Promoting Competition in Federal AI Procurement

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Executive Summary

In directing the nation's artificial intelligence (AI) strategy, executive branch policymakers face important decisions concerning procurement. As federal agencies take advantage of the latest technology to better serve the public, they will often rely on procurement contracts with private corporations for AI tools. Significant concentration in the AI sector, with monopolistic or oligopolistic market structures in chips, cloud computing, and data, means that government AI contracts risk further entrenching dominant incumbents. Over time, this may impede the government's ability to promote fair competition, stimulate innovation, administer a successful industrial strategy, and procure AI resources efficiently and economically. Avoiding these problems should therefore be a policy priority.

This paper offers a series of policy options for how policymakers can ensure that procurement of AI prevents anticompetitive practices that harm both the AI ecosystem and future federal acquisitions. The paper describes (1) policies that promote competition, avoid lock-in, and get the government a good deal in AI procurement; (2) how to implement these policies on a contract-by-contract basis, in Presidential orders, in the Federal Acquisition Regulation (FAR), and in guidance for agencies, and (3) new directions for promoting competition in the AI industry through procurement, including a study on interoperability and public capacity as an alternative to contracting. These policy options orient federal AI procurement toward promoting a more competitive and innovative ecosystem and will ensure efficient and economical procurement into the future.[1]

Introduction

As federal agencies adopt artificial intelligence (AI) to improve public services, many of the most important decisions they face concern procurement. AI at scale requires several inputs, from chips and cloud infrastructure to training data and foundation models. Whether the objective is a chatbot on an agency's website to facilitate a better user experience or an automated system to process paperwork more expeditiously, each of these inputs will have to be built in-house or acquired from private sources.

As a result, one of the primary modes of engagement between the federal government and the AI industry will be the procurement process. The United States federal government is the largest single purchaser of goods and services in the world, spending upwards of $92 billion on information technology alone in 2021.[2] Given its ability to create demand in critical sectors—and its power to determine the conditions of such demand—the federal government's use of procurement can also shape how markets operate.

In executive orders and in administrative appointments, President Biden has expressed a strong commitment to competition policy and making markets more competitive,[3] a position that finds expression in both the AI Executive Order and OMB draft memorandum on AI.[4] "Full and open competition" is also a cornerstone principle of federal procurement policy.[5] Competition in the context of the Federal Acquisition Regulation (FAR) means competition for federal contracts – which, of course, assumes there is a competitive marketplace.

But "full and open competition" is not an accurate descriptor of the current state of the AI industry, which provides procurement officers with deceptively limited options. Many government contractors, from Deloitte to Accenture, market AI services to federal agencies.[6] But given extreme concentration in the cloud sector, the underlying compute power is offered by only a few providers, of which three dominate: Amazon Web Services, Microsoft Azure, and Google Cloud Platform. Even if the government were to instead build its own cloud infrastructure, it would have to procure the necessary hardware, including powerful GPU chips, for which one company, Nvidia,

controls 80-95 percent of the design market.[7] Once the infrastructure is in place, acquiring sufficient data storage and a foundation model may also be necessary. Winner-take-all dynamics in data acquisition and in the model layer and preferential relationships between model and infrastructure firms—such as those between OpenAI and Microsoft, and Anthropic and Amazon—may distort competition in these markets as well.

Procurement policy alone cannot solve the problems posed by concentration at the different layers in the AI tech stack. But there are steps that can and should be taken to ensure that procurement decisions consider the competitive dynamics of the AI industry, avoid further entrenching powerful AI companies, and use government contracts as a mechanism to promote competitive markets. The draft OMB guidance on the implementation of the President's recent Executive Order makes two important contributions in this area. First, it encourages agencies to promote interoperability and combat self-preferencing through the procurement process:

> Agencies should take appropriate steps to ensure that Federal AI procurement practices promote opportunities for competition among contractors and do not improperly entrench incumbents. Such steps may include promoting interoperability and ensuring that vendors do not inappropriately favor their own products at the expense of competitors' offerings.[8]

