series of expenditure records recorded under G-Cloud between January 2015 and December 2018.
[37] The Digital Marketplace website states CCS's transparency figures for G-Cloud are provided monthly by suppliers: https://www.gov.uk/government/collections/digital-marketplace-sale.
[38] Some authorities could not locate the G-Cloud ID numbers for the services they had purchased.

(including communication with suppliers, notes, etc.) are not required to be stored in such a centralised way. Much of the key information is saved centrally, while other areas of the audit trail may be saved within individual and/or local drives, meaning that to locate, retrieve and extract this disparate information would exceed the cost limit."

The Home Office declined a request for audit trails of nine different procurements on grounds of cost (providing an estimate that it would take 72 hours to retrieve information on these procurements). A narrowed request was then refused on grounds of commercial interest: "Release of the withheld information would provide competitors with information, not available to them by any other means, about current service providers. This would create an unfair advantage resulting in a prejudice to the commercial interests of the company or companies concerned. Disclosure would also prejudice the Home Office's commercial interests by damaging commercial relationships with contractors and service providers."

Not all departments believe that disclosing audit trail information is detrimental to commercial interests, however. The Foreign and Commonwealth Office had refused our first request on grounds of cost, but responded positively to a narrower request. The disclosures totalled hundreds of pages of emails, evaluations and contractual material. Key data was still missing. Nonetheless, the FCO's response shows that disclosing detailed audit trail information is possible.

Case Study: G-Cloud Searching and Evaluation - Video Justice

In a few cases we received enough information to draw some conclusions about how authorities locate and evaluate G-Cloud services. Here is one example, chosen because it gives a good insight into a relatively simple search and evaluation process, and because its topic - digital justice provision in an age of austerity - is of considerable social importance.

Starting in 2015, Sussex Police procured various services via G-Cloud in relation to the development of a "video enabled justice system", in partnership with other police forces and national departments. The overriding goal was "delivering justice in an environment where there are fewer court buildings and less staff", through the use of "video by default". Sussex Police considered a number of avenues for procuring projects associated with this system. In one such instance, "consultancy services for the provision of a target operating model", in-house management was discounted because expertise and capacity were unavailable. The Home Office's Bluelight framework, commonly used by police forces, was discounted because of "the perception of a lack of independence and impartiality" and "connotations of it being a police-led project when it is essential that partners feel they are operating in an environment of inclusion." Use of an existing partnership with Deloitte would have created conflicts with another programme, while issuing a tender invitation was unattractive because of time scales (which were described as "extremely tight"). The G-Cloud framework was preferred because "it is a service for short term contracts [and] it is more efficient for selecting a suitable supplier through a direct-award process rather than sending out an [invitation to tender]." A similar process was followed for the subsequent "detailed business case" the following year. Time was too tight to use the DOS framework because of the

tendering invitation requirement, and other frameworks which, like G-Cloud, lacked tendering invitation requirements were seen as less specialised towards digital acquisitions or more limited in the range of suppliers offered.

Having decided to use the G-Cloud framework, procurement officers set about searching for the company which would offer consultancy on the "Video Enabled Justice system - Phase 2 Detailed Business Case" by inputting a wide variety of terms in the G-Cloud search box. These search terms included "connects video", "joint working", "end to end", "reduced business travel", "return on investment", "staff satisfaction" and "digital transformation", among others. Many of these terms returned dozens or hundreds of results; these were filtered and limited by the addition of the term "video" to each. An intermediary longlist produced a variety of services from Accenture UK, Affinity Digital Technology, AVM Impact, Dimension Data, Cloud Technology Solutions, Modality Systems, Involve Visual Collaboration and numerous other companies. Accenture, Modality Systems and Involve made it to the short list, where they were scored on service definition (via subcategories of relevant and specific experience, method and approach and mobilisation speed) and pricing, with Accenture coming top.

Perspectives

As well as examining procurement processes and records, we carried out dozens of interviews with experts, insiders and members of civil society. The purpose of these interviews was to help us situate our findings about the buying and selling of IT and data systems in the general context of current policy initiatives and debates.

Several interviewees suggested a strong link between the adoption of data-driven systems and the programme, dominant in recent years, of "austerity". Documents produced by both sellers and buyers frequently reference the need to do more with less, and systems are sold to the public sector with the promise that they will offer savings or be more efficient than existing methods. Questions exist as to how direct the link between buying IT systems and saving money is, however. There is evidence that automation of processes saves time. But more than one interviewee told us that while a good IT system costs a lot, the only real way for public authorities to save money is to cut down on staff or property.

Several interviewees expressed frustration with current narratives about algorithmic systems. Sellers, buyers and the media have all been known to exaggerate the sophistication of systems and to package traditional methods of statistical modelling as being "artificial intelligence".

Many interviewees were not entirely negative about authorities trying to do a better job with more data. But more than one cautioned that data-driven systems need to be contestable, and that this requires them to be transparent.

Several interviewees emphasised that, looking at the matter from the other end, the design and implementation of systems need to be properly in line with the needs of users - typically officials and frontline staff - as well as the ideas of their managers. Otherwise they risk being a waste of money or producing answers to the wrong questions.

A narrow focus on algorithms or data usage can be counterproductive when trying to assess complex systems. Interviewees who discussed the Universal Credit system with us saw its problems as being linked to poor communication, poor training, poor advice and poor resourcing more than to the algorithms embedded within the system. Others highlighted the gap between what a system is built to do and the culture of how it is used, and how this can change over time. Decisions made or suggested by an IT system are a subset of a broader range of decisions made by human users. The function of the IT system can't be assessed without evaluating the overall context of the management and working culture within which its human users operate.

Conclusions

As we stated at the outset, a recurring refrain throughout our interviews was the basic dearth of structured information about what public authorities are doing with their IT investments. This report aims to show some ways in which this problem can be addressed, while pointing to significant barriers that investigators still need to overcome.

We've examined some of the avenues through which the government buys IT services, identified companies (large and small) which are competing for public money and tested the transparency of the procurement process. We've also shown how existing open sources can be combined to form a more comprehensive picture of government purchases.

It is clear from our research that there is a flourishing ecosystem of companies offering digital, data and algorithmic services to public authorities. Over 1,800 companies are listed as having sold G-Cloud services (including software and hosting) to the public sector. 776 more complex awards via Digital Outcomes and Services went to almost 300 companies. As our appendix shows in detail, the Home Office's work over the last two years on several major transformational IT projects (spanning border, law enforcement and biometric databases) has required over 40 corporate partners operating under dozens of separate contracts.

In short, there is a very active industry competing for public money in exchange for data-driven and digital services. However, many authorities are unwilling or unable to specify how and why they purchased these services. This should ring alarm bells. The datasets which the government publishes in the name of transparency are inadequate,[39] particularly in the case of highly diverse large companies which offer a multiplicity of services - true of many major government contractors.

Transparency - and therefore accountability - over the way in which public money is spent remains a very grey area in the UK. This is concerning, particularly at a time when the state is in the midst of a complex data-driven revolution predicated on saving money through major digital transformation programmes and legacy system overhauls.

Such overhauls and transformations are likely to have a major effect on a significant proportion of the population - including the most vulnerable. Intentionally or not, they have the capacity to disrupt long-standing legal frameworks and policy norms around the way in which the state makes and implements decisions. Government contracting and outsourcing is traditionally an area which requires vigilance, especially regarding delivery of services and accountability. But without basic tools to assess what is going on and who is doing it, such vigilance is difficult.

