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JARED WRIGHT
BENEDICT MACON-COONEY
KEVIN LUCA ZANDERMANN

Reimagining Procurement for the AI Era

TONY BLAIR INSTITUTE FOR GLOBAL CHANGE

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Our Future of Britain initiative sets out a policy agenda for governing in the age of AI. This series focuses on how to deliver radical-yet-practical solutions for this new era of invention and innovation – concrete plans to reimagine the state for the 21st century, with technology as the driving force.

01

Executive Summary

Technology is transforming the way the state operates, delivers services, and engages with citizens, governments and industry. Advances in artificial intelligence and other next-generation technologies are dramatically optimising government operations. Yet, against this backdrop, government procurement – which constitutes 30 per cent of all government spending and acts as the entry point for bringing those new technologies into the state – remains largely unchanged.

The old way of doing business is wholly unfit for today's world, and the pace of technological progress continues to vastly outpace the government's ability to procure it effectively.

Technology – and software in particular – underpins nearly every aspect of a 21st-century government, from public services, to policing, to national defence. The ability to efficiently garner that innovation for public use requires a fit-for-purpose procurement system that enables government to buy, build and deploy new software at pace and scale. It also requires a rethink of risk and a specialised environment to test and experiment with new technologies. In practice, this means a system that is flexible, agile, and continuously learning

and adapting along with the rate of exponential technological change.

To achieve a fit-for-purpose 21st-century procurement model, the United Kingdom's government must rethink its relationship with industry, the private sector and the third sector, particularly new startups and innovators who are leading the development of today's cutting-edge technologies; its relationship with users, be those recipients of government services or back-office civil servants; and its overarching approach to innovation and next-generation technologies for government use. This must be built on three core foundational principles:

1. A partnership with industry, where industry and government build, learn and deploy together.
2. A direct connection with users, with all procurement processes centred on building for the user, with the user.
3. A streamlined path to production, shipping fast and often so users can interact with, test, and validate solutions early and throughout the development process.

And delivering on these core principles demands a redesign of the procurement institutions themselves. We are calling for the establishment of an Advanced Procurement Agency (APA) that would transition new and emerging technologies into the UK government more quickly and drive a culture of innovation and experimentation across government. We believe the first step is to modernise four key areas:

- Partnerships: Government needs to actively engage with and invest in the innovation ecosystem and be a more attractive customer to cutting-edge technology companies. It can do so by simplifying procurement and solicitation processes and strategically loosening vendor requirements to ease entry barriers and encourage participation from small and medium-sized enterprises, startups, and non-traditional contractors.
- Institutions: Innovative procurement processes, practices and methodologies that meet software and AI-driven demands require redesigned institutions, including modular contract models, agile methodologies and flat, collaborative team structures. This also entails leveraging myriad procurement techniques such as challenge-based and pre-commercial procurement models, specifically co-design, co-build models with private-sector innovators.
- Human capital: Procurement experts should invest in upskilling and

recruitment within procurement so teams are equipped to effectively evaluate and purchase solutions from vendors and build and deploy cutting-edge technologies in house. This includes attracting best-in-class technologists to the procurement ecosystem as well as rethinking current procurement training and education programmes to align with today's technological landscape.

- Emerging technologies: The government should integrate AI, machine learning and other innovations to automate and augment procurement practices. AI tools offer unique advances for procurement teams, such as the ability to streamline manual processes, enhance compliance checks and better leverage data to drive intelligent decision-making.

Today's technology demands a new procurement model. By delivering a robust procurement-modernisation agenda, the UK government can be a driving force not only for government innovation and digital services but for private-sector growth, specialisation and innovation.

02

Introduction

A “Reimagined State” uses the opportunity of emerging technologies – particularly AI – to give government the tools it needs to do more with less, make better public services a reality and free up capital for other priorities without creating new burdens on the public.

This transformation will affect every part of the state, from highly specialised capabilities, such as defence, to generalised improvements, such as increased productivity and a culture of innovation and experimentation. But the success of that transformation depends on how new technologies are brought into government. Procurement plays a central role in the effectiveness, efficiency and overall quality of technology purchases.

Reimagining procurement for the era of AI means transforming the processes by which government buys, builds and deploys AI tools and other information-technology systems to increase administrative efficacy and improve government service delivery. We aim to build on recommendations from previous papers and delve into greater detail on best processes and practices.

In our *New National Purpose* papers, we have set out at a high level the need to modernise procurement for the AI era, in part by creating an Advanced Procurement Agency (APA) to transition new and emerging technologies into public institutions quicker and to drive a culture of innovation and experimentation across government. Here we’ll expand on that work, specifying what the APA is, its mandate, how it would operate and where it should sit to achieve the greatest impact.

Governing in the Age of AI: A New Model to Transform the State set out that the UK could gain £40 billion per year in public-sector-productivity improvements by embracing AI. Delivering this benefit requires a new procurement model for AI tools and systems, including innovative solutions for piloting public services, overseen by the APA, that tolerate higher risk. It also requires that the procurement of such systems is based on a “best affordable solution” mindset rather than a race to the bottom on costs.

Another TBI paper, *Reimagining Defence and Security: New Capabilities for New Challenges*, laid out how the UK should transform defence procurement.

The arrival of new capabilities and technologies on the battlefield requires totally new procurement techniques, including greater collaboration between the military and private sector.