Second, it accounts for the consequences of a lack of competition in the AI industry by promoting policies to avoid data misuse and vendor lock-in:

> Agencies should take steps to ensure that their contracts retain for the Government sufficient rights to data and any improvements to that data so as to avoid vendor lock-in and facilitate the Government's continued design, development, testing, and operation of AI. Additionally, agencies should consider contracting provisions that protect Federal information used by vendors in the development and operation of AI products and services for the Federal Government so that such data is protected from

> unauthorized disclosure and use and cannot be subsequently used to train or improve the functionality of commercial AI offerings offered by the vendor without express permission from the agency.[9]

This paper offers recommendations for implementing these policies, as well as additional suggestions to further promote fair competition in federal AI procurement. Part I of the paper describes policies that promote competition, avoid lock-in, and can ensure government gets a good deal in AI procurement. Part II outlines how these policies can be implemented on a contract-by-contract basis, in Presidential orders, in the Federal Acquisition Regulation (FAR), and in guidance for agencies. Part III discusses additional ideas for promoting competition via AI procurement, including interoperability and in-house capacity.

Pro-Competition and Antimonopoly Policies for AI Procurement

Nondiscrimination Rules. Nondiscrimination rules have historically been used in highly concentrated industries to combat oligopolistic abuses of power. Nondiscrimination rules "allow a firm to operate two or more vertically-linked business lines, but require the firm to treat downstream businesses neutrally—including its own vertically-integrated business lines."[10] Requiring government vendors and contractors to treat downstream businesses neutrally is one way to address OMB's concerns about self-preferencing, "ensuring that vendors do not inappropriately favor their own products at the expense of competitors' offerings."[11] Importantly, as market participants, agencies have a legitimate interest in seeking these rules: In developing an AI model, for example, an agency should not be charged a higher price for cloud services than a provider's own vertically-integrated model developers or be arbitrarily prohibited from accessing cloud services available to other customers. Nondiscrimination rules can therefore be an effective mechanism for ensuring that an agency gets the "best value" from a given acquisition. Importantly, because vendors would likely deny that they discriminate against users, they may agree to such provisions willingly.

Multicloud Requirements. When selecting bids for cloud services, agencies could be required to contract with multiple providers, so as to avoid lock-in to any particular provider. "Multicloud," as this strategy is known, is usually understood as a security measure.[12] If the compute power on which an agency's AI application relies were to fail, the public service it helps provide may also fail. Contracting with multiple cloud vendors at once may help prevent such a disaster. But by refusing to grant the advantages of lock-in to any one provider, the government avoids handing special privileges or advantages to dominant incumbents, making multicloud also a pro-competition policy for cloud procurement.[13]

Prohibitions on Egress Fees. As part of their contracts, agencies could prohibit egress fees—either for all cloud infrastructure contractors, or at a minimum, in federal contracts. These fees, which are common in the industry,[14] add costs to users to switch from one cloud provider to another, thereby reducing competition and facilitating lock-in.[15]

Data Isolation. AI models rely on enormous amounts of data for training and inference. Therefore, whether the underlying models are acquired or built by in-house technologists, government AI applications may rely extensively on government data. This raises at least two concerns: one regarding security, given that sensitive government data is housed on private cloud servers; and another regarding concentrated power, given that dominant firms may have privileged access to public data to train their own proprietary models. As noted above, OMB's draft guidance recognizes these risks and directs agencies to consider policies to address them.

To address these issues, agencies could require that government data housed on private servers is separated from all other data. Data isolation is an established data management practice, done either through physical separation in distant server locations or electronic separation via secure copies with strict access controls or other computational isolation mechanisms.[16] Each of the leading cloud providers advertises their capacity to isolate sensitive customer data using these procedures, and this approach could be made mandatory in procurement contracts.[17]

Data Control. Federal AI contractors may seek to retain the rights to data collected in a procured technology's deployment for use in further development. To address this concern, contracting officers could expressly limit the use of government data by private firms to the specific product or service for which they are contracted. If government data is used in the training of an AI model for use in a particular public service, that data should not be used for proprietary purposes, to prevent government contractors from having an unfair advantage and further entrenching their power through privileged access to government data. Contracting officers should require that data produced by technology procured with public money be returned to the procuring agency, and to the extent feasible and appropriate, be made publicly accessible, such as by posting the data to data.gov.