We hope that our findings will prove helpful to the many people in journalism, academia, civil society, the legal profession and parliament who are currently grappling with these

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[39] Compare the granular data on spending published through the USA's Federal Procurement Data System.

significant developments in state bureaucracy and management. The potential for automated systems to offer "great possibilities for good and for evil" has been highlighted for decades.[40] Despite this, we still face an alarming deficit of knowledge about what these systems entail. Investigating the landscape of public-private partnership in the development of complex data systems offers some first steps to remedying this and provides a foundation for further inquiry.

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[40] The classic formulation is that of robotics pioneer Norbert Wiener, *Cybernetics or control and communication in the animal and the machine*, New York 1948, pp. 37-9.

Case Study: The Home Office

Summary

The Home Office is one of the departments most active in the purchase of IT services. It is in the middle of a number of major projects which aim to replace expiring legacy systems and transform the management of immigration, visa and passport applications, border control and policing.[41] Its objective is to create integrated, "digital-by-default" systems and to become a "data driven organisation".

Searching through procurement data, we identified over 40 companies contracted to provide services or specialists to the Home Office since late 2016 on major data-driven transformation projects. We list 86 of these contracts below, grouped under four broad headings (Digital Services at the Border, the National Law Enforcement Data Programme, Home Office Biometrics and the Passport Office's Digital Application Processing).

Roughly 180 firms sold G-Cloud services to the Home Office over the same period. These are also listed below, although further research is required to identify what services were purchased in each case. Analysis of G-Cloud data shows that of the firms which were used by the Home Office, those with fewer services available offer biometric and document

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[41] Some details of Home Office contracting in this area are discussed in Corporate Watch, *The UK Border Regime: A critical guide*, Oct. 2018, available at https://corporatewatch.org/new-book-the-uk-border-regime/.

authentication, machine learning and predictive analytics for fraud detection, risk scoring, and fusion of data from multiple sources, among other things.

An FOI request for audit trails of several purchases made by the Home Office via the Digital Marketplace was refused following a public interest test. The Home Office argued that disclosure would prejudice its commercial interest and that of the companies concerned.
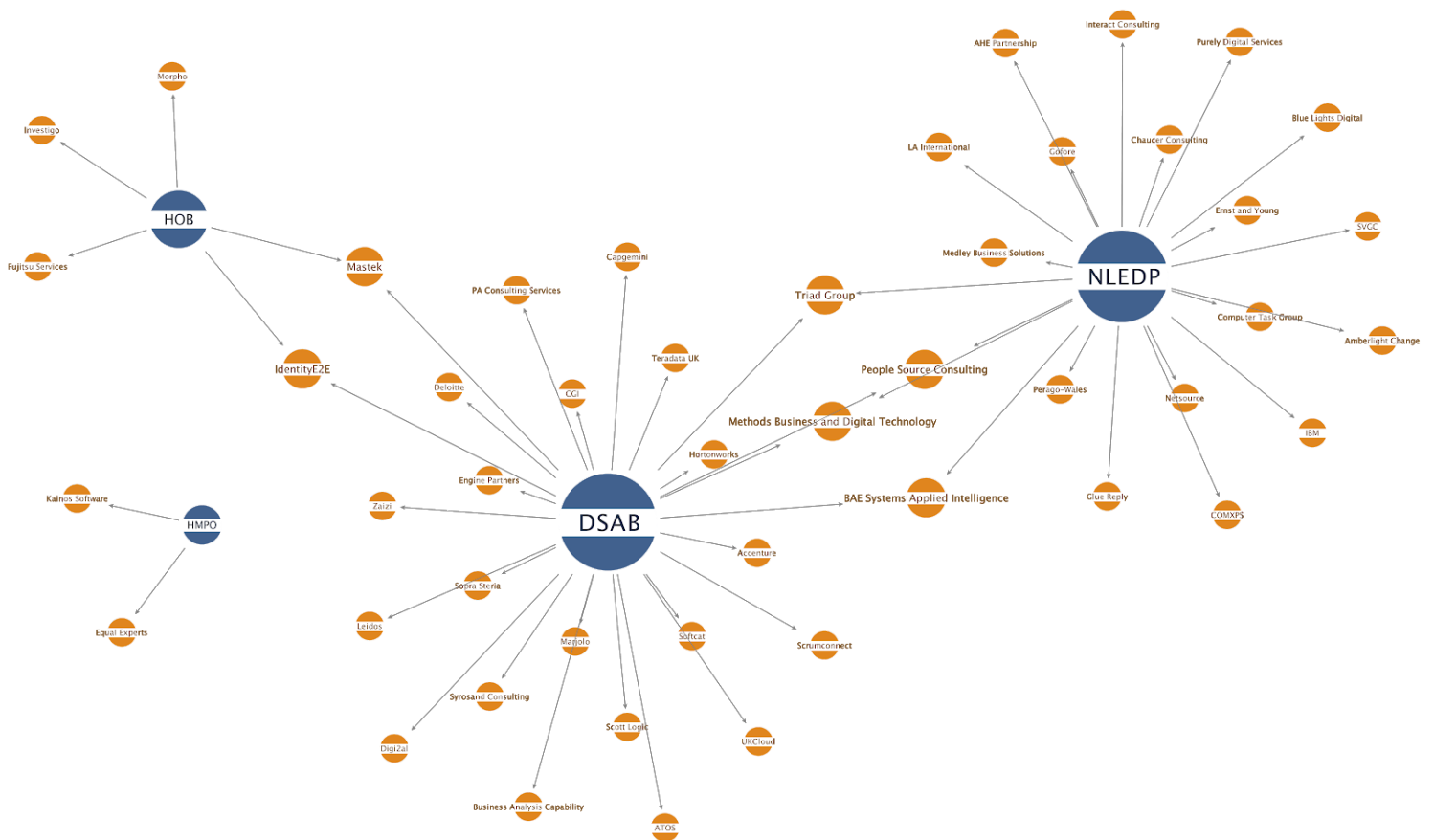
Companies and Contracts

PA Consulting Services and **Accenture** are key partners in the Immigration Technology Portfolio. The tenders published for these services describe the goal as "automating existing manual, paper-based processes; and supporting decision-making to drive consistency."[42] Among the tasks are to "resolve the identities of individuals … manage information about individuals [and] perform and record the outcomes of checks, including calculations (eg. to assess whether a threshold in the Points Based System is met)." Questions therefore exist concerning to what extent the Home Office is moving towards a data-driven and/or automated risk-based approach in assessing immigration applications. The government is hoping to develop in-house capacity to run the Immigration Technology portfolio, but this is currently lacking: **Deloitte** has a £23.5m award to assist "transition … to the internal capability."[43]

"Digital Services at the Border" (DSAB) is the successor to the failed E-borders programme.[44] The Home Office wants to replace the two systems supporting E-borders (Semaphore and Warnings Index – 13 and 22 years old respectively) with the new Advanced Border Control and Border Crossing systems. DSAB also includes the Advanced Freight Targeting Capability (AFTC) system, replacing HMRC's Freight Tracking System, to identify cargo of interest.