AI is having and will continue to have a transformative impact on the state and its relationship with its citizens – but how the state goes about effectively, efficiently and responsibly procuring those tools is critically important for achieving those transformative outcomes.

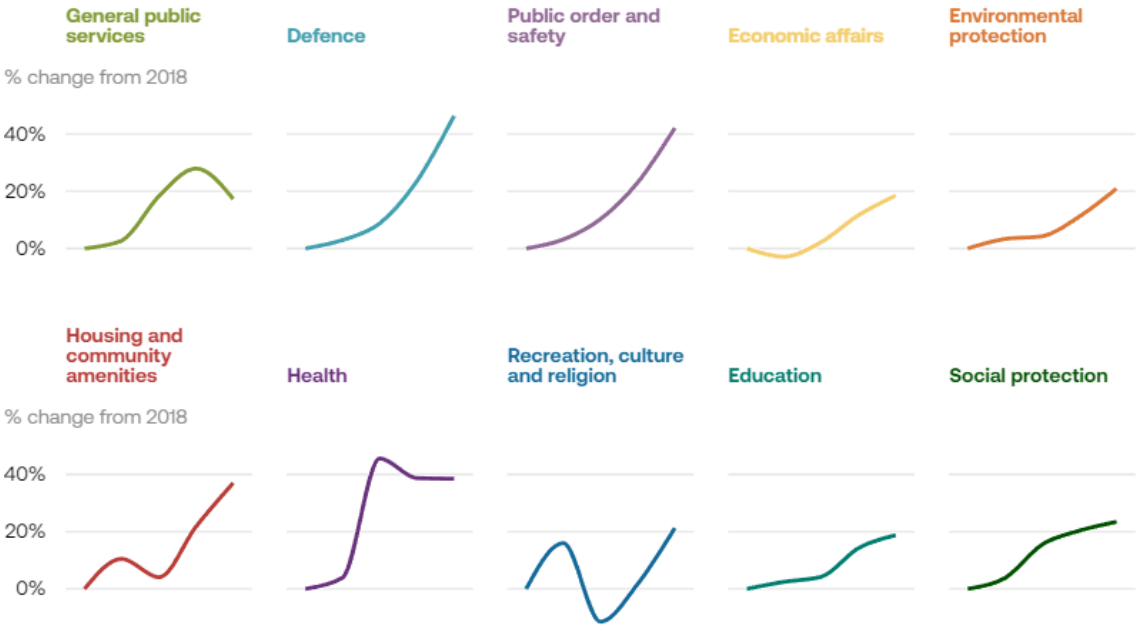
03

The State of UK Procurement

The scale of government spending is vast – and nearly one-third of it goes towards procurement. In the fiscal year 2020–21 alone UK government procurement totalled £306 billion,[1] or 29 per cent of total spending. Two years later, in 2022–23, that number reached £393 billion, an increase of £25 billion and a continuation of a trend that has seen public procurement spending rise 7 per cent annually since 2015. The increase has been driven by a variety of factors, primarily rising inflation and the need to increase health spending due to the pandemic.

FIGURE 1

Figure 1: Gross procurement spending from 2018 to 2025, organised by expenditure area



Source: HM Treasury

With the goal of saving time and money, in 2014 the UK government moved to

a centralised procurement system operating through the Crown Commercial Service (CCS),[2] which helps buyers purchase a variety of commonly used goods and services on behalf of the whole of government. In addition to providing a centralised purchasing framework, the CCS is responsible for the legal framework behind public-sector procurement and leads on the development and implementation of procurement policies for the UK government.

The CCS announced in its 2022–23 Annual Report and Accounts that it had achieved more than £3 billion in commercial benefits for its customers, the first time it had done so. It also increased its total spend through commercial agreements to reach more than £30 billion.[3]

While the CCS is set up under the right set of guiding principles, in actuality it has done little to modernise procurement – particularly technology procurement – across government. By its own admission in its latest annual report, until recently the organisation considered it "very likely" that it could fail to "deliver technology and digital solutions aligned to the business strategy which meets the needs of our business and our customers".[4]

The organisation has made some progress on technology procurement in the last year, such as creating a new technology framework that allows the public sector to procure technology devices and commercial off-the-shelf software in one place for the first time. But this does not reduce the structural challenges that hamper the CCS's ability to lead on technology procurement.

First, a general procurement service is poorly equipped to deal with technology. The CCS procures everything from office supplies to police cars. But as the National Audit Office has warned, "digital change requires specific ways of investing, funding and procuring digital services" and "processes which work for other programmes are not always well-suited for digital programmes".[5]

Second, the CCS relies on large companies rather than small and medium-sized enterprises (SMEs). In the fiscal year 2022–23, only 14 per cent of central-government procurement spending through the organisation went to SMEs, which is concerning given the important role that SMEs play in spurring technological innovation.