Policymakers could also ensure that the Federal Risk and Authorization Management Program's (FedRAMP's) Emerging Technology Prioritization Framework, which seeks to fast-track cloud providers through the screening process for government agencies in response to the President's executive order, does not grant dominant incumbents privileged access to government data.[18]

Implementing Pro-Competition and Antimonopoly Procurement Policies for AI

There are at least three distinct ways by which changes to federal procurement policy can be made. First is on a contract-by-contract basis: Contracting officers have broad discretion to set technical specifications and terms in their requests for proposals (RFPs) that they deem necessary to get the government the "best value" from a particular contract.[19] In contracts subject to competitive sealed bidding procedures, these specifications must be kept consistent throughout the bidding process and be the ultimate criteria under which the bid is selected. In negotiated contracting, where even more specialized or complex technology is designed with greater collaboration between agencies and vendors, contracting officers also have broad discretion to negotiate technical specifications. Second, the President can issue directives to agencies that promote fair competition in the procurement process. Though there are

conflicting circuit court decisions on the scope of the President's authority under the Federal Property and Administrative Services Act of 1949 (the "Procurement Act"), other statutory provisions may offer additional support for such policies. Third, an agency may submit a proposed amendment to the FAR, which could be taken up by members of the FAR Council and go through the notice and comment rulemaking process. Each of these procedures has its own advantages and drawbacks.

Contract-By-Contract. Implementing pro-competition requirements on a contract-by-contract basis involves setting technical specifications that meet agencies' needs and prohibit anticompetitive features. Contracting officers have broad discretion to determine the technical specifications of procurement contracts in order to obtain the "best value" from their acquisitions.[20] To do so, as the draft guidance suggests, federal agencies and their procurement officers should be encouraged to implement nondiscrimination rules to combat self-preferencing by dominant platforms, thereby ensuring agencies get the best value for their acquisition now, and promoting competition in the process, which ensures that the federal government will get the best value for contracts in the future.

One benefit of promoting competition on a contract-by-contract basis is that there are very few restrictions on what contracting officers can require within a particular contract, and thus that requirements can be implemented with comparative ease. This is true especially of technical requirements that facilitate switching between providers. Because a switching rule would make the competitor agency's operations more efficient, such a requirement would be just as common-sense as one stipulating that the cloud computing service must be able to store a particular amount of data or be able to process specific types of data.

There are at least two potential drawbacks to seeking pro-competition measures on a per-contract basis, though there are strong counterarguments to each. First, some might argue that some rules, such as nondiscrimination rules, may be more difficult to administer on a contract-by-contract basis. Such policies govern contractors' business models, rather than the technical specifications of the product or service to be procured per se. But even so, contract-by-contract nondiscrimination rules cut to one

of the core values of federal procurement: ensuring the government gets a good deal. A nondiscrimination provision ensures that the federal government is not getting—and will never get—a worse deal than the platform gives its own vertically-integrated business lines. Second, by definition such conditions only apply to the firm that wins the bid, rather than to all market players in that line of business. But if bidding firms need to attest that they will abide by nondiscrimination rules, those rules may simply become industry-standard—so that competitors to the winning firm can compete in the future.

