



# VENDOR-LOCK

AND LACK OF COMPETITION IN THE  
GOVERNMENT'S SOFTWARE ESTATE

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# EXECUTIVE SUMMARY

## KEY FINDINGS

- Microsoft and Oracle, the world's two largest software companies, received 25 to 30 percent of their contracts without meaningful competition (and likely much more).
- In one prime example of vendor-lock, the government spent \$112 million more to buy Microsoft Office than Google Workspace in order to avoid perceived costs to switch.
- A five percent improvement in price performance, due to enhanced software competition, could produce savings up to \$750 million annually.

The United States Government has spent almost \$2 trillion on Information Technology (IT) since 1994. About \$300 billion of that expenditure has been on commercial off-the-shelf (COTS) software. On an annual basis, the government collectively spends \$10 to \$15 billion on new software and for the maintenance and support of previously purchased software. Unfortunately, the majority of the COTS software spend has been destined for only a limited set of software companies who have managed to create a largely vendor-locked COTS software estate.

Until now, the government has had little visibility into how resoundingly its incumbent software estate has been captured by so few. As a result, an oligarchy of software companies has been free to use fear, uncertainty, and sometimes questionable business practices to make authentic competitions against incumbent software applications relatively rare.

The government has generally acquiesced to vendor-lock, limiting full and open competitions for COTS software to just new programs that are large and highly visible. This research paper explores “vendor-lock” in federal IT and examines how incumbent software companies exploit vendor-lock to decrease competition and increase costs to taxpayers.

**Vendor-lock has also allowed software vendors to leverage their power to impose a number of harmful practices on the government.**

### Some of these crafty actions include:

1. Licensing restrictions requiring the government to repurchase previously paid for software, in order to use those applications in competitive cloud environments.
2. Fixed, inflexible annual support fees, that cannot be reduced, even with a reduction in software usage.
3. Predatory software audits (according to lawsuits) used to cement lock-in, and in one case, force the government to spend hundreds of millions of dollars unnecessarily.

Lastly, this research paper puts forward several actionable steps the federal government should take to limit vendor-lock and save taxpayer dollars.

Chief among them—the bipartisan SAMOSA Act, (S.4908; H.R. 9330), introduced in the fall of 2022, offers significant relief by requiring each agency to do a rigorous accounting of their COTS software to better understand their software licensing assets, rights, and liabilities.

Software vendor-lock is a difficult problem that afflicts industry and government alike. Not all vendor-lock is avoidable. But, because the government is the largest single buyer of IT products in the world, it has unique leverage to fight back against the most onerous software licensing practices. In the end, if the government used meaningful competition to mitigate vendor-lock and improve price performance by only 5 percent, it could generate savings of between \$500 and \$750 million annually.

# GOVERNMENT IT, VENDOR-LOCK AND COMPETITION

**The United States Federal government is the largest single consumer of Information Technology (IT) in the world. It spends IT dollars at a staggering rate. According to budget research, the government has spent almost \$2 trillion on IT since 1994.<sup>2</sup>**

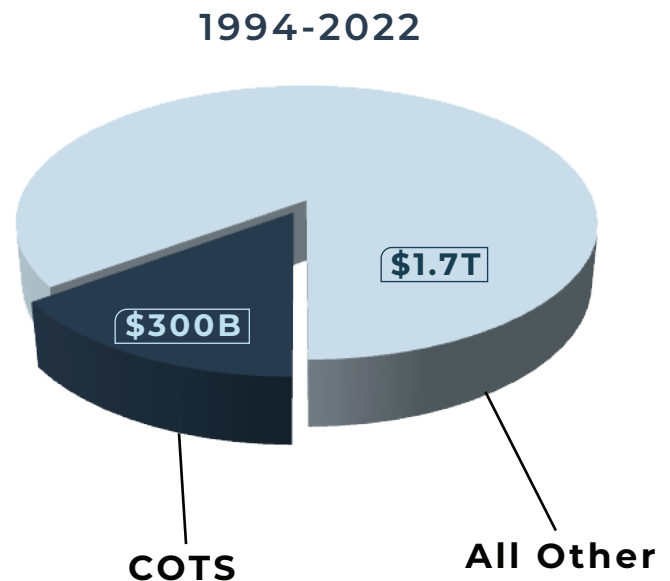
**While most of this has been for services related to IT operations and management, one can safely assume at least 15 percent, or \$300 billion, has been spent on commercial off-the shelf (COTS) IT products including software and nascent cloud technology.<sup>3</sup>**

Unfortunately, the deeply fragmented and independent way that IT procurements are conducted by federal agencies has largely left the government with a vendor-locked software estate dominated by a handful of COTS vendors. These vendors have been free to impose difficult licensing provisions and punitive restrictions against competition, with little fear of displacement.