Despite the CCS's role as a centralised procurement function, as a whole the

UK procurement system is highly fragmented and decentralised, with an estimated total of 8,000 to 21,000 different public-sector frameworks used for government purchasing. According to the most recent report from the National Audit Office, "This fragmentation prevents the government from acting as a single buyer across numerous categories of common goods and services, resulting in duplication of effort and increasing bidding costs for suppliers." It also results in insufficient oversight and missed opportunities to improve public-procurement efficiency.[6]

Nor are the ongoing reforms made by the Procurement Act 2023 likely to sufficiently improve the system. The act's main purpose is to replace the four procurement regimes retained from the European Union with a new single regime that also has welcome provisions supporting SMEs. These include a new requirement for contracting duties to consider SMEs; a single digital platform for suppliers to help businesses make multiple bids easily; and 30-day payment terms for some contracts. While it does introduce added flexibility – which is positive for driving innovation – it falls short of addressing organisational and cultural impediments.

On innovation specifically, the act does relatively little. The legislation simply requires contractors to go beyond value for money while considering "national strategic priorities", including "increasing innovation and the use of disruptive technologies and business models", alongside other social-value criteria such as creating new businesses, jobs and skills and tackling climate change.[7]

TRADITIONAL PROCUREMENT CULTURE IS SLOWING INNOVATION

Today's procurement system is built on a set of assumptions that are perpetuating risk aversion and inertia. While a degree of risk aversion is necessary, especially when it comes to the use of taxpayer pounds, the current risk-based approach is failing. It's not actually reducing risk or failure, but instead delaying progress and, in many circumstances, driving up overall costs.

This culture is underpinned by a core set of assumptions:

1. Failure is bad.

Not all failure is created equal, however. It must be differentiated. Failing big, such as what we've seen with Horizon in the UK or healthcare.gov in the US,[8,9]

is bad. And the current procurement system is set up to fail big, with real costs, both reputational and monetary.

This prevailing assumption and the causation of the above examples comes down in large part to process. By rethinking the process, we can rethink how we mitigate risk and transform failure into learning – and we can use it to simultaneously reduce big failure and spur innovation.

Case Study: healthcare.gov

The healthcare.gov project followed what's known as a "waterfall" software-development process: government contractors were sent away to build the entire project independently from start to finish, with insufficient levels of testing and feedback loops throughout. That lack of testing and feedback led to a final product that failed to meet basic user needs and technical demands. Many of the factors that caused it to fail could have been discovered and rectified early in the development process, if only they had baked in a continuous-feedback loop.

By integrating agile methodology and user-centred design – a process built on continuous feedback and iteration – failing early and failing fast can reduce risk and improve the overall end product. It can turn failure into an asset by allowing development teams to course-correct in real time; test and address issues as they arise (as opposed to at the end of the process); and frequently test and integrate user feedback.

This leads to the next assumption:

2. Risk and innovation are zero-sum.

There's a fundamental tension between the desire to innovate and the disincentives within the system that make it difficult to do so. New or innovative ways of thinking are not inherently riskier but can actually help manage risk. This raises a fundamental question of how to deliberately create space to experiment with new technologies and solutions while taking calculated risks. Because innovation and risk-taking are necessary. Innovation doesn't always equate to higher risk – and both can operate in the same space.

This reinforces the next prevailing assumption:

3. Familiar vendors and off-the-shelf solutions are less risky.

Government procurement departments favour familiar vendors and off-the-shelf solutions as a means of de-risking. The theory goes that incumbents come with proven track records and an understanding of government requirements and expectations. This can sometimes be true, especially when the government requires an off-the-shelf solution that fits a specific need. But it's not always the case, and this culture of bias is hindering startups and smaller innovators from winning government contracts.

More broadly, this preference for incumbents and large enterprises is limiting competition, squashing innovation and preventing novel solutions from seeing the light of day. It also has its own risks, including vendor lock-in, where the government becomes dependent on a single supplier for different parts of the digital system, which in turn can drive a monopoly on costs and affect interoperability. Relying too heavily on the same vendors using the same technology is again one of the main aspects feeding the self-defeating cycle of procurement – and leads to high costs for low value.

4. Value for money is the same as upfront cost.

In today's procurement system there's a false equivalence between up-front costs and long-term value. There's too much focus on the former and not enough of the latter. A major paradigm shift is needed in terms of how the government defines value for money, which is currently viewed through an outdated accounting lens (price) and not by the long-term value it generates (value). Both matter, but emphasis on the latter helps elucidate the former – and quantifying the latter requires specialised expertise and analysis, especially for new technologies like AI, which largely does not exist within

procurement departments.

This is especially true when thinking about digital government as an evolving ecosystem. A value-based evaluation approach emphasises factors such as scalability, open architecture, interoperability, security and total cost of ownership. It's worth repeating: value for money should not be defined by price, as it is now, but instead by how well it solves user needs and the value of its emergent qualities across digital government.

A STRATEGIC POLICY LEVER FOR AI

Procurement accounts for about one-third of all public expenditures – and spending in the UK increased by 22 per cent in real terms between fiscal year 2017–18 and fiscal year 2022–23.[10] All of which poses an important question: how to use procurement as a lever of investment and as a tool for shaping standards and regulation, including around responsible AI?

As we've noted in the paper *Accelerating the Future: Industrial Strategy in the Era of AI*, new forms of procurement and co-investment models can help share the risks and rewards of AI development and deployment across the economy, support local innovation, drive long-term partnerships with industry, and shape the ethical standards for AI.

As we argued in *Reaping the Rewards of the Next Technological Revolution: How Africa Can Accelerate AI Adoption Today*, procurement holds significant potential as a soft-law mechanism to incentivise responsible AI development and deployment. By incorporating ethical standards and responsibility criteria into procurement processes, governments can exert considerable influence over the AI market, particularly in the context of large tenders. Critically, procurement guidelines and requirements also offer a lot of flexibility as a policy lever, as they can be quickly updated to address emerging issues and possibilities in technology.