Promoting competition should be a priority at each stage of the procurement process, from pre-acquisition planning to the ongoing monitoring of an awarded contract:[21]

A) *Planning.* In the acquisition planning stage, agencies should first carefully consider their policy and technical objectives in making any AI-related procurement, in conjunction with public sector technology experts. Doing so will ensure that each procurement is tailored to the needs of agencies and the public, rather than to contractors, and that dominant incumbents are not unduly advantaged by the unnecessary acquisition of AI products or services. At a minimum, the agency should be able to answer whether their objectives could be met by a) building a system in-house with existing capacity or by hiring personnel and procuring foundational inputs, or b) without the implementation of an AI system. If the answer to either of these questions is affirmative, the agency should plan how to use existing resources to achieve their objectives, or focus on hiring personnel to build systems internally, instead of making unnecessary acquisitions from private companies.

   Once it has been decided that an automated system is required to achieve a pre-defined objective (that is, exogenous to simply using AI), procurement officers should consider the competitive dynamics of the market for the product or service to be acquired. Indeed, "AI procurement" may incorporate one or more distinct components within the AI tech stack: hardware (including GPUs or other microprocessor chips), cloud computing services, models (including data, foundational models or algorithms, and modes of data access such as APIs), or

integrated AI applications incorporating all the prior inputs. In hardware, one company, Nvidia, has captured an overwhelming majority of the market for the design of GPUs, the small, hyper-powerful chips that provide the processing power for AI models and applications. One company, Taiwan Semiconductor Manufacturing Corporation (TSMC), dominates the fabrication of the most advanced chips. Barring the construction of a federal cloud computing service, which would necessitate the acquisition of a large number of GPUs, the infrastructure with which procurement officers will directly or indirectly engage is cloud computing. Three major companies dominate cloud computing: Amazon Web Services, Microsoft Azure, and Google Cloud Platform. At the model level, dynamics in that market plus significant investments by these firms in AI model developers, such as Anthropic and OpenAI, may also distort competition.[22]

Procurement planning should account for each market's competitive dynamics, in order to make decisions with an eye towards preventing the entrenchment of dominant incumbents. Just as acquisition planning may involve risk assessments involving AI safety or ethics, it should also include an assessment of the likelihood that a major procurement contract will result in vendor lock-in, unduly advantage particular companies, or otherwise allow dominant AI companies to deepen their market power.

B) *Solicitation*. When issuing RFPs (requests for proposal) in advance of an AI-related acquisition, procurement officers should include terms and technical specifications that reflect the pro-competition policies detailed in the previous section. These should include either announcing a preference for, or simply requiring, vendors that incorporate nondiscrimination policies into their business practices. For cloud procurement, they should contain multicloud requirements, prohibitions on egress fees, and provisions requiring data isolation and prohibiting the use of government data for proprietary purposes.

C) *Evaluation and selection*. When evaluating bids and selecting vendors, procurement officers should hold fast to the terms and specifications they

promulgated in the solicitation period. Agencies should evaluate bids based on whether the companies involved have expressly written these commitments into their proposals, and such commitments should be factored into ultimate selections. Once selections have been made, nondiscrimination rules should be written into the awarded contracts.

D) *Contract Performance and Ongoing Monitoring*. Once contracts have been awarded, whether for COTS (commercial off-the-shelf) AI-related products and services or for tailor-built systems developed in consultation with an agency, procurement officers should ensure that vendors abide by all contract terms and technical specifications, including those related to competition and commercial behavior. Contracts should enumerate specific penalties for violating these provisions, including termination of the contract.

Presidential Action. There is a long history of presidential action in federal procurement policy through executive orders requiring agencies to include provisions in contracts that place certain obligations on contractors. Some of the most early and notable exercises of this power involved prohibiting racial discrimination by federal contractors. In 1941, at the urging of civil rights leader A. Phillip Randolph, President Roosevelt signed an executive order requiring, among other things, that:

> All contracting agencies of the Government of the United States shall include in all defense contracts hereafter negotiated by them a provision obligating the contractor not to discriminate against any worker because of race, creed, color, or national origin[.][23]