Vendor-lock refers to a situation where the actual or perceived costs of switching to a different vendor appear to be so high or difficult that the enterprise is essentially “locked” into the original vendor.

Once locked in, the vendor faces no meaningful competition and is free to extract price premiums. To state an actual example, the government recently demonstrated a willingness to spend \$112 million more for Microsoft Office than for Google Workspace, to avoid the switching costs that it perceived to be even higher.<sup>4</sup>

**COTS Products as a Share of Total IT Spend**



<sup>1</sup> Software Estate is a term used to describe the entire accumulated collection of software applications across a vast computing enterprise in very large organizations like the government.

<sup>2</sup> Between 1994 and 2019, the government budgeted \$1.6 trillion dollars for IT. In the three years since, the average IT budget has been \$100 billion per year. These public budget numbers do not include money spent on IT in the Intelligence Community nor for other classified programs.

<sup>3</sup> 15 percent is a conservative estimate based on the fact that about 68 percent to 77 percent of all IT is spent on Operations and Maintenance. See Federal Agencies Need to Address Agency Legacy Systems, GAO-16-696T (May 2016).

<sup>4</sup> USDA argued that it needed Microsoft Office instead of Google Workspace because the cost of switching would take three years and was not practicable. See Westwind Computer Products, Inc. GAO B-420119. Westwind, the disappointed bidder, stated that the cost of Office was \$170 million while the cost of Google Workspace was \$58 million. See IT Reseller Challenges USDA's 20-Year Tradition of Sticking With Microsoft, FEDSCOOP, Dec. 23, 2021.



The U.S. government was willing to spend

**\$112 million more**

for Microsoft than for an alternative software provider, in part due to vendor-lock.

Because COTS acquisitions by brand-name are not tracked with fidelity in the Federal Procurement Data System (FPDS), the full effects of COTS software vendor-lock on the government are neither widely understood nor appreciated. Although there may be times when specific vendor-locking situations are unavoidable and perhaps even justifiable, the reality is the government allows COTS software acquisitions to proceed with little regard to how the thousands upon thousands of independent acquisition choices aggregate into a calcified estate.

With more competition for COTS software, the U.S. government could save up to

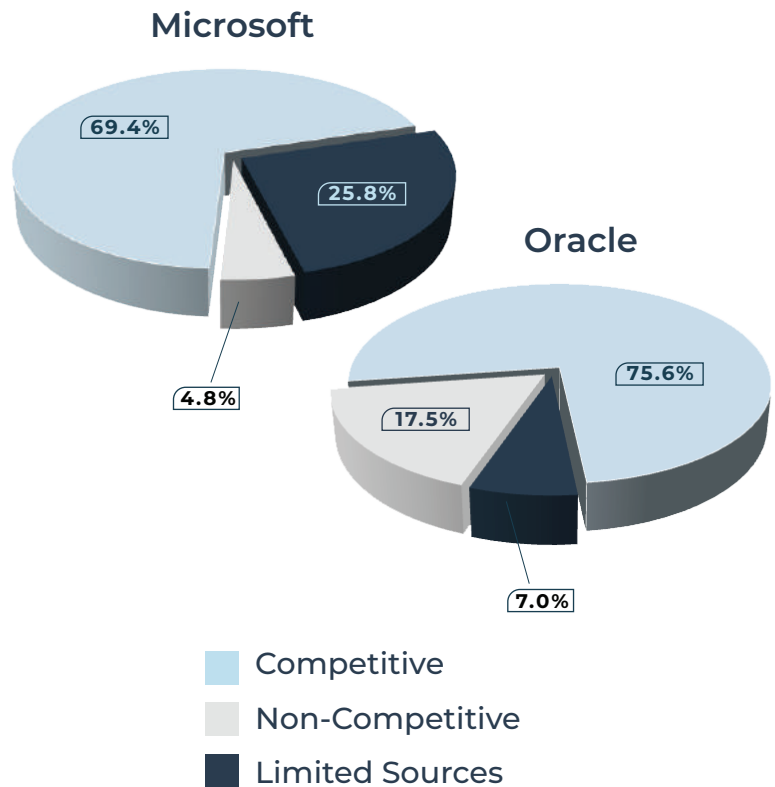
**\$750 Million**

per year

Given that the government is conservatively spending \$10 billion to \$15 billion a year on COTS software and cloud,<sup>5</sup> a reduction of only five percent, **driven through competition**, could possibly produce an annual savings of \$500 million to \$750 million. To promote competition, the government should decisively attempt to maintain the ability to substitute one product for another, whenever it is economically or technically expedient to do so. A comprehensive vendor-lock mitigation strategy is needed.