BAE Systems Applied Intelligence has been awarded a £4.9m contract to provide the Borders and Immigration Advanced Border Crossing Delivery Team, "specifically focusing on the delivery of a digital capability to allow Border Force, Police and other key stakeholders to identify and assess threats who are about to travel to, and from, the UK."[45] The requirements include "large scale data ingest" and "information and analytics". **Triad Group** has been contracted to provide developers for the AFTC system "data ingestion/management project" and the HBASE big data platform,[46] while **Syrosand** has been contracted to "analyse the data for subjects (both people and goods) approaching the UK border and provide staff with analytics driven insights to allow intervention where necessary."[47] **Zaizi** is engaged in digitising processes for Border Force officers: in May 2018 the Home Office noted that "incumbent solutions are locally built solutions based on Excel and Access which do not scale to meet the present multi-user requirements or meet our ambition for becoming a more data driven organisation."[48]

The National Law Enforcement Data Programme (NLEDP) is being delivered by **IBM** (and other partners) and aims to upgrade legacy systems - notably the Police National Database (PND) and the Police National Computer (PNC) - into an integrated single-view system which

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[42] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5768 and https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5771
[43] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5428
[44] https://www.nao.org.uk/wp-content/uploads/2017/10/The-UK-border.pdf
[45] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5403
[46] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2615 and https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2616
[47] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4908
[48] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6309

will link records of individuals from multiple sources (accessible to all law enforcement communities). It offers functions such as "analys[ing] data to identify links between people, objects, locations and events" and setting up "automated alerts for new or changed data and events of interest."[49] The **Police ICT Company** – currently owned by the Association of Police Authorities and Home Office – coordinates a variety of data activities and purchases across police forces.[50] It has "recently extended the national agreement with IBM providing access to analytics tools until 2020 … These capabilities extend beyond the i2 Analysis Software that analysts in every force are using already, to include predictive and video analytics tools."[51]

The Home Office is also in the process of developing the Home Office Biometrics Programme (HOB), to support the two legacy systems of IDENT1 and IABS (Immigration and Asylum Biometrics System) in a capability covering "3 primary biometric modalities of fingerprint, DNA and facial image associated with searches, verification checks and profile storage."[52] As stated in the Home Office Biometrics Strategy, "In future, HOB will provide a common facial matching service enabling the Home Office to realise efficiencies and ensure a more consistent approach to the testing, access controls and privacy controls associated with it. This will allow improvements in the technology and matching algorithms to enhance processes at Ports of Entry, Visa Application Centres and within passport applications."[53] **Fujitsu**, **Morpho** and **NEC** have been awarded contracts to deliver the Home Office Biometric Matcher Platform,[54] with **IdentityE2E**,[55] **Investigo**[56] and **Mastek**[57] providing associated services.

HMPO has announced a transformation agenda that describes its vision as shifting "assessment to a risk based, digital approach which will increase the capability to identify fraud" by introducing "risk-based approaches to application assessments, resulting in automation of low risk applications and more time for in depth examination of higher risk cases." Contracts have been awarded to **Kainos Ltd** and **Equal Experts** for the delivery of this project.[58]

In total, we identified 47 companies providing services or specialists to the Home Office since the end of 2016 on its various data-driven transformation plans, via awards listed on Contracts Finder and the Digital Marketplace.

[49] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1227
[50] https://ict.police.uk. See also https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/512164/police-ict-company.pdf
[51] https://ict.police.uk/wp-content/uploads/2017/01/Programme-press-version.pdf
[52] https://ted.europa.eu/udl?uri=TED:NOTICE:121962-2018:TEXT:EN:HTML
[53] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/720850/Home_Office_Biometrics_Strategy_-_2018-06-28.pdf
[54] http://bidstats.uk/tenders/2018/W51/693436534
[55] http://bidstats.uk/tenders/2018/W48/692060517
[56] http://bidstats.uk/tenders/2018/W48/691863928
[57] http://bidstats.uk/tenders/2018/W11/674955440
[58] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2400; https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4887; https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4781.

Many other tenders on the Digital Marketplace are listed as closed but no supplier is given. These are omitted from the list below, although the advertisements still give useful indications of work that the department anticipates doing.

The 47 companies are:

Accenture	Fujitsu Services	Netsource
AHE Partnership	Glue Reply	PA Consluting Services
Amberlight Change	Gofore	People Source Consulting
Atos	Hortonworks	Perago-Wales
BAE Systems Applied Intelligence	IBM	Purely Digital Services
Blue Lights Digital	IdentityE2E	Scott Logic
Capgemini	Interact Consulting	Scrumconnect
CGI	Investigo	Softcat
Chaucer Consulting	Kainos Software	Sopra Steria
Computer Task Group	LA International Computer Consultants	SVGC
COMXPS	Leidos	Syrosand Consulting
Deloitte	Marjolo	Teradata
Digi2al	Mastek	Triad Group
Engine Partners	Medley Business Solutions	UKCloud
Equal Experts	Methods Business and Digital Technology	Zaizi
Ernst and Young	Morpho	

Below is a partial list of Home Office awards identified during our research, ordered by category (DSAB and associated, NLEDP, HOB, HMPO) and start date.

We also include a breakdown of the Home Office's G-Cloud purchases by supplier.[59] As mentioned earlier, government transparency data generally doesn't reveal which services were bought.

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[59] Because our searches are based on keywords and because these keywords are not applied consistently by the buyer, where each contract sits within the Home Office's own structure is not always visible. For example, we do not try to unpick whether all "visa" or all "Borders & Immigration Technology Programme" contracts fall within DSAB or are separate.

Digital Services at the Border / Immigration Technology Portfolio

Dec. 2016

Digital Services at the Border require a CESG Tailored Assurance Service (CTAS) Evaluation. CGI, £55k[60]

A Border Force officer is required to perform detailed checks for incoming and outgoing individuals at the border. "Digital Services at the Border (DSAB) requires a inter domain gateway for validation of information across a security boundary. … The Home Office has requirement that the inter domain gateway undergo a CESG Tailored Assurance Service (CTAS) Evaluation. … Without this assurance the new DSAB platform will not Go Live."

DSAB Cloud hosting. UKCloud, £810k[61]

DSAB - AFTC - AFTC IaaS Hosting. UKCloud, £810k[62]

Jan. 2017

DSAB Technical Architect/Developer (AFTC-1). Sopra Steria, £336k[63]
"Work on the Digital Services at the Border programme (DSAB) supporting the AFTC project to work with external 3rd parties to agree and design the approach for receiving and integrating their data within the DSAB data store." Must support cloud hosting and understand impact of cloud on design.

DSAB Java Developer (AFTC-2). Sopra Steria, £336k[64]
"Work on the Digital Services at the Border programme (DSAB) supporting a data ingestion and management project. This will involve writing code to transform and manipulate data across formats as well as its potential impact on the Hadoop big data platform. There is also a requirement to work with an old project in order to understand requirements and existing behaviour." Requires expertise in Java 8, Camel, Swagger, SpringBoot, SpringData, Docker, JUnit, Cucumber, micro services architecture, REST, GIT, PHP, Zend, MySQL. "Must be able to retrieve data from micro-services architecture, manipulate data between different forms and understand how this affects the data storage and retrieval."

DSAB - Angular/PHP developer (AFTC-3). Sopra Steria, £312k[65]

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[60] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1414
[61] https://www.contractsfinder.service.gov.uk/Notice/48049cff-ab1b-44ea-b87a-3abd28dd12cf
[62] https://www.contractsfinder.service.gov.uk/Notice/afdf5c6e-75b2-4660-a85d-06875de810c3
[63] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1203
[64] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1204
[65] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1209

"Developer to work on a User Interface project as part of the DSAB Programme. This will involve writing code in the new UI project, as well as working with the old UI project to understand requirements and behaviours."