Employing this mechanism requires a rethink of how the government solicits proposals to develop AI tools through requests for information or proposals, as well as how it evaluates vendors during the procurement process, which is outlined below. It starts with the strategic drafting of solicitations with the aim of achieving two key purposes: first, bridging the information asymmetry between industry players and governments; second, simultaneously driving innovation and aggressive commercial competition around responsible AI.

As part of this process, it is essential that procurement teams are not simply well informed, but also part of wider global endeavours to define AI standards.

Three types of standards are key:

1. **Foundational standards** establish a common language and set of concepts that facilitate clear communication between all stakeholders involved in an AI project. Shared vocabulary and understanding are essential to accurately specify requirements, evaluate proposals and ensure that the AI system aligns with the organisation's needs and values.
2. **Process standards** are vital for embedding best practices into the life cycle of AI systems. They guide the creation of a framework that supports the responsible development and deployment of AI, focusing on management, process design, quality control and governance. The certifiability of certain process standards also allows organisations to demonstrate their commitment to ethical AI practices through independent assessment and certification, enhancing credibility and trust.
3. **Measurement standards** provide the tools needed to assess AI systems' performance accurately. These standards ensure that the evaluation of AI technologies is based on reliable and agreed-upon methods, facilitating the comparison and selection of solutions that meet the organisation's performance criteria and ethical standards.

FIGURE 2

Figure 2: Relevant AI standards for AI procurement

Requirements	Data and governance	Accuracy, robustness and cybersecurity	Risk management
ISO/IEC and E/IEC	ISO/IEC 38507: Governance	ISO/IEC DIS 24029: Robustness	ISO/IEC CD 42001: Management system
	ISO/IEC CD 42006: Auditor accreditation	ISO/IEC 4213: Accuracy	E/IEC 5259: Data quality
	ISO/IEC 25024: Privacy, explainability and transparency		ISO/IEC 24028: Accountability
	ISO/IEC 5259: Data quality		

Source: Holistic AI

Given the complexities of the ethical trade-offs involved in deploying AI applications in government, AI procurement is not “business as usual” and needs a highly specialised team to effectively evaluate AI solutions, algorithms and security risks.

04

Reimagining Procurement for the AI Era

Government today procures more technology and software than at any time in history. This will only increase, with the Treasury recently announcing a £3.4 billion investment to reform the National Health Service (NHS) using technology and £800 million for other public-sector productivity drives focused on AI and digitalisation.[11] Yet despite year-on-year increases in technology spending, the government has invested little towards ensuring the procurement system is set up to effectively purchase that technology. This is leading to a costly misalignment between the technology government needs and a system that's not designed to purchase it.

Technology procurement is complex, requiring careful planning, evaluation and decision-making. It requires a more sophisticated level of strategic thinking and coordination to ensure it all fits together as a unified, interoperable and intelligent digital-government system. And it is getting more complex by the day as technology continues to evolve.

GOVERNMENT FACES A TRILEMMA: HOW TO SHORTEN TIME BETWEEN AWARD AND DEPLOYMENT, DO IT WITHIN BUDGET AND ACHIEVE QUALITY RESULTS?

Reform of this magnitude demands thoughtful leadership, as the core of what needs to change is a culture impervious to new ways of thinking. This means shifting from a culture of risk aversion to smart risk mitigation, built on collaboration and experimentation. It also means consulting with and giving authority to the staff who are doing the work – and understand where change is needed – thereby enabling them to take calculated risks to experiment and innovate.

For government to drive this modernisation process, we recommend the following:

Government must prioritise creating a new relationship with industry and set out clear rules, regulations and standards that incentivise innovation in an efficient and responsible manner. The absence of a well-defined process

or framework for overseeing and governing certain types of technology creates uncertainties in managing their pull-through to deployment. Government needs to be responsible in how it procures and deploys cutting-edge technologies – but not at the expense of rapid government innovation itself.

- Invest in strengthening partnerships with innovators from the private and third sectors, including through the use of co-build, co-design procurement models, as well as market analysis and networking events, specifically targeting non-traditional contractors and startups.

Government needs to streamline procurement processes and seek greater collaboration with SMEs and non-traditional contractors. Small companies play an essential role within the innovation ecosystem – yet many find it unattractive at best and impossible at worst to partner with the government. This means finding ways to simplify processes and remove roadblocks to allow innovators to focus on innovating, not how to navigate procurement regulation.

- Loosen procurement requirements for new entrants and non-traditional companies to increase competition for solicitations. Focus on expanding SME and startup participation.
- Simplify the bidding process, including by setting page limits on proposal requirements, to level the playing field for all companies. Consider using alternative methods for proposals such as concept papers, videos or wire framing.
- Eliminate prescriptive solicitations with specific, pre-defined requirements and instead identify a problem statement or need and let the private sector propose the solution they believe best fit for the job.