### Competition Details by Brand for Software Purchases

FY13- FY22



<sup>5</sup>The actual amount cannot be ascertained with precision. This conservative estimate is based on roughly doubling the \$5.6 billion reported on the GSA Schedule for 2021, which is only one of multiple procurement vehicles for the purchase of COTS software. Workspace was \$58 million. See Westwind Computer Products, Inc. GAO B-420119.

<sup>6</sup>These competition designations are “terms of art” in the government’s acquisition data. “Non-Competitive” means the awardee was simply given a contract without competitive pressures. “Limited Sources” means the government restricted the competition to a limited set of competitors. “Competitive” means there were no restrictions on potential bidders. As discussed in the paper, these data are not well categorized and may be misleading.

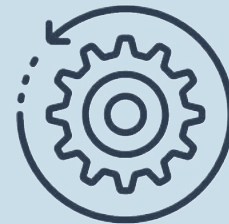
Acquisition data, in the graphic shown previously, indicate that Oracle and Microsoft, the top two recipients of government COTS software spending over the last decade, received at least 25 percent and 30 percent of their government sales respectively through less than fully competitive procurement procedures.<sup>6</sup> While alarming, this data likely under-reports the true scope of non-competition.

Importantly, the government considers competition between software resellers, even for specific products it has pre-designated by brand, to be a form of competition, when in fact, they are not meaningful competitions. The product winner has been predetermined prior to the competition. This type of procurement may meet the legal definition of “competition” under the Federal Acquisition Regulation (FAR), but as discussed later in this report, these instances of competition do not deliver meaningful price benefits. As a result, it is easy to speculate that the actual number of awards for Microsoft and Oracle products, without meaningful competition, is significantly higher than 25 to 30 percent, and could total over a billion dollars annually.<sup>7</sup>

In fact, government purchases of software are rarely competed in a traditional sense. More often, the government determines which software product it wishes to buy (or pay to support) and then reverse engineers the acquisition process to ensure it gets the software it has already decided to acquire –

almost always the incumbent application. This largely transpires in an invisible way, unmanaged, untracked.

**Because of vendor-lock, the U.S. government sometimes reverse-engineers software procurement processes to avoid genuine competition.**



While there can be legitimate reasons to stay with incumbent COTS solutions, alternatives are rarely even considered. Concerns about switching costs combined with incumbent vendors’ use of fear, uncertainty, and sometimes questionable business practices make authentic competitions against incumbents relatively rare. Unless the government is contemplating a new large program, or a green-field opportunity like the Department of Defense’s Healthcare Management Systems Modernization (DHMSM) or the Joint Warfighting Cloud Capability (JWCC), it often surrenders to inertia, concerns about switching costs, or the incumbent vendor’s desire to make it unduly complicated or cost-prohibitive to move to alternative solutions.

<sup>7</sup>Unfortunately, Microsoft and Oracle do not report their federal revenue. FPDS data is imprecise but indicates that among the top ten software brands, Microsoft and Oracle account for over 50 percent of the government’s software spend. If the government spends \$10 billion to \$15 billion a year on COTS software, using a conservative estimate, it is fair to assume that Microsoft and Oracle account for at least 33 percent or about \$3 billion annually. FPDS data indicates 25 to 30 percent of their awards have occurred using less than fully competitive procedures. It is therefore reasonable to estimate that at least \$1 billion in annual federal revenue is awarded to Microsoft and Oracle without meaningful competition. The true number is likely higher because much of what is considered full competition is merely competition between resellers for pre-designated products – like the Microsoft and Oracle brands. It would be useful to ask all software manufacturers to provide their total federal revenues to end the guess work. Microsoft and Oracle are the two largest enterprise software companies in the world. See World’s Top 10 Software Companies available at <http://bit.ly/4ocdBrw>

# THE PERNICIOUS CONSEQUENCES OF VENDOR-LOCK

Skeptics may believe that vendor-lock is unavoidable and inevitable. It is, in fact, a difficult problem that affects all large consumers of IT. Nonetheless, the government does have tools to diminish some of its negative consequences and could inspire a more robust competitive culture for COTS software, as envisioned by the FAR. Among other things, it could encourage co-existence of competitive products and a reduction of an “all or nothing” approach to contract awards. To appreciate the importance of more competition, and software diversity, it is worthwhile to review actual case studies on the negative effects of vendor-lock that waste tax-payer dollars.