Following this declaration, other presidents, including President Eisenhower, also exercised their power to prohibit discrimination by federal contractors.[24] Yet others used their authority to place conditions on federal contracts in efforts that reflected their policy priorities. President Carter implemented price and wage regulations in federal contracts to fight inflation in the late 1970s.[25] President Bush, in the early 2000s, used his authority to require that federal contractors post notices to their employees that they had the right to refuse to join a union and pay union dues.[26]

President Obama, in 2015, ordered federal contractors to provide seven days of paid sick leave to their employees.[27] Of these executive orders that were challenged in federal court, each was upheld.[28]

From President Carter onward, presidents cited their authority under the Federal Property and Administrative Services Act of 1949 (the "Procurement Act") to establish rules for federal contractors that promoted "economy and efficiency" in federal contracting. Under the standard used in the D.C. Circuit Court's decision in *AFL-CIO v. Kahn* (1979), Presidents were permitted to promulgate such rules so long as there was a "sufficiently close nexus" between them and the values of "economy and efficiency."[29] However, recent challenges to the Biden administration's mandate for federal contractors to vaccinate their employees against Covid-19 resulted in a split among circuit courts over whether this particular statute grants the President this authority.[30]

There are other statutory authorizations that the President, OMB, and federal agency heads may cite to support pro-competition and antimonopoly rules for federal contractors:

- Small Business Act – The Small Business Act "requires each Federal agency to foster the participation of small business concerns as prime contractors and subcontractors in the contracting opportunities of the Government regardless of the place of performance of the contract."[31] To enforce this requirement, regulators have required agency acquisition planners to, among other things, "structure procurement requirements to facilitate competition by and among small business concerns."[32] These obligations may support procurement policies that help create a level playing field and ensure fair competition for small businesses.
- Competition in Contracting Act – The Competition in Contracting Act of 1984 requires that acquisition officers write specifications "in a manner designed to achieve full and open competition" and "develop specifications in such a manner as is necessary to obtain full and open competition."[33] Pro-competition contracting policies may be necessary "to obtain full and open competition" over time.

- Antitrust Laws – The Clayton Act of 1914, as amended by the Robinson-Patman Act of 1936, prohibits price discrimination between different purchasers of commodities in like grade and quality, where the result may be to substantially lessen competition or tend to create a monopoly.[34] Congress's strong stance against price discrimination in commerce as expressed in this Act may lend further support to pro-competition, and especially nondiscriminatory, contracting requirements.

Under these and potentially other statutory authorities, the President, OMB, and federal agencies could emphasize that promoting competition is and ought to be a central consideration of federal AI procurement policy. However, the challenge with executive action, as always, is a lack of stickiness: A subsequent administration could reverse or change policies to promote concentration in the AI sector.

FAR Regulations. A more difficult, yet more durable, method of making changes to federal procurement policy is by amending the FAR. Nondiscrimination could be made a uniform condition of all federal contracts for platform-like services in regulations that may be more difficult to reverse than executive orders. This is also a more efficient model for obtaining such rules than contract-by-contract, given that contracting officers will automatically insert into acquisition contracts requirements present in the FAR, rather than need to reinvent those provisions in every situation.

Writing pro-competition requirements, such as nondiscrimination clauses, into the FAR would require the FAR Council, consisting of representatives from the General Services Administration, the Department of Defense, and the National Aeronautics and Space Administration and headed by the administrator of the Office of Federal Procurement Policy, to initiate a rulemaking. Like other federal regulations, the proposed rule would be published in the Federal Register for public notice and comment, before finally being written into the FAR.[35]

Statutory Change. An even more durable method would be for Congress to enact pro-competition policies with respect to AI procurement into federal law.