Government should reorganise procurement teams to break down silos and drive innovation and collaboration. Procurement teams are often made up of low-level civil servants who lack the cover to try new things. In addition, procurement functions are disconnected from other functions within departments. The processes operate much like a conveyor belt, with different teams owning different segments of the belt, often creating divergences, friction and delays. In practice this siloed approach results in little collaboration or shared buy-in, which is disruptive and inhibitive for novel technologies, where downstream contract approvers, legal teams and procurement specialists may not be familiar with – or at worst sceptical of – the cutting-

edge products being purchased or built.

- Establish a government-wide marketplace to reuse and repurpose previously procured solutions, particularly high-tech ones. The UK should focus on the adoption of reusable solutions and tools across government.
- Adopt new procurement processes enabled and directed by technology, including a programme-manager model, similar to the one used by the Advanced Research Projects Agency (ARPA), in which a single procurement owner oversees a collaborative team of experts.

Government needs to build skills and capacity to effectively procure high-tech solutions. A whole new set of risks is created when staff can't effectively assess or evaluate a particular vendor proposal, including, for instance, the ability to understand the integrity or explainability of an AI algorithm. The procurement-training programme itself needs reforming; it's wildly out of date and not fit for purpose in the 21st century.

- Revise existing procurement certification programmes to reflect 21st-century demands to ensure staff are equipped with the skills and expertise necessary to navigate complex government-technology procurements.
- Establish a cadre of highly technical digital-acquisition experts, mirroring Michèle Flournoy's call for a Green Berets for acquisition,[12] which was included in our recent paper *Reimagining Defence and Security: New Capabilities for New Challenges*.

Government needs to integrate new technologies to augment procurement practices, including AI and machine-learning tools. As we detail below, AI can help automate and reduce mundane and paper-driven processes, and help the government make better decisions by improving how it utilises its wealth of procurement data. But these innovations must be met with equal investment to fix underlying processes, optimise data and build technical capacity across public-sector procurement teams.

THE ADVANCED PROCUREMENT AGENCY

Reimagining the state starts with reimagining how we buy, build and deploy new technologies across government. As we have written previously in our *New National Purpose* series, we recommend standing up a new Advanced Procurement Agency (APA) as a step to bring UK science and technology procurement into the 21st century. The APA would have a mandate to

integrate cutting-edge technologies into government and diffuse technology-focused procurement models across it. It would partner with the UK's innovation ecosystem to buy, build, test and deploy high-tech solutions while also advising Whitehall on the trajectory of advanced technologies to inform future investment and procurement planning.

The APA would be just one small component of fixing government procurement. To be clear, it should not replace the CCS, nor suggest the need for a complete overhaul of the government procurement system – although reform is needed to improve the way government more broadly approaches technology procurement. Instead, the APA would operate as a hyper-specialised team with the flexibility to demo, trial, experiment with and incubate transformative technologies within government. It would represent an effort to augment existing capabilities with specialised technology, procurement expertise, and agile and flexible processes. Over the long term, however, a successful APA model could help transform public procurement departments into drivers of government innovation to improve administration and create a more effective model for public-service delivery.

Housing this niche expertise in an agency like the APA would help advance promising new government programmes, such as those coming out of the Department of Science, Innovation, and Technology (DSIT), the Advanced Research and Invention Agency (ARIA), and the NHS, and pull in new technologies and solutions from the domestic ecosystem. In this sense, the APA could also play a market-signalling function for technologies or sectors, and provide a foundation for public-private innovation. But more than anything, the APA would put forward an unprecedented opportunity for the UK government and its agencies to experiment and try new things in a controlled and de-risked environment.

Given its focus, it should operate as a standalone agency directly reporting into DSIT, operating across Whitehall as a tech integrator and strategic procurement advisory arm. The agency should have dedicated spending authority for pulling through technologies and innovations of national priority, either directly funded or funded through a delegated cut of overall procurement budgets. By placing the APA within DSIT's orbit, DSIT could transform itself from a mere funder of innovation to a driver and implementer of it, directly contributing to the development and deployment of technology solutions within government.

The APA should have a mandate to identify and support strategic priorities and to work with industry and the public sector to co-design and co-fund challenge-led procurement programmes. To do this, it should be granted certain special procurement exemptions and authorities to flexibly experiment with new procurement techniques and processes, as outlined by ARIA. This would allow it to use a range of procurement methods, including pre-commercial procurement, innovation partnerships and outcome-based contracts, to support different stages of the innovation process.

In addition to its priority role as an in-house incubator driving the practical integration of new and emerging technologies into government, the APA could play two other key roles to enable the Reimagined State, listed in order of priority:

1. Operate as a technology-futures strategy group to forecast and anticipate the trajectory of new and emerging technologies, including their impact on the state, and advise on future procurement planning. This includes, for instance, strategic thinking on how government can properly evaluate and assess the viability and sustainability of new technology solutions.

2. Operate across the state under a procurement-as-a-service model to foster procurement best practice, learnings (what has worked and what has not), and support across departments and agencies. This includes not only advising and supporting teams on procurement but serving as a catalyst for technology-procurement innovation.

There is a critical need for a forward-looking advisory group, composed of world-class technology experts and third-sector leaders, that can inform Whitehall on potential technology tipping points and guide future investment and planning. How can the state anticipate future technologies and their impact more strategically, as opposed to reacting to them?

This requires great expertise and thought on how to evaluate novel technologies against existing ones. For instance, how does the government effectively compare and evaluate investment in autonomous vehicles versus existing modes of transportation, such as trains or automobiles? It is this type of question that will guide future procurement decisions. Being adaptive and technology-forward necessitates a wholesale rethink of traditional procurement metrics and benchmarks to match the technologies of today with the needs of the future.