## CASE STUDY: VENDOR-LOCK VIA CLOUD LICENSING RESTRICTIONS

Microsoft does not want its existing customers to move to competing cloud solutions. Their enormous Windows installed base accounts for roughly 75 percent of the global desktop and server operating systems market.<sup>8</sup> In the Productivity software category, the Office bundle of products, which include Outlook, Word, PowerPoint, Excel, and Teams dominate - owning approximately 90 percent of the global market.

The IT research firm Gartner believes that Microsoft’s worldwide revenue from Office is \$42 billion.<sup>9</sup> With something close to two million government employees using Office, it is easy to imagine the government spends more than \$300 million annually on Office alone.<sup>10</sup>

It is not surprising then that Microsoft has engaged in licensing practices that leverage their vendor-lock in Server/Operating System and Productivity software to increase its cloud market share.

One tool to thwart competition and leverage one’s installed base is to erect licensing provisions that penalize customers for moving to competitive offerings. This is exactly what Microsoft has done, according to multiple press reports and complaints filed with regulators in Europe.<sup>11</sup> The prospective consequences for cloud competition and vendor-lock for the government are significant.

To stifle cloud competition, in 2019 Microsoft changed its standard licensing agreements. The effect is to make it significantly more expensive - up to five times the cost<sup>12</sup>—to use Microsoft products in cloud environments other than Microsoft’s own Azure cloud.

<sup>8</sup> See Global Market Share of Windows available at <https://bit.ly/3QjZM5u>

<sup>9</sup> Google Workspace Continues to Gain Market Share Versus Microsoft Office and Office, Gartner ID G007743401 (July 2022).

<sup>10</sup> Based on a broad estimate that Office costs approximately \$13 per seat, per month. The only way to know for sure is to ask Microsoft for the exact amount.

<sup>11</sup> See Microsoft Faces New EU Antitrust Complaint From Competing Cloud Services, available at <http://bit.ly/3DmOuIq>

<sup>12</sup> Microsoft states “AWS is up to 5 times more expensive than Azure for Windows Server and SQL Server; Why run them anywhere else?” See <http://bit.ly/3WJv3k5>

Microsoft explicitly forbids new licensees, including government users, from hosting their already purchased on-premise products at their main cloud competitors AWS and Google. To use competitive providers, Microsoft now forces customers (under newer license agreements or updated maintenance) to repurchase new software. This policy gives Microsoft a unique opportunity to steer customers into its own Azure cloud, thwarting migration to AWS and Google, where costly new licenses are required to be repurchased.<sup>13</sup>

**In 2019, Microsoft introduced restrictions that force customers to repurchase its software to use in alternative cloud platforms**

To put this into context, a large installed base of 20,000 government users may pay as much as \$3 million to \$5 million per year to use Office and other Microsoft datacenter products on the government's own hardware.<sup>14</sup> Microsoft's current licensing would allow that same user to move all their Microsoft software into Azure for essentially no additional charge. Alternatively, depending upon the licensing date and status of maintenance support, a customer would have to repurchase, or start-over, with new Microsoft licenses to move into the AWS or Google clouds.

This new licensing barrier is perpetual vendor-lock writ large.

Limiting the government's access to AWS, Google or other leading cloud vendors by charging no additional fee to use Microsoft's Azure cloud may seem innocuous or even like a benefit. But it is not. It is more akin to a form of price predation, described by the Department of Justice as,

***"...a price reduction that is profitable only because of the added market power the predator gains from eliminating, disciplining or otherwise inhibiting the competitive conduct of a rival or potential rival. Stated more precisely, a predatory price is a price that is profit maximizing only because of its exclusionary or other anticompetitive effects."<sup>15</sup>***

AWS, Google and others should be on equal footing, competing on inherent best value, and there should be no arbitrary restrictions against the use products on different cloud platforms. By analogy, Microsoft's new licensing barrier is akin to General Motors telling drivers of its cars that they may only park in garages owned by General Motors. To park in alternative garages, they'd be required to purchase new cars.