AI Guide for Government. The AI Center of Excellence, one of the IT Modernization Centers of Excellence housed within the General Services Administration, publishes an AI Guide for Government that catalogs best practices for federal agencies' use of artificial intelligence. Though it covers a broad range of issues, including transparency, workforce development, and data governance, its discussion of procurement does not consider competition.[36] Topics covered in the Guide's current iteration include key AI terminology; considerations for agency organization; trustworthy and ethical AI principles; diversity, equity, inclusion, and accessibility; workforce recruitment and retention; data cultivation and management; a model for evaluating AI's capability maturity; innovation; use case discovery, including through hackathons and public challenges; prototyping and piloting; integration and implementation; and acquisition decisions. There is no mention of competition or market structure. The AI Guide for Government should also be updated to include information about AI's industrial organization and offer agencies guidance on how to promote competition in their procurement decisions. Executive branch leaders should also reaffirm that agencies should consider competition in all AI-related (and, indeed, non-AI-related) procurement decisions—not just in the bidding process, but in the impact of such decisions on markets.

Additional Policies to Ensure AI Competition Via Procurement

Interoperability Study. Along with nondiscrimination rules, interoperability rules are another tool that policymakers have used in highly concentrated platform-like industries to prevent lock-in and promote competition. Generally speaking, such rules "lower barriers to entry and thus stimulate competition by 'allowing new competitors to share in existing investments' and 'imposing sharing requirements on market participants.'"[37] Interoperability requirements in the AI context might enable customers to easily switch their data between rival cloud infrastructure providers and thereby prevent lock-in. The draft OMB guidance encourages agencies to "take appropriate steps" to promote competition among contractors and includes both nondiscrimination and interoperability rules as possible steps towards that goal.

Determining exactly how interoperability might apply in the cloud computing context is a subject that merits serious study. Some technologists have proposed that an interoperable cloud would require a shared compatibility layer—a solution that, while addressing the risks of lock-in, might disincentivize competition between platforms and be difficult to administer through the procurement process.[38] To inform debate about what technical specifications might be necessary to implement interoperability rules in procurement contracts, the National Institute for Standards and Technology (NIST) should conduct a study on AI models and cloud platforms and report its findings to the President and Congress. The study should consider whether and what types of interoperability requirements would be suitable to prevent lock-in and simultaneously promote competition between platforms on use cases, security, and other features.

Build Public Capacity on AI. Though procurement may often be necessary for AI inputs, perhaps the most critical step the government can take to avoid entrenching dominant firms is to build in-house capacity wherever possible, instead of outsourcing AI operations. As described above, outsourcing AI operations may further entrench the oligopoly of firms that offer inputs including cloud computing and foundation models. It may also result in lock-in and compromised data, as well as high costs, undermined accountability, and depleted institutional knowledge.[39] Mitigating the harms posed by concentration in the AI sector will require that the government has sufficient in-house personnel and technical capacity to help support AI's responsible procurement, adoption, and regulation.[40]

Conclusion

Procurement in a sector in which there is little competition presents a challenge for a government committed to competition as a central value. The tools outlined here may serve as useful steps towards addressing this challenge, ensuring that the federal government has the resources it needs to simultaneously equip itself with cutting-edge technology and avoid entrenching already powerful corporations.