Finally, with the right support and capacity, the APA could also act as a central procurement resource for new and emerging technology. The aims would be to inculcate processes directed and enabled by technology across government and to create an experimental safe place for government bodies to trial and test new ideas, promote new procurement techniques, and share lessons learned. Related tasks would include, but not be limited to, running bootcamps, collating agency learnings, and creating repositories of evaluation criteria and techniques for new and emerging technologies.

If the goal is to change how the government procures technology, then the UK must think about changing procurement culture across the whole of government by bringing in best practice and expertise across all levels and all departments.

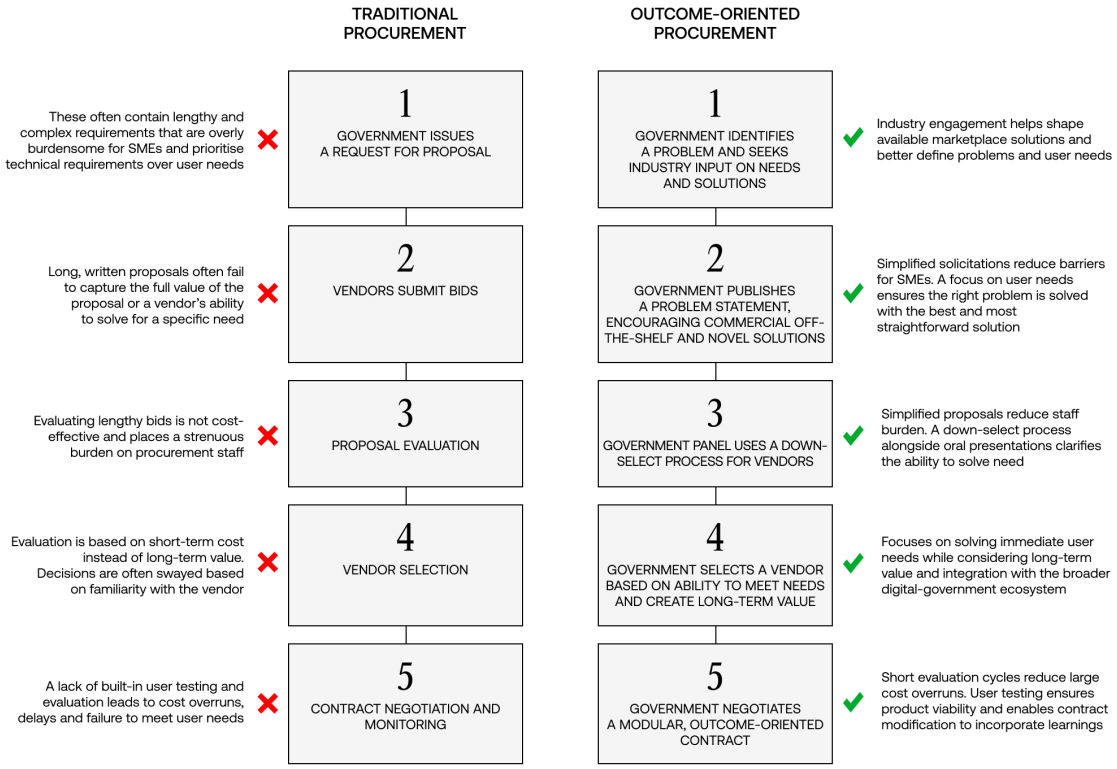
How the APA Would Operate

The following section addresses questions on how the APA would help achieve modernisation across the four key areas of optimising processes, redesigning institutions, building skills and capacity, and using emerging technologies.

Successfully integrating the right solution innovations and vendors into government relies heavily on the efficacy of the procurement process itself. Below we outline the traditional procurement process and its drawbacks. Our suggested procurement process, an example of which is seen on the right column, is delineated in five distinct phases, improving on traditional procurement at each stage.

FIGURE 3

Outcome-oriented procurement ensures product viability while reducing cost overruns



Pathways for Procuring Novel Technologies

While novel-technology procurement is not limited to two approaches, it's worth extrapolating on two different pathways that follow a concept known as outcome-oriented procurement:

1. Pre-commercial procurement (PCP) involves purchasing services, including research and development services, in order to develop solutions that either do not exist yet or are not commercialised and require further research, development or innovation. PCP is similar to the procurement of innovative solutions,[13] in which the public sector uses its purchasing power to act as an early adopter of innovative solutions that aren't yet available on a large-scale commercial basis.

2. Challenge-based procurement involves the state, either an agency or central government, posing a problem statement to the vendor community as a challenge to be solved, encouraging private-sector innovators to pitch novel, out-of-the-box ideas. This could follow a modular procurement process such as what's being used in the US, including the Defense Innovation Unit at the federal level or the Request for Innovative Ideas approach at the state level in California.[14,15]

Procurement in practice

1. PROBLEM IDENTIFICATION

Identify the problem or need.

2. SOLICITATION

Draft and publish a public solicitation inviting vendors to submit short concept proposals outlining a solution. Do not place restrictions on the type of solution they can offer.

3. FIRST EVALUATION PHASE (PITCH)

Select the top three to five concept proposals. Invite the selected candidates to pitch their company and solution to an evaluation board.