DSAB - BX - F5 specialist hardware (plus 1 yr support). Softcat, £149k[66]

DSAB Technical Architect / Developer - AFTC1. Sopra Steria, £336k[67]

DSAB PHPDeveloper - AFTC3. Sopra Steria, £312k[68]

DSAB - Client Side Project Review. Scott Logic, £1[69]

DSAB-DOS-Specialist1-AFTC3. Sopra Steria, £393k[70]

DSAB-DOS-Specialist1-AFTC1. Sopra Steria, £424k[71]

Feb. 2017

DSAB - AFTC - Technical Lead Developer. Sopra Steria, £336k[72]

DSAB - AFTC - PHP Developer. Sopra Steria, 312k[73]

Mar. 2017

Border Force (BSTP) Project Management Service. Methods Business and Digital Technology, £1.7m[74]

"Supporting the programme team managing integration of new digital platforms into the current systems whilst managing changes into existing legacy systems in parallel. … The Home Office and Border Force UK are transforming services with the introduction of a number of new digital systems. Migration to these new systems is complex demanding a series of transitional hybrid states from old to new. During this transition period the legacy systems are maintained and developed using key technologies including C++, C# .NET, Java and SQL server, IBMs large infrastructure products such as Websphere Message Broker, Business Objects and Oracle. … The existing team is a blend of internal HO staff supplemented by external consultants. The legacy systems are maintained by multiple external Systems Integrators whilst the new digital platforms are typically developed by in-house teams."

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[66] https://www.contractsfinder.service.gov.uk/Notice/ba9a5cdf-fe69-4049-b636-2c26f56fbe5a
[67] https://www.contractsfinder.service.gov.uk/Notice/e82b0dce-ca98-4e68-975b-0c6062cafc97
[68] https://www.contractsfinder.service.gov.uk/Notice/e19c2bbc-637d-4ccf-914e-39b963325704
[69] https://www.contractsfinder.service.gov.uk/Notice/8f2622e6-98ca-4899-b839-2ac192100855
[70] https://www.contractsfinder.service.gov.uk/Notice/0609766c-9886-45cd-9bc5-2b94282a292b
[71] https://www.contractsfinder.service.gov.uk/Notice/50413e9a-3266-4505-89cc-9b0590cec367
[72] https://www.contractsfinder.service.gov.uk/Notice/3435166c-8381-48fb-8336-468e4a6d7ec5
[73] https://www.contractsfinder.service.gov.uk/Notice/e5ee9911-ae37-4e93-bb29-125a9263e805
[74] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2174

Apr. 2017

DSAB - BX - x1 e-Learning Content Developer. People Source Consulting, £150k[75]

DSAB - E-Learning Content Developer. People Source Consulting, £75k[76]

DSAB - SL Variation (IR35 remediation). Scott Logic, £250k[77]

May 2017

Borders Business Architect (BBA1). Marjolo, £84k[78]

"Experienced Business Architects working across the Border Force business domain to design target operating models and associated business architecture artefacts in order to realise the business transformation by 2020."

June 2017

DSAB AFTC Project Test Engineering. IdentityE2E, £1.2 to 2.5m[79]

"Quality Assurance and Testing (QAT) requirements and arrangements needed for the provision of test engineering services to support the delivery of the Advanced Freight Targeting Capability (AFTC) & Advanced Border Control (ABC) projects"

July 2017

DSAB Delivery Manager Roles x3. Marjolo, £660k[80]

Aug. 2017

Borders Java Developer. Triad Group, £286k[81]

"Contribute to the development of the Borders AFTC service working in an Agile delivery environment. The role works on a data ingestion/management project, involving writing code to transform and manipulate data across formats, into storage with potential impact on the HBASE big data platform, providing data to consumers via micro-services." Requires expertise in Java 8, Spring / Spring Boot and spring data rest, REST, TDD, BDD (specifically

[75] https://www.contractsfinder.service.gov.uk/Notice/339163cf-0be5-406e-a778-5ad695a310f8
[76] https://www.contractsfinder.service.gov.uk/Notice/09f511d3-6e9e-4ad0-bc9f-344141c0902d
[77] https://www.contractsfinder.service.gov.uk/Notice/6f4cfc73-7af8-404d-8815-a0616c4fb052
[78] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2180
[79] https://www.contractsfinder.service.gov.uk/Notice/c63c0248-16bf-4402-b720-9474f0c8e999
[80] https://www.contractsfinder.service.gov.uk/Notice/63c60485-dc0a-4bf7-a5b6-9382628654a2
[81] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2615

Cucumber), Apache Camel, Microservices architecture, GitHub / GitLab, use of branching and merging strategies, Clean code.

Borders Big Match Developer. Triad Group, £286k[82]

"Contribute to the development of the Borders AFTC service working in an Agile delivery environment. Working closely with data on-boarding, data analytics and devops teams within the project. Role focuses on Infosphere 'Big Match for Hadoop'." Requires expertise in Infosphere Big Match for Hadoop, Hadoop, HBase, MapReduce, Java 8, REST, TDD, BDD (specifically Cucumber), Microservices architecture, GitHub / GitLab, use of branching and merging strategies, Clean code.

DAC-030 - C8367 NGDA Product Manager. Syrosand Consulting, £376k[83]

"The project is providing analytic processing on data arriving within a window of opportunity in order to support Border Force business needs. Specifically, to analyse the data for subjects (both people and goods) approaching the UK border and provide staff with analytics driven insights to allow intervention where necessary. ... Delivery of a number of operational trials that if successful, and provides the required level of benefits will proceed to full implementation using the analysis of data for goods and people, which is on the whole, currently a manual process. The delivery of a data analytics capability to Border Force will enhance their ability to identify targets that produce a positive result, in terms of detection and intervention."

DSAB Java Developer. Triad Consulting & Solutions, £286k[84]

Nov. 2017

DSAB 2nd and 3rd Line Support. Leidos, £5m[85]

G-Cloud 9 DSAB Data Platform - Hadoop Services Support. New Contract. Teradata UK, £1.8m[86]

Case Working Delivery Partner 2. Accenture (UK), £9.5m[87]

"The goal is to replace legacy systems by building a new extensible and reusable framework to meet the needs of immigration and asylum claims within UK Visas and Immigration (UKVI). ... As a result of delivering the framework a number of business critical legacy systems will be replaced. ... The Portfolio is building services to transform the way the Home Office (HO) manages immigration into the United Kingdom. The key outcome is to build a core Caseworking system for use by Home Office staff, and replace the existing ASYS, BRP,

[82] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2616
[83] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4908
[84] https://www.contractsfinder.service.gov.uk/Notice/1451984b-3f85-4557-9660-0283a3b23482
[85] https://www.contractsfinder.service.gov.uk/Notice/de8c1782-8b6b-4c48-848c-716bf871acf7
[86] https://www.contractsfinder.service.gov.uk/Notice/2982c21e-fb33-4281-85c0-6474d396ac61
[87] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5771

CID, ICW and PBS systems. These systems collectively support several thousand concurrent users, and mange decision making on hundreds of thousands of Immigration and Visa cases per year. Key deliverables include: developing configurable technology modules tailored to a specific business service need; automating existing manual, paper-based processes; and supporting decision-making to drive consistency."

Users need to "Resolve the identities of individuals applying for Visa and Immigration products; Manage information about individuals and their cases; Perform and record the outcomes of checks, including calculations (eg. to assess whether a threshold in the Points Based System is met); Record decisions made about cases and the fulfilment of those decisions (eg. to provide a Visa); or provide asylum support [to] ensure applications are completed within agreed SLAs."

Dec. 2017

Client Side Partner for Immigration Technology. PA Consulting Services (UK), £10m[88]

"Immigration Technology has a requirement for a partner to provide large scale IT programme and project delivery expertise and guidance. … We are helping to deliver the future of immigration. Users include the public applying for entry to or the right to remain in the UK and police, security and enforcement teams controlling immigration and securing UK borders and detecting criminal behaviour within the Home Office and wider Government Agencies."