Endnotes

[1] Ramsay Eyre is a policy analyst at the Vanderbilt Policy Accelerator. The author thanks Jeff Gordon, Sarah Myers West, Laura Dolbow, David Rubenstein, Tejas Narechania, Joe Jordan, Bharat Ramamurti, Ganesh Sitaraman, Grace May, and Andy Flores for helpful conversations.
[2] *FACT SHEET: Biden-Harris Administration Announces Reforms to Increase Equity and Level the Playing Field for Underserved Small Business Owners*, THE WHITE HOUSE (Dec. 2, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/02/fact-sheet-biden-harris-administration-announces-reforms-to-increase-equity-and-level-the-playing-field-for-underserved-small-business-owners/; Dominick A. Fiorentino, *Federal Information Technology (IT) Budgeting Process in the Executive Branch: An Overview*, CONG. RSCH. SERV. 1 (Aug. 17, 2021).
[3] Exec. Order No. 14,036, 86 Fed. Reg. 36,987 (July 9, 2021).
[4] Exec. Order No. 14,110, 88 Fed. Reg. 75,191 (Oct. 30, 2023); OFF. OF MGM'T AND BUDGET, PROPOSED MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES: ADVANCING GOVERNANCE, INNOVATION, AND RISK MANAGEMENT FOR AGENCY USE OF ARTIFICIAL INTELLIGENCE 21 (Nov. 2, 2023) (hereinafter "OMB DRAFT POLICY").
[5] 48 C.F.R. §6.101(a) (requiring that "contracting officers shall promote and provide for full and open competition in soliciting offers and awarding Government contracts.").
[6] DELOITTE, "AI Institute For Government" https://www2.deloitte.com/us/en/pages/public-sector/articles/artificial-intelligence-government-sector.html (last visited September 11, 2023); *Generative AI for US Federal Agencies,* ACCENTURE, https://www.accenture.com/us-en/services/us-federal-government/generative-ai (last visited Aug. 23, 2023).
[7] Tejas Narechania and Ganesh Sitaraman, *An Antimonopoly Approach to Governing Artificial Intelligence*, VAND. POL'Y ACCELERATOR 11 (Oct. 10, 2023).
[8] OMB DRAFT POLICY, *supra* note 4, at 21.
[9] ID., at 21-22.
[10] Narechania and Sitaraman, *supra* note 7, at 43.
[11] OMB DRAFT POLICY, *supra* note 4, at 21.
[12] Chris Dimitriadis, *Developing a multicloud security strategy*, CSO (Dec. 10, 2020), https://www.csoonline.com/article/570041/developing-a-multicloud-security-strategy.html.
[13] One need look no further than the Department of Defense's ill-fated "JEDI contract" for cloud computing services, which ultimately resulted in a contract with multiple providers, to recognize the perils of seeking only a single vendor for a major cloud contract. *See* Ron Miller, *Pentagon announces new cloud initiative to replace ill-fated JEDI contract*, TECHCRUNCH (Nov. 19, 2021, 12:52 PM CST) https://techcrunch.com/2021/11/19/pentagon-announces-new-cloud-initiative-to-replace-ill-fated-jedi-contract/.
[14] Investigation of Competition in Digital Markets: H. Comm. On The Judiciary, 117th Congress, 98 (2020); Stephen Pritchard, *Cloud egress costs: What they are and how to dodge them*, COMPUTER WEEKLY (Jan. 23, 2023), https://www.computerweekly.com/feature/Cloud-egress-costs-What-they-are-and-how-to-dodge-them.
[15] One provider, Google Cloud Platform, recently announced that it would end egress fees for users, likely in response to European and American antitrust investigations. But this policy does not apply to all the platform's users, only to users who remove their data from their cloud entirely and close their account. Moreover, it requires that users apply to have their egress fees waived, giving the provider yet

another opportunity to engage in discriminatory treatment of its users. *See* Tobias Mann, *Why Google is waiving egress fees for disgruntled customers ditching GCP*, THE REGISTER (Jan. 11, 2024), https://www.theregister.com/2024/01/11/google_cloud_egress_fees/.

[16] *Data isolation,* COHESITY, https://www.cohesity.com/glossary/data-isolation/ (last visited Oct. 23, 2023).

[17] *Isolation in the Azure Public Cloud*, MICROSOFT (Oct. 12, 2023), https://learn.microsoft.com/en-us/azure/security/fundamentals/isolation-choices; *Google infrastructure security design overview*, GOOGLE CLOUD (June 2023), https://cloud.google.com/docs/security/infrastructure/design; *Logical Separation on AWS*, AMAZON WEB SERVICES (July 28, 2020), https://docs.aws.amazon.com/whitepapers/latest/logical-separation/welcome.html.

[18] FEDRAMP, EMERGING TECHNOLOGY PRIORITIZATION FRAMEWORK (Jan. 26, 2024), https://www.fedramp.gov/assets/resources/documents/FedRAMP_DRAFT_Emerging_Technology_Prioritization_Framework.pdf.