The massive Microsoft footprint is being leveraged here to expand into an adjacent cloud market and further lock the government into a single provider, making future competitions even more complicated – as intended.<sup>16</sup>

<sup>13</sup> Previously reported in Federal Computer Week April 2022, available here, <http://bit.ly/3j6rypV>

<sup>14</sup> Estimate based on typical enterprises of this size.

<sup>15</sup> See Predatory Pricing Strategic Theory, available at <https://bit.ly/3CwPe5s>

<sup>16</sup> See "Customers Aren't Happy About Microsoft's Restrictive Cloud Policies," available at <https://bit.ly/3CS7Mp9>

The likely end result is to further entrench vendor-lock, weaken the ability to run rigorous competitions in the future, and drive up the cost of procuring IT.

Oracle, the leader in database software, also typically charges more for its software when run in a competitor's cloud. Oracle's published guidelines show that Oracle licenses software in its own cloud on a processor basis,<sup>17</sup> while in a competitor's cloud, it licenses on an "available" processor basis. The former licensing model significantly reduces cost for customers who use virtualization (almost all do), providing an obvious advantage to run Oracle software in Oracle's cloud. This is similar to Microsoft's Azure strategy, ensuring that it likely costs more to use Oracle products in competitors' clouds.



Additionally, Oracle uses fear to steer customers to their cloud. Their standard support contract language states that Oracle has not "certified" that their products work in their competitor's clouds.

Therefore, they will only provide support for known problems or problems that can be redemonstrated in their own Oracle cloud environments. To clarify, Oracle's position is that if customers choose to use Oracle products on AWS, Google, or another provider, they may or may not receive assistance to solve Oracle bugs.

To appreciate the effect of Oracle's support stance, relational database software, like Oracle's, sits under virtually all IT applications. Oracle is estimated to own somewhere around 40 percent of the entire relational database market.<sup>18</sup> Oracle's databases are at the core of many if not most of the government's mission-critical systems, likely including some of DoD's important strategic and tactical applications.

In this context, is there a mission owner anywhere in the government, using Oracle technology, willing to risk the movement of their mission critical system to a cloud infrastructure that may not be supported by Oracle? Oracle intentionally leaves their support ambiguous. This ambiguity works to enforce vendor-lock and prevent mobility, even if a better deal for an alternative cloud could be had elsewhere.

**CASE STUDY: OPAQUE RULES FOR MAINTENANCE SUPPORT AND MAINTENANCE PRICING TRAPS PROPAGATE VENDOR-LOCK**

Another pernicious form of vendor-lock attaches to maintenance agreements.

<sup>17</sup>"[C]ount two vCPUs as equivalent to one Oracle Processor license if multi-threading of processor cores is enable;" Oracle Document: Licensing Oracle Software in the cloud Computing Environment, at 1.April 2022, available here, <https://bit.ly/3Cw69NA>

<sup>18</sup>See RDBMS Market Share available at <https://bit.ly/3GL2T3b>



Every year, Oracle collects an annual maintenance fee that is typically twenty-two percent of the customer's original purchase price. To ensure that Oracle customers never reduce their licensing, and Oracle never loses maintenance revenue, Oracle uses a stealthy pricing mechanism that effectively locks customers into an annual support payment that often cannot be reduced, even if users attempt to reduce their reliance on Oracle software.

Oracle locks customers into maintenance payments that cannot be reduced, even when the customer is less reliant on Oracle software

The language of this provision is so opaque and convoluted it bears quoting.

***“In the event that a subset of licenses on a single order is terminated or if the level of support is reduced, support for the remaining licenses on that license order will be priced at Oracle’s list price for support in effect at the time of the termination or reduction minus the applicable standard discount. Such support will not exceed the previous support fees paid,***

***plus any applicable country annual adjustments, for both the remaining licenses and the licenses being terminated or unsupported and will not be reduced below the previous fees paid for licenses continuing to be supported.”***<sup>19</sup>

In practice, customers have discovered this word puzzle means when they terminate some of their Oracle licenses, they still must continue to pay their entire original maintenance fee anyway.<sup>20</sup> Keep in mind that a large enterprise Oracle customer may be paying as much as \$5 million per year in support.<sup>21</sup>

If the point of reducing Oracle usage was to free some budget to incrementally switch to another vendor, customers quickly discover the economics compel customers to stay with Oracle. Even when they use less Oracle, the annual cost of ownership stays the same. In this scenario, the only way to reduce the Oracle maintenance charge is to abolish all Oracle from the estate, in an all or nothing choice, which is often not practical or even possible.