Business Change Service for UK Visas and Immigration & Immigration Enforcement. Atos IT Services UK, £4.9m[89]

"Business-Change Service provision for an existing-portfolio of in-flight projects, ensuring business-readiness and benefit-realisation."

"UK Visas and Immigration is responsible for making millions of decisions every year about who has the right to visit or stay in the country, with a firm emphasis on national security and a culture of customer satisfaction for people who come here legally. Immigration Enforcement exists to reduce the size of the illegal population and the harm done to the UK. … UKVI users include the public applying for entry to or the right to remain in the UK. IE external users comprise the illegal migrant population. UKVI and IE have internal users of approximately 7,000 and 5,000 respectively."

Digital Customer Journey - Access UK. Deloitte, £23.5m[90]

"The Immigration IT Portfolio is delivering around 70 projects which impact over 20,000 Home Office staff and millions of customers worldwide. We are looking for an AGILE partner to deliver a range of internal and public facing digital immigration services from discovery to

[88] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4753
[89] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5088
[90] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5428

live. … The Home Office is currently delivering digital immigration services to customers with a mixed delivery team. The medium-term plan is to build an in-house AGILE 'Digital Hub' development capability, located in Sheffield. Until this internal capability is established, the Home Office has a need to access AGILE development teams to continue building, testing and iterating customer-facing services, and then transition these skills and knowledge to the internal capability."

IPT L2/L3 Live service support /change. Mastek (UK), £9.5m[91]

"The Immigration IT Portfolio is delivering around 70 projects which impact over 20,000 Home Office staff and millions of customers worldwide; building a range of internal and public facing digital immigration services to our customers. We require a partner to provide interim Level 3 application support for these digital services. Our medium-term plan is to create and build an in-house capability, we are therefore looking for a partner who can transition the service and knowledge to this capability."

Jan. 2018

Borders and Immigration Advanced Border Crossing Delivery Team. BAE Systems Applied Intelligence, £4.9m[92]

"The Digital Services At Border (DSAB) Programme has a requirement for a Delivery Partner to supplement the existing team(s) and supply the capability to deliver discrete work packages aligned to the DSAB programme roadmap, specifically focusing on the delivery of a digital capability to allow Border Force, Police and other key stakeholders to identify and assess threats who are about to travel to, and from, the UK." Initial workpackages: End to end design that aligns to the enterprise level DSAB architecture, including IdAM and Security; Large scale Data Ingest; Information and Analytics.

User-Centred Design. Digi2al, £5m[93]

"Immigration IT Portfolio. The Home Office currently lacks capability in user centred design and the services are failing to meet the Digital by Default Service Standard. The supplier will support in-house delivery teams to build services which meet the Digital Service Standard, reduce duplication of effort, reduce failure demand and transfer knowledge and skills to Civil Servants."

Digital Passenger Services: Developer Outputs. Engine Partners UK, £2.3m[94]

"The initial requirement is to contract for provision of developer services for the Digital Passenger Services Programme, but potentially wider Border Force IT Portfolio."

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[91] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5478
[92] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5403
[93] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5224
[94] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5439

Feb. 2018

Digital Services at the Border - DevOps. Capgemini UK, £2.3m[95]

"Increase the DevOps capability".

Mar. 2018

Case Working Delivery Partner 1. PA Consulting Services (UK), £9.5m[96]

(See description for Accenture, Case Working Delivery Partner 2, Nov. 2017.)

Border Crossing Solution Architect. Capgemini UK, £351k[97]

"Supporting the Border Crossing project which is delivering new border control software to the UK borders and a replacement for the current watchlisting systems."

Apr. 2018

Digital Services at the Border Programme - Development Capability. Capgemini UK, £4.3m[98]

Digital Services at the Border Programme - Business Analysis Capability. Capgemini UK, £3m[99]

May 2018

Digitisation of Processes for Border Force Officers. Zaizi, £4m[100]

"Border Force Officers use a suite of legacy tooling, this work will digitise process around most common use cases – typically of the nature of data capture, workflow and present a Management Information dashboard. … This work is required to address many of the deficiencies in day to day operational use and digitise process alongside the rollout of new technology – new laptops, smartphones and integration with cloud based solutions. … Much of the incumbent solutions are locally built solutions based on Excel and Access which do not scale to meet the present multi-user requirements or meet our ambition for becoming a more data driven organisation."

[95] https://www.contractsfinder.service.gov.uk/Notice/5caa2d89-98d8-4bc3-8bc6-c4284762130c
[96] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5768
[97] https://www.contractsfinder.service.gov.uk/Notice/13c2219a-7033-441b-9efc-0cb5fb73d8b9
[98] https://www.contractsfinder.service.gov.uk/Notice/079a9949-8fe1-41a4-99d3-d9f98ad4c7e4
[99] https://www.contractsfinder.service.gov.uk/Notice/8a179592-671e-4ac8-9319-8caf1d6997ca
[100] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6309

DSAB Cloud Support Professional Services. Hortonworks UK, £1.7m [101]

"Provision of specialist Hadoop and Big Data Specialist Team"

DSAB - Scrum Master 3. Scrumconnect, £195k [102]

July 2018

DSAB - Scrum Master 1. Triad Consulting & Solutions, £216k [103]

Aug. 2018

Border Systems Technology Projects (BSTP) - Project and Programme Management. Capgemini UK, £3m [104]

"BSTP delivers programmes and projects that support security at the border. Existing projects include upgrades to reporting mechanisms, new software functionality and consolidation work, but the team can be flexed to support any new requirement. The supplier will provide project management capability, release management and planning services to ensure successful delivery of the projects."

Oct. 2018

Border Systems Technology Project (BSTP) - Critical Systems Project Delivery Capability. Methods Business and Digital Technology, £4m [105]

"Borders IT require a specialist Delivery Partner for critical systems project delivery on the Semaphore and Warnings Index programmes, covering programme and project management, architecture and data modelling. Both are critical national systems protecting the border - more detail will be provided at the next stage."

[101] https://www.contractsfinder.service.gov.uk/Notice/9db1a902-fefc-426d-9378-e198bfeb4296
[102] https://www.contractsfinder.service.gov.uk/Notice/448f1d90-f6ab-492e-9c7e-27f6447134b9
[103] https://www.contractsfinder.service.gov.uk/Notice/d29bce97-4044-4f2b-a236-d67abf1a6e43
[104] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/7573
[105] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/7539

National Law Enforcement Data Programme

Sep. 2016

Delivery Manager - Data Migration Project Manager. Chaucer Consulting, £165k[106]

"Requires a deep understanding of all aspects of migration from a Natural/Adabas database mainframe environment. The specialist will oversee the data migration strategy, and document relevant business logic and rules in order to migrate to a new system. The candidate will be responsible for ensuring a smooth transition to the target platform managing trial runs, data reconciliation, data mapping, readiness assessments."

Oct. 2016

Business Analyst. Medley Business Solutions, £176k[107]

"Engage with the law enforcement community, other Home Office Digital, Data and Technology (HODDaT) programmes, and other programme streams, to progress the design of the integrated services across LEDS."

Technical Transition Architect. Medley Business Solutions, £176k[108]

"Technical transition architect, responsible for defining the transition solution from a complex Adabas/Natural mainframe environment to a new platform."

Nov. 2016

Planning Delivery Manager. AHE Partnership, £157k[109]

"Plan, structure and lead the planning of the projects ... Manage the interface between projects highlighting both the dependencies and the interfaces between stakeholders."