[19] David S. Rubenstein, *Federal Procurement of Artificial Intelligence: Perils and Possibilities*, GREAT DEMOCRACY INITIATIVE 29 (Dec. 2020); *see also* Antarctic Support Assocs. v. United States, 46 Fed. Cl. 145, 154 (2000) ("[C]ontracting officials are granted wide discretion in their evaluation of bids and the application of procurement regulations.").

[20] Id.

[21] In describing the federal procurement process in these four stages, the author follows David S. Rubenstein, *Acquiring Ethical AI*, 73 FLORIDA L. R. 747 (2021).

[22] For more on the AI tech stack, *see* Narechania and Sitaraman, *supra* note 7.

[23] Exec. Order No. 8,802 (June 25, 1941).

[24] Kentucky v. Biden, 57 F.4th 545 (6th Cir. 2023).

[25] AFL-CIO v. Kahn, 618 F.2d 784 (D.C. Cir. 1979).

[26] Exec. Order No. 13,201, 66 Fed. Reg. 11,221 (2001).

[27] Exec. Order No. 13,706, 80 Fed. Reg. 54,697 (Sept. 7, 2015).

[28] AFL-CIO v. Kahn, 618 F.2d 784 (D.C. Cir. 1979); UAW-Labor Empl. & Training Corp. v. Chao, 325 F.3d 360 (D.C. Cir. 2003). President Obama's executive order was not challenged. *See* Mayes v. Biden, 67 F.4th 921 (9th Cir. 2023).

[29] AFL-CIO v. Kahn, 618 F.2d 784 (D.C. Cir. 1979).

[30] Compare Mayes v. Biden, 67 F.4th 921 (9th Cir. 2023) (upholding the vaccine mandate) with Kentucky v. Biden, 57 F.4th 545 (6th Cir. 2023), Louisiana v. Biden, 55 F.4th 1017 (5th Cir. 2022), Georgia v. President of the United States, 46 F.4th 1283 (11th Cir. 2022) (each affirming injunctions against the vaccine mandate). In December 2023, the Supreme Court vacated three cases related to vaccine mandates for federal employees as moot on the basis that the President had rescinded the relevant executive order. Applying this logic, given that the President also rescinded the executive order related to federal contractors, the 9th Circuit vacated its judgment in *Mayes* on procedural grounds, without altering its substantive analysis. *See* Mayes v. Biden, 89 F.4th 1186 (9th Cir. 2023).

[31] 13 C.F.R §125.2(c)(1).

[32] 13 C.F.R §125.2(c)(1)(i).

[33] Kate Manuel, *Competition in Federal Contracting: An Overview of the Legal Requirements*, Congressional Research Service 18 (June 30, 2011) (citing 10 U.S.C. § 2305(a)(1)(A)(i)-(iii) & 41 U.S.C. § 253a(a)(1)(A)-(C)).

[34] 15 U.S.C. §13.

[35] *The Federal Acquisition Regulation (FAR): Answers to Frequently Asked Questions*, Congressional Research Service 11-12 (Dec. 18, 2015).

[36] *AI Guide For Government*, IT MODERNIZATION CTRS. OF EXCELLENCE, https://coe.gsa.gov/coe/ai-guide-for-government/introduction/index.html (last visited Feb. 7, 2024).
[37] Narechania and Sitaraman, *supra* note 7, at 44.
[38] Richard MacManus, *Sky Computing, The Next Era After Cloud* Computing, NEXT STACK (Aug. 9, 2021), https://thenewstack.io/sky-computing-the-next-era-after-cloud-computing/.
[39] *See* MARIANNA MAZZUCATO AND ROSIE COLLINGTON, THE BIG CON: HOW THE CONSULTING INDUSTRY WEAKENS OUR BUSINESSES, INFANTILIZES OUR GOVERNMENTS, AND WARPS OUR ECONOMIES (2023).
[40] *See* Ganesh Sitaraman and Ramsay Eyre, *Building Public Capacity on Artificial Intelligence*, VAND. POL'Y ACCELERATOR (Oct. 10, 2023).