#### CASE STUDY: ALLEGATIONS OF PREDATORY SOFTWARE AUDITS TO ENFORCE VENDOR-LOCK

Virtually all software license agreements include a provision that allow software companies to audit the use of their software to ensure that customers do not exceed the rights granted under the agreement.

<sup>19</sup> Oracle Technical Support Policies: 07-October-2022 at 7.

<sup>20</sup> This is effectuated by repricing annual maintenance against a price list that is seldom otherwise meaningful. Because software is intangible and producing another copy for a new customer requires virtually no incremental cost, software company list prices are mostly aspirational. It is not unusual for a large transaction to have discounts greater than 50 percent. I personally have seen discounts higher larger than 90 percent.

<sup>21</sup> Reported by Palisades Compliance.

That is reasonable. However, several recent lawsuits have brought allegations of predatory auditing behavior. The allegations are that audit shakedowns are used to find dubious non-compliance violations to extract penalty fees and to also perpetuate vendor-lock through negotiated settlements.

IBM is the subject of such an audit fraud lawsuit with allegations that the government was expressly targeted. In 2018, a former IBM employee filed a False Claims Act allegation that IBM astronomically inflated audit non-compliance findings to ensure that the Internal Revenue Service (IRS) remained locked into IBM software, specifically to thwart the IRS' stated objective to reduce their reliance on IBM's products.<sup>22</sup>

The relevant allegations are that the IRS was nearing the end of an existing five-year license agreement that had been awarded to IBM in 2007. As the time for renewal approached in 2011, the IRS stated it intended to reduce reliance upon IBM and move to less expensive products, including free open-source software.

The lawsuit alleges that IBM then conspired to generate a fraudulent audit of the IRS' use of IBM software to create a wildly inflated compliance bill of \$292<sup>23</sup> million.

The actual non-compliance amount may have been as low as \$500,000.<sup>24</sup> To avoid penalties, the IRS was strong-armed into a new five-year license agreement worth approximately \$265 million to IBM.

The IRS was once again locked into IBM software, despite a desire to leave and use other products.

IBM has been accused of using predatory audit to strong-arm the IRS into a

**\$265 million license**



The lawsuit further states that IBM had hoped to take lessons learned from the IRS audit to conduct similar vendor-locking tactics against the Postal Service and Customs and Border Protection Agency.<sup>25</sup> Likewise, two recent high-profile lawsuits against Oracle revealed allegations of similarly disturbing behavior. In 2015, Mars, the global candy company, sued Oracle for injunctive relief after Oracle threatened to shut down Mars' entire Oracle estate.

This included over one thousand databases, potentially crippling the company, "leaving over 75,000 Mars employees at a standstill."<sup>26</sup> The heart of the dispute was over Oracle's auditing practices and its decision to count "potential" use of virtualized processors, as mentioned earlier, instead of actually deployed processors.<sup>27</sup>

<sup>22</sup> United States of America, ex rel. Paul A. Cimino v. International Business Machines, First Amended Complaint for Violations of Federal False Claims Act (July 27, 2018)

<sup>23</sup> Id., 23.

<sup>24</sup> Id., 7.

<sup>25</sup> Id., 34.

<sup>26</sup> Mars Incorporated v. Oracle Corporation, Plaintiffs' Memorandum And Points of Authorities In Support of Its Motion for Preliminary Injunction (October 23, 2015).

<sup>27</sup> Virtualizing servers is the practice of using software like VMware to simulate the existence of multiple "virtual" computers on a single machine. In practice, it's an efficiency technique that allows a single machine to run multiple applications, instead of one machine being dedicated to exclusively to one application. Virtualization saves money on servers.

Mars contended that the result of a superficial Oracle audit caused Oracle to charge them for every instance of virtualized processors where Oracle might be installed rather than where it was actually installed.<sup>28</sup> These charges for non-compliance associated with virtualization can run into millions of dollars. The Mars case was settled out of court allowing Oracle to avoid a negative precedent-setting interpretation of their licensing practices.

For now, the vague and untested understanding of their opaque license continues to work to Oracle's benefit.