Jan. 2017

Stakeholder Engagement Manager. Triad Group, £127k[110]

"Work collaboratively across National Law Enforcement Data Programme (NLEDP) to deliver the programme vision, developing and maintaining a stakeholder engagement strategy and plan to ensure consistent and coherent engagement across NPDP's diverse stakeholder landscape."

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[106] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/591
[107] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/868
[108] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/874
[109] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/948
[110] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1175

PND Service Architect. Methods Business and Digital Technology, £151k[111]

"Service Disaggregation of an existing contract. To work with the existing team to define, document and agree with all stakeholders the approach, implementation and ongoing service architecture. You will own the service disaggregation including security considerations and help shape the services, metrics and operating model for the application.

Feb. 2017

Application Development Service. IBM UK, £12m[112]

Building and supporting data services to support law enforcement and other agencies; highly automated application delivery pipelines; access portals; API gateways supporting fixed and mobile channels.

"The Home Office has existing data systems whose contracts begin to expire in 2019. These systems are expensive to operate and maintain, and difficult to change to accommodate the rapidly evolving law enforcement landscape. Additionally, some systems and components are approaching end-of-life, or end-of-support. This procurement will enable NLEDP to replace these systems with the Law Enforcement Data Service (LEDS). LEDS will ensure continuity of business services, and act as a platform for innovation to transform the way the HO manages and supplies data services to Law Enforcement Communities and other authorised Agencies throughout the UK and internationally. … Work packages will focus upon access portals, web applications, API gateways, Master Data Management, Entity Recognition, messaging, micro-services, security and auditing, container technologies and SQL and NoSQL databases. … Users include 43 police forces, Border Control / Immigration, government departments and agencies, Disclosure Services, Criminal Justice System, Offender Management Services. User requirements include the provision of capability to: check an individual's identity, offending history, status, and location; analyse data to identify links between people, objects, locations and events; set up automated alerts for new or changed data and events of interest."

User Researcher. Amberlight Change, £146k[113]

"Engage directly with Service Designers and Business Architects, operational police officers and the public in order to create local, regional and national insight in the design of service, process and organisational structure."

Relationship Manager. Methods Business and Digital Technology, £143k[114]

"You will play an integral role in securing access to data sources necessary to fulfil the wider data sharing ambitions of the programme and will own relationships/engage with data

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[111] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1140
[112] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1227
[113] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1218
[114] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/1173

owners ensuring data sharing requirements/implications are understood whilst ensuring plans are put in place to address these in line with Ministerial direction."

June 2017

Non Standard Service (NSS) Delivery Project Manager. Purely Digital Services, £151k[115]

"Identify and manage relationships and inter-dependencies between projects within a complex commercial environment of multiple suppliers, 3rd parties and partners."

July 2017

Solution Designer. LA International Computer Consultants, £249k[116]

Transition Service Packages, Transition Risk Mitigation and Rollback, Interface and Batch treatment plans, Data Replication, Reconciliation.

Service / Business Architect. Perago-Wales, £324k[117]

"Shaping how the future of LEDS will operate in a BAU environment."

Product Manager. Computer Task Group (UK), £581k[118]

"The programme is comprised of a mixed team of Civil Servants and client side consultants supplemented with SMEs both client and supply side. The programme team also comprises seconded operational and retired Police Officers. The programme also utilises one large supplier (Application Development Support Partner) for most of the build activity associated with LEDS and a collection of small SMEs focused on activities such as data migration, testing and data quality. … One of NLEDP's key objectives is to determine the future need for new services to make national data easy to access by frontline officers to inform local policing decisions. As Product Manager, you will support NLEDP delivery by analysing and defining requirements to and establishing core LEDS products that work together to provide the overarching service."

Relationship Manager. Computer Task Group (UK), £581k[119]

"As Relationship Manager, you will support the NLEDP leadership team in securing access to data sources necessary to fulfil the wider data sharing ambitions of the programme. You will engage with data owners to ensure that data sharing requirements and their implications are understood and that plans are put in place to address these in line with Ministerial appetite and direction."

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[115] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2082
[116] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2374
[117] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2480
[118] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4563
[119] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4565

Business Analyst. Computer Task Group (UK), £490k[120]

"Support the NLEDP delivery teams by analysing and defining requirements to make sure that the projects that deliver them are built and run to align to the service vision, meeting business and user needs."

Project Manager. Computer Task Group (UK), £581k[121]

"Support the NLEDP leadership team in delivering outputs necessary to fulfil the wider outcome delivery objectives of the programme".

Service Transition & Programme Support. Ernst & Young, 4.5m[122]

"There is a need to manage the transition of services being developed to a BAU state. To do this, the programme requires a Service transition team, comprising of a Service Transition Lead and at least 2 Service transition Managers to deliver outcomes such as Service Design Packages, Impact assessments, Service Transition governance."
(See also Feb. 2017, IBM award.)

Aug. 2017

Governance Lead. SVGC, £259k[123]

"You will scope business level governance aspects of Sustainment including establishing a comprehensive map of current and to-be governance and identify governance and processes required to agree these provisions with the business."

Service Manager. Netsource, £222k[124]

"You will support the Sustainment Lead by establishing a clear plan for an ITiL aligned service organisation. You will outline scope and requirements for delivering the proposed Service Architecture. You will support planning for Sustainment and act as an interim service manager for any services not yet transitioned to operations."

Oct. 2017

Project Manager - PNC. Chaucer Consulting, £374k[125]

"Support the NLEDP leadership team in delivering outputs necessary to fulfil the wider outcome delivery objectives of the programme."

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[120] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4568
[121] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4570
[122] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4567
[123] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2508
[124] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2509
[125] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5090

Jan. 2018

Interaction Designer for Police Intelligence. Triad Group, £275k[126]

"The interaction designer will be working to refine a prototype based on feedback from users who work as intelligence analysts in police forces. The interaction designer will then work on scaling the product for live and may assist on other LEDS products. … We are specifically exploring how to replace the service that intelligence staff in all UK Police Forces use to find intelligence at a national level with a new UI supported by modernised search capabilities."

Apr. 2018

Interaction Designer for Police Intelligence. Interact Consulting, £158k[127]

"Lead the design of a national police intelligence service based on police officers' user needs. The product will be used by Police Forces on a daily basis to manage national intelligence and is hoped to set a design pattern for other search services. … LEDS will replace the service that police users find intelligence on at a national level with a new UI supported by modernised search capabilities."

Service Transition Manager-1. COMXPS, £283k[128]

"Mobilisation and management of resources, facilitating and tracking progress across service suppliers (internal HO teams and external suppliers)."

Service Architect. Computer Task Group (UK), £157k[129]

"Engage with key stakeholders to develop service model, service architecture and support service transition plans for the multiple operating states that NLEDP will deliver."

Systems Integration Team. Glue Reply, £4.5m[130]

"The transition architecture and approach seeks to minimise mandated external change whilst sustaining existing legacy interactions. Each legacy interface requires an interface approach/treatment/definition and dependency roadmap that is agreed with the respective integration partner or partners. Partners typically are other government departments, law enforcement agencies, and commercial vendors of services and products. … There is an incumbent supplier providing the current team that will transition out. There will be a handover phase during the first 1-2 months of the contract to the new supplier. … LEDS must support its UI and API interactions by using information flows to external systems. It

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[126] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5576
[127] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6158
[128] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6151
[129] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6152
[130] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5999

shall also provide system interfaces to enable approved external organisations to initiate interactions with LEDS data. This integration uses several Enterprise Integration Patterns. The target for NLEDP is to reduce the numerous legacy integration points but, to avoid significant software and business change, NLEDP aims to support the existing information flows until external partners can modernise their interfaces alongside the necessary business change."