4. SELECTION

Select top candidate(s) and award funds to develop prototype(s) for the demonstration phase.

5. SECOND EVALUATION PHASE (DEMONSTRATION)

Organise candidate(s) to demonstrate their working prototype, ideally in a sandbox environment that reflects government data and has on-site users to test and interact with the prototype.

6. CONTRACT AND AWARD

If a vendor's demonstration is successful, award them the production contract.

7. IMPLEMENTATION AND MONITORING

The vendor builds the product solution

alongside a government team. The solution is continuously tested by users and validated.

Following an outcome-oriented procurement process is an essential first step, but it must be underpinned by institutional reforms, resting on a few key principles.

PUTTING THE RIGHT TEAMS IN PLACE

Similar to the ARPA model, each procurement project would be owned by a programme manager who would oversee the entire process and manage a highly technical group responsible for designing, developing, building and testing solutions against identified needs.

This team would include a diverse mix of specialised experts, including:

1. A representative from the procuring entity
2. Procurement experts
3. Product experts
4. Human-centred design experts
5. Engineers
6. Other domain or technology specialists where necessary

They would work closely with legal experts and other contracting authorities to ensure transparency throughout the process.

The team would focus on interacting with users, including by bringing them into the evaluation and development phase where possible. These users could come from the government or the citizenry, although the latter may necessitate navigating a more complex set of protocols. However, creating opportunities for users to test, interact with and navigate an app or piece of software will help validate the technology's user friendliness – and ensure it

meets its intended needs.

LETTING INNOVATORS SOLVE GOVERNMENT PROBLEMS

At present, the most traditional approach is for the procuring entity – say, a government department – to specify exactly what they want to buy and then seek out a narrow set of vendors that meet those specifications. Evaluation is then based on vendors' ability to meet specific requirements, not their ability to solve for them.

Traditional IT procurement is often too prescriptive or fails to incorporate a robust problem-discovery phase to ensure a strong understanding of what problem or need it should address. Both ways of thinking are ineffective and stifle novel solutions.

What we are calling for instead is for the government to collaborate with the private and third sectors to co-define needs and co-design solutions to meet them.

AGILE DEVELOPMENT AND MODULAR CONTRACTS

AI and other emerging technologies are constantly evolving and require a new approach to technology development, vendor management and contract terms.

With the right expertise in place, the APA would employ an agile approach built on continuous testing and deployment. As discussed earlier, an iterative approach helps de-risk – which is especially important with new technologies – and ensure the end solution is tailored to user needs. This approach would allow procurement teams to de-risk through small, quick software deployments that test the riskiest assumptions without overinvesting time and money upfront.

When the United States Citizenship and Immigration Services, for example, used an agile and user-centred development process, it increased the number of software deployments by 356 per cent. This process helped shorten security-check processing times from 24 to two hours, reduced required applicant data by 70 per cent and reduced backlogs by 15 per cent. Additionally, it led to a 98 per cent reduction in the time needed to process work-order requests for key immigration forms and an 80 per cent reduction

in processing times for pre-screening cases. Time spent waiting for security checks dropped from one week to less than 24 hours.[16]

Contracts should mirror this process. Instead of lengthy contractual timelines, contracts should be split up into sections or modules. Modular contracting allows teams to break down each procurement into separate stages of development, with reviews, evaluations and necessary modifications carried out at each stage. Buckets of funding can be tied to each phase of development, allowing the government to de-risk investments. All of this would allow government teams to be continuously involved in the decision-making process – making needed changes less costly and easier. In practice, this could involve breaking down a £1 million contract into four separate £250,000 allotments, with each chunk of funding tied to a specific deliverable.

Finally, contracts should be drafted to allow revisions based on insights gained throughout the procurement process. While a rewritten or revised contract is a sign of failure in traditional scenarios, an innovative procurement process would embrace revisions as a sign of learning and adaptation to the problem and solution set.

BRING IN THE RIGHT SKILLS AND CAPACITY

Insufficient technology talent hinders not only the capacity to build, deploy and maintain software and AI systems over their life cycle but also the ability to effectively procure them. This includes embedding the right mix of skills and expertise in the procurement process, throughout each agency and more broadly across government to better enable the deployment of digital services and tools.

Evaluating AI procurement solutions necessitates multidisciplinary expertise and novel approaches, as AI is built on emergent properties, meaning it will continue to evolve and learn. The AI technology space itself is also rapidly evolving.

In general, bringing the right skills and expertise into government procurement is essential to:

- Properly assess vendors and vendor solutions, particularly AI and other complex algorithms. Without having these skills in-house, procurement teams will continue to rely on vendors to verify the authenticity of their

solutions, which is risky and can lead to poor outcomes.
- Understand the licencing and pricing of solutions, and how to evaluate AI solutions against existing off-the-shelf ones. This is particularly important when evaluating dissimilar products.

As addressed previously, the way these and other complementary skills are combined in the process is pivotal to making it work.

DEMOS, NOT MEMOS

The best way to understand whether a solution works is for users – specifically the intended end users – to test it. Government can finally break the cycle of relying on vendors to write about or present on how a solution works and instead get to using it themselves. Integrating demos is a unique opportunity to test-drive new solutions, get hands-on experience with the product or service, and understand how it works and interacts with government data in action. It also promotes transparency by showcasing strengths and weaknesses.