In 2020, Oracle was sued again—this time in a Class Action for violations of securities laws. Fraudulent auditing was, once again, at the heart of the claim.<sup>29</sup> In short Oracle is accused of using an “Audit, Bargain, and Close” (ABC) sales strategy to find customers who were out of compliance and then bargain away some of their penalties in exchange for buying Oracle cloud, even when customers had no need for it. In the words of the lawsuit,

***“Oracle would install its on-premise software in the client’s ecosystem with a variety of preferences automatically enabled that,***

***unbeknownst to the customer, cause the customer to arguably – and unknowingly – exceed the limits of the license. After the customer fell into this trap, Oracle would audit the on-premise customer for violations of its on-premise software license. When it found violations, Oracle would threaten to impose extremely large penalties. Oracle would then offer to reduce or eliminate those penalties if the customer agreed to accept a short-term cloud subscription that the customer neither desired nor intended to use.”***<sup>30</sup>

The lawsuit alleges, as one example among many, that the Financial Industry Regulatory Authority (FINRA) was told it was \$150 million out of compliance, and therefore owed Oracle \$10 million in penalties.

Oracle then offered to reduce the penalty to \$5 million if FINRA also bought \$2.5 million worth of Oracle cloud.<sup>31</sup> The full breadth of the lawsuit finds that 90 percent of all cloud revenue in the period between March 2017 and June 2018 was driven by this strong-arm “ABC” sales tactic.<sup>32</sup> Another way to describe it: vendor-lock begetting more vendor-lock, through something akin to extortion. If these allegations are truthful, it would be hard to believe that they were not deployed against the government. It would be prudent for the government to review all its Oracle transactions from this era.

<sup>28</sup> Mars Incorporated v. Oracle Corporation, Plaintiffs’ Memorandum And Points of Authorities In Support of Its Motion for Preliminary Injunction (October 23, 2015) at 9.

<sup>29</sup> Union Asset Management Holding AG v. Oracle Corporation, Amended Consolidated Class Action For Violations of The Federal Securities Laws (February 17, 2020).

<sup>30</sup> Id., 6-7.

<sup>31</sup> Id., 39.

<sup>32</sup> Id., 97.

**EVEN WHEN VENDORS DON'T USE  
UNFAIR TECHNIQUES, THE GOVERNMENT  
OFTEN PERPETUATES VENDOR-LOCK**

Rigorous and meaningful competition would be one way to keep incumbent vendors from attempting abusive practices. Unfortunately, the actual number of authentic competitions that could potentially dislodge incumbent COTS software solutions is a mystery because brand name data is not well tracked in the Federal Procurement Data System (FPDS).

Nonetheless, it is likely the fear of switching costs, coupled with some of the predatory behaviors mentioned above that reduce incentives to run full-throated competitions.

In the Productivity space there are approximately two million federal workers using Microsoft Office. If Microsoft's incumbency and vendor-lock was threatened, we would see frequent contests for replacement, as the typical license and/or maintenance agreement only runs three or five years. Where are those renewal competitions?

A December 2021 Government Accountability Office (GAO) bid protest decision provides insight into the government's preferred method to reverse engineer acquisition, to purchase a pre-determined product, in a way that avoids meaningful competition.

A recent lawsuit accuses Oracle of using predatory audits to drive **90% of its cloud revenue** between 2017-2018.

The Department of Agriculture (USDA) sought quotes for the consolidation of a variety of Microsoft products on a brand name "only" basis, expressly limiting NASA SEWP contractors to bid only Microsoft brands. The justification for the elimination of all brands, other than Microsoft, was a consummate description of vendor lock.

The agency stated that "96 percent of USDA systems run Windows operating systems...supporting roughly 122,531 users." As a result, it would be inconvenient, disruptive, and time-consuming to consider replacing the incumbent Microsoft. Further justification affirmed, "USDA has standardized on Microsoft Office, email, and cloud and has been using these tools for over 20 years."<sup>33</sup>

GAO pointed out that much of USDA's justification to eliminate competitive solutions was based on its perception of the time required to successfully substitute out Microsoft for alternative products (switching costs).

The USDA's standardization on Microsoft does not justify the lack of meaningful competition for potential software replacements.



Additionally, USDA's justification read, in part, "USDA [has] reasonably determined that only Microsoft products would meet USDA's needs." GAO rejected this analysis suggesting that USDA did not conduct proper market research. GAO upheld the