May 2018

Service Transition Manager-3. BAE Systems Applied Intelligence, £232k[131]

"Manage Service Transition Plan. Mobilisation and management of resources, facilitating and tracking progress across service suppliers (internal HO teams and external suppliers)."

Migration Solutions Architect. People Source Consulting, £345k[132]

"Specialist will lead on the discovery of the data migration requirements, development of data migration strategies, and design of technical solutions for migrating data from current systems into their replacements, including both business applications data and end-user data."

July 2018[133]

Data Migration Project Manager. Chaucer Consulting, £850/day[134]

"The specialist will ensure a smooth transition from source to target platform, managing trial runs, data reconciliation, data mapping, readiness assessments and informing the development of replacement services. Significant experience required in Data Architecture, data quality, Natural/Adabas and robust Project Management, able to manage business and technical aspects of migration. … The role requires a deep understanding of migration from a Natural/Adabas database mainframe environment. The specialist will oversee the data migration strategy, and document relevant business logic and rules in order to migrate to a new system."

Oct. 2018

Learning Partner Delivery. Blue Lights Digital, £2m[135]

"The Law Enforcement Data Service (LEDS) will replace two critical national police IT services provided by the Police National Computer (PNC) and Police National Database

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[131] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6592
[132] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5467
[133] Seemingly mistakenly listed in DMP as July 2017.
[134] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6685
[135] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/6853

(PND). The Programme is seeking to appoint a learning partner to design, manage and deliver training and learning materials to the User community."

Technical Transition Architect. Medley Business Solutions, £410k[136]

"Requires a deep understanding of system-to-system interfaces with experience of transition and migration from a mainframe architecture."

Dec. 2018

LEDS Interaction Designer. Gofore UK, £302k[137]

"The interaction designer will work to create a new national police intelligence and data service based on user needs. The product will be used by police officers and operational staff in UK Police Forces to manage national intelligence data and provide information pertinent to the investigation of crime."

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[136] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/7501
[137] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/7320

Home Office Biometrics (HOB)

Feb. 2018

Home Office Biometric Matcher Platform and associated Services - Lot 1. Fujitsu Services, £28m[138]

"The Contracting Authority intends to identify an Economic Operator(s) to provide the Biometric Matcher Platform & associated Services (BMPS). BMPS delivers across multiple biometric modalities and data sets (which shall include, but not limited to, immigration, citizenship, law enforcement) as part of Home Office Biometrics (HOB) programme. There are two distinct parts to the BMPS: (i) A technology platform and Biometric Matcher Service Bus; and (ii) Biometric Matching algorithm(s) that are integrated into the platform.
Three separate lots will be used to procure the BMPS.
Lot 1: Matcher Service Supplier (MSS) will be selected to provide Matcher Service Platform (MSP) that includes a Matcher Service Bus (MSB), Matcher service interface, integration of MES(s) and operation of the BMPS."

Mar. 2018

DevOps - Platform Development and 3rd Line Support. Mastek (UK), £5m[139]

"HOB Programme delivers future biometric IT services to various government departments including Home Office departments and Law Enforcement agencies. Consumers use the biometric services to support various business processes for immigration, law enforcement and citizenship. The services run on the platform provided and managed by the DevOps Tooling Platform service. … A number of services are already live including the Biometric Services Gateway and several services are under development including international data sharing capabilities and additional APIs. The DevOps Tooling Platform service will need to take on and manage the platform in support of the existing live services and also transition the work in progress for the in-flight projects. The development tooling and pipeline is already in place in support of the existing IaaS supplier. It is anticipated that the development pipeline and tooling would need to be changed in order to support the transition to a new
IaaS supplier."

DevOps Platform Development and 3rd Line Support. Mastek (UK), £5m[140]

May 2018

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[138] https://www.contractsfinder.service.gov.uk/Notice/21319a82-4a57-4b62-8eff-57a320a2328e
[139] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/5673
[140] https://www.contractsfinder.service.gov.uk/Notice/e0786905-1130-4ec7-8d73-f87ec9c877ca

Home Office Biometric Matcher Platform and associated Services - Lot 2. Morpho UK, £7m[141]

(See Matcher Platform, Feb. 2018.)
"Lot 2: Matcher Engine Software (MES) (minutiae based) Supplier will be selected to provide matching of Tenprint, Palm and Latent marks including support for verification, search and de-duplication of biometric records."

Aug. 2018

Biometrics Managed Service Provider (MSP). Investigo, £4.5m[142]

"The Managed Service Provider (MSP) will work with the Buyer's Programme team to deliver a large, complex programme converging IT systems into a cohesive, cost effective, user centred service. This will include elements of legacy outsourced Services (typically biometric systems) being transition into new and mixed delivery architectures including but not limited to Cloud-based services, Buyer managed environments, and/or 3rd party technical infrastructures and/or capabilities."

Jan. 2019

Biometric Technical Services. Identity E2E, £4.9m[143]

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[141] https://www.contractsfinder.service.gov.uk/Notice/87f8f797-acb9-43d1-8600-f7f8fa04cc9f
[142] https://www.contractsfinder.service.gov.uk/Notice/549867be-6441-4f6b-b5f0-413e09d43141
[143] https://www.contractsfinder.service.gov.uk/Notice/ad31dfb0-1037-4c8b-a2e2-18c0aae79f01

HMPO Digital Application Processing

July 2017

Delivery partner for online passport application services. Kainos Software, £3.2m[144]

"HM Passport Office has an organisational goal to create an integrated, digital-by-default service for customers who need to apply, renew or replace passports. This will reduce the 35 million documents and pieces of paper that HM Passport Office and its partners handle annually to the single digit millions by 2020, by receiving over 90 per cent of passport applications online. … The existing service accommodates a single customer group - adult renewals aged 26 years and older. HM Passport Office's plans are to extend this to all customer groups, both in the UK and abroad, in order to achieve the strategic organisational goal of 95% transactions online by 2020. The current delivery approach needs to be scaled to support this ambition, without sacrificing the user-centered approach already established."

Oct. 2017

Product & Delivery Team. Equal Experts UK, £4.5m[145]

"HMPO's 2020 vision moves passport applications online for the majority of customers and shifts assessment to a risk based, digital approach which will increase the capability to identify fraud. The DAP project is responsible for building the capability to deliver an in house case working, workflow and checking capability to support the production of passport applications, currently the responsibility of an external provider. With HMPO's contracts with existing strategic partners coming to an end in 2019, the DAP service has to be ready to take over all application processing by this date. … To achieve the HMPO Transformation agenda, DAP needs to introduce risk-based approaches to application assessments, resulting in automation of low risk applications and more time for in depth examination of higher risk cases."

Nov. 2017

Delivery Team Supporting Casework Team. Equal Experts UK, £2m[146]

See above, Oct. 2017. "As a user the HMPO passport staff need a system that automates passport applications where safe and practical to do so. To enable them to concentrate on the more complex cases that can never be automated."