In the US, for instance, the Colorado government's digital-service team deployed a similar demo-lead procurement to help the department of health choose a single contact-tracing tool to deploy across the state.[17] By bringing vendors in to demo their solution and letting users interact with it prior to purchase, the government was able to procure its solution in just 19 days and $15 million under budget.[18]

Of course, not every instance – including new solutions that don't yet exist at the outset of procurement – is suitable for a demo. Context also matters. That's why it is critical that the government is investing in setting up digital sandboxes to demo how solutions may operate while using government data. The APA could both host and help other government departments as they set up their own digital-testing environments. The California Department of Technology, like many other agencies, uses digital sandboxes to test AI and other tools on simulated government data to understand their functionality and vulnerabilities. Singapore's government has taken this even further with its AI Trailblazers programme.[19]

USE AI TO IMPROVE PROCUREMENT

E-procurement platforms and user-centred digital processes have the

potential to transform how governments obtain goods and services. Nevertheless, procurement departments have failed to fully leverage them. AI, machine learning and other emerging technologies also offer unique opportunities to improve the way procurement departments function, including through:

- Transparency and fraud detection
- Data and information management
- Supply-chain risk, market research and supplier sourcing
- Contract management and invoicing
- Strategic decision-making and spending analysis
- Relationship management and customer service

AI can help automate manual tasks, remove administrative bottlenecks and streamline end-to-end procurement processes. Eliminating manual and time-intensive procurement functions can save time and money and reduce burdens on overworked staff. It can also help procurement teams leverage data more effectively, such as by processing large volumes in real time to assess vendor markets and compatibility or forecast trends in supply chains. Ultimately, all these capabilities will create a smarter, more strategic and resilient procurement system.

However, as with any system, it's imperative to be aware of the risks of using AI and take active steps to mitigate them. This is particularly true with AI models running on citizen data or, in the case of procurement, vendor data, including risks related to bias and explainability, accountability and transparency, and security. Mitigating such risks requires investing in the right expertise to understand, evaluate and monitor AI solutions both up front and over time. It also requires ensuring that underlying systems are robust, government data are accurate, organised and secure, and AI models are trained on accurate data.

To date, the most common approach to AI in procurement involves purchasing off-the-shelf software solutions and platforms that have built-in automation and AI capabilities. However, other governments globally are beginning to explore bespoke AI solutions, including by publishing requests for information or preliminary market consultations to better understand which AI solutions currently exist in the marketplace and how AI can help augment existing procurement processes.

The US Air Force and US Army have both independently acquired AI tools to help augment their procurement processes.

The US Armyhas developed and deployed a Determination of Responsibility Assistant (DORA) bot,[20] which has revolutionised the responsibility-determination process. DORA can pull relevant vendor information from government databases and websites, such as the System for Award Management and then create a report for the relevant contracting specialist in less than five minutes. When completed manually, this process usually takes up to an hour.

The US Air Force piloted an AI-powered programme that simplified the understanding of acquisition regulations, which enabled contracting officers to find answers to difficult questions quickly. It also allowed private businesses to identify applicable regulations and query which contracts they were eligible to bid on. This created a quicker and more efficient feedback function for potential vendors and freed the back office from some simple tasks.

05

Conclusion

The transformative power of technology for government operations and services is undeniable. While advancements in AI and other next-generation technologies are revolutionising government efficiency, outdated procurement systems pose a significant barrier to harnessing these innovations effectively. Reimagining the state requires a procurement system that's able to keep pace with technological progress.

Today's technology demands a new procurement model – one centred on users and premised on a collaborative partnership between government and industry and an array of advanced procurement models. In the UK, establishing an Advanced Procurement Agency would mark a vital step towards achieving this vision. By embracing innovation, fostering collaboration with industry pioneers and investing in the development of procurement expertise, the UK government can not only propel its own digital transformation but also catalyse growth and innovation within the private sector.

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Annex: To Buy or Build

Whether to buy, build or do a combination of both is one of the most significant decision points in the digital-transformation journey. Traditionally governments have relied on outsourcing or buying off-the-shelf products instead of building and developing in-house capability. But as the government invests in building its own in-house technology and development expertise, the debate on whether to buy or build becomes more complex. That's where we are now.

The short answer is there are times to purchase off-the-shelf solutions and times to build solutions internally. There are also times to modify or amend existing off-the-shelf solutions to meet government needs.

It can make more sense to buy an off-the-shelf product if your requirements are very common and easily met by suppliers. An email tool, a project-management platform or an office suite such as Microsoft Office are good examples of where the government should buy off the shelf.

But, given the incredibly broad and unique remit of the government, there are an increasing number of opportunities to build solutions or procure development services internally. There are dual benefits in cases when a core business remit does not yet exist and is highly unique to one agency, such as rebuilding a mainframe system to handle rising caseloads or creating a central-login platform to access myriad services. First, it showcases how the government can leverage its purchasing power to drive markets and shape key sectors and technologies. Second, the "build" option allows customisation to unique user needs, the ability to modify software as needed, and the ability to drive innovation and competitive advantages.

The last option is a hybrid of buying and building – that is, customisation of off-the-shelf software. In this approach, off-the-shelf software serves as the foundation solution and is tailored to unique requirements by making code modifications and implementing custom development.

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