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[144] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/2400
[145] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4887
[146] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/4781

G-Cloud Purchases

The Home Office is the largest spending government department on G-Cloud, with £447m of purchases disclosed by the government from January 2016 to December 2018. (This is almost double the G-Cloud spend of the next-highest-spending department, HMRC.) Over that period, the Home Office has bought services from roughly 180 firms, listed below in descending order of cost.[147]

Capgemini Uk Plc	£48,329,405
BAE Systems Applied Intelligence	£31,982,502
Mastek UK	£29,820,050
Deloitte LLP	£29,695,521
IBM United Kingdom	£22,686,931
PA CONSULTING SERVICES	£22,584,579
Amazon Web Services Inc	£22,507,224
Accenture (UK)	£19,949,054
FDM Group	£12,377,301
6point6	£12,131,810
SUNGARD AVAILABILITY SYSTEMS (UK)	£10,846,132
Methods Professional Services	£10,431,666
PA CONSULTING SERVICES LIMITED	£8,957,822
UKCloud	£8,955,950
Engine Partners UK LLP	£8,352,191
Redweb	£8,220,727
Leonardo MW	£5,751,940
Certus Solutions	£5,232,876
Amazon Web Services EMEA SARL	£5,055,866
Kainos Software	£4,235,652
NETbuilder	£4,215,393
Roke Manor Research Limited	£3,984,683
Alpine Resourcing Limited	£3,588,987
Big Data Partnership	£3,577,210
QA Consulting Services Limited	£3,574,665

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[147] Data presented in its original form. Some firms are listed under multiple names, but we have not tried to deduplicate these, nor have we adjusted capitalisation for greater consistency. Note that companies are often not listed by the same name in the G-Cloud transparency data as they are on the G-Cloud search site.

Atkins	£3,545,780
Roke Manor Research	£3,389,067
Fujitsu Services	£3,280,719
DataLynx	£3,220,039
DataLynx Limited	£3,072,517
Alpine Resourcing	£3,011,467
PricewaterhouseCoopers LLP	£2,987,805
NETCOMPANY UK	£2,948,388
QA Consulting Services	£2,909,437
ITM Communications	£2,755,995
Scott Logic Limited	£2,751,320
Fincore	£2,423,862
LA International Computer Consultants	£2,314,289
Be Informed BV	£2,119,607
ITM Communications Limited	£2,007,523
SFW	£2,000,532
Chaucer Group Limited	£1,942,523
NETCOMPANY UK LIMITED	£1,915,382
PARITY RESOURCES	£1,666,508
The Strategy & Architecture Group	£1,648,152
WorldReach Software Corporation	£1,532,571
Think Big, A Teradata Company	£1,500,440
Veran Performance	£1,485,146
Ernst & Young LLP	£1,476,432
Fincore Limited	£1,469,560
Actica Consulting	£1,403,435
Identity E2E	£1,375,909
Invotra	£1,332,210
MEDLEY BUSINESS SOLUTIONS	£1,209,425
L-3 Communications ASA LImited	£1,200,322
Mozaic-Services	£1,192,318
Mindful Contract Solutions Limited	£1,164,639
Hive IT	£1,159,849
Triad Group Plc	£1,126,995
L-3 Communications ASA	£1,097,716

Scott Logic	£1,076,068
Civica UK	£1,017,403
Westhill Commercial	£1,007,991
Equal Experts	£939,950
TRUSTIS	£864,190
Dome Recruitment	£818,211
IPL Information Processing	£798,626
Sopra Steria	£788,463
Trustmarque Solutions	£776,935
Microsoft UK	£714,117
Zaizi	£661,401
BRAMBLE HUB	£656,766
Methods Business and Digital Technology Limited	£637,734
SPECIALIST COMPUTER CENTRES PLC	£609,371
Westhill Commercial Limited	£577,106
Zeefix Consulting Limited	£565,330
Airwave Solutions Limited	£537,990
FCO SERVICES	£529,215
Trustmarque Solutions Limited	£508,634
Vodafone	£506,272
NCC GROUP PLC	£496,822
NINIAN SOLUTIONS T/A HUDDLE	£469,275
APPVIA	£423,383
Kinegistic	£410,250
Media Measurement Limited	£392,607
Chorus Intelligence Limited	£391,416
Telefónica UK	£359,650
WTG Technologies	£349,076
Border-Systems.com	£334,704
Methods Professional Services Limited	£317,180
F-SECURE DIGITAL ASSURANCE.	£306,106
IO1	£305,140
People Source Consulting	£303,475
Modis International	£301,711
RAINMAKER SOLUTIONS	£301,250

BSI CYBERSECURITY AND INFORMATION RESILIENCE (UK)	£292,706
Clearvision CM 2005	£290,945
scrumconnect	£276,340
Basware Holdings Limited	£267,974
Eduserv	£263,927
DEMYSTIFY PROFESSIONAL SERVICES	£257,505
Altius Consulting	£249,785
Dun and Bradstreet	£224,000
Planixs GRP	£213,000
Sopra Steria Limited	£211,931
KPMG LLP	£206,934
Ninth Wave	£204,228
Hive IT Limited	£193,404
Toplevel Computing	£191,145
Zennor Consulting	£188,446
Computer Task Group UK	£185,384
Allen Lane	£179,335
Assured Information Security	£173,604
Kinegistic Limited	£150,400
BUSINESSWEB SOFTWARE T/A FIRMSTEP	£150,000
Pluralsight, LLC	£145,905
Health HR UK Limited	£138,000
Blackthorn GRC Limited	£137,316
Amazon Web Services UK	£134,539
Nudge Digital	£121,868
Blackthorn GRC	£114,481
BravoSolution	£110,986
Veracity OSI UK Limited	£109,570
OD Consultancy	£106,615
Kimcell	£102,000
Flabba Limited	£101,332
Big Data Partnership Limited	£96,760
Amazon Web Services UK Limited	£95,169
Atamis	£90,917
Talent International (UK)	£90,605

Mindful Contract Solutions	£82,625
Quo Imus	£80,986
NQC	£74,150
Ninth Wave Limited	£70,528
Box Inc.	£69,798
MDS TECHNOLOGIES	£68,650
Certus Advisory	£64,646
Cassidian CyberSecurity	£64,476
UBDS IT CONSULTING	£62,238
REPKNIGHT	£54,000
SALESFORCE.COM EMEA LIMITED	£51,336
CACI	£50,950
Gartner	£50,800
Barrachd	£50,400
McKinsey & Company Inc United Kingdom	£50,000
ENCIRCLE SOLUTIONS	£49,551
MMGRP	£46,654
ARCUS GLOBAL	£44,348
Vldb Solutions	£44,000
Badenoch & Clark	£42,650
ICASEWORK	£42,500
BSI CYBERSECURITY AND INFORMATION RESILIENCE (UK) LIMITED	£42,340
Dyn	£35,978
Unify	£34,200
GB Group plc	£34,000
BEAUMONT COLSON	£31,325
IndigoBlue Consulting	£29,400
MICROSOFT IRELAND OPERATIONS	£27,335
Panlogic	£26,085
INOVEM	£25,069
SmartSurvey	£25,000
EGRESS SOFTWARE TECHNOLOGIES	£24,450
CAPITA BUSINESS SERVICES	£24,133
The Server Labs	£22,998
Twentysix	£19,871

MEMSET	£19,868
PNH CONSULTING SERVICES LIMITED	£18,000
Computer Application Services	£17,875
Mazepoint	£15,400
IB BOOST	£15,042
Basware Holdings	£15,000
Mazepoint Limited	£12,767
MAGIC MILESTONES	£10,500
Advent IM	£10,200
2T Security	£8,100
British Telecommunications Plc	£6,097
Information Risk Management Plc	£5,850
QuoVadis Online Security Limited	£3,435
Digital Accessibility Centre	£3,375
QuoVadis Online Security	£2,580
Q5 Partners LLP	£1,800
Wired Marketing	£1,470
GLOBAL RADIODATA COMMUNICATIONS.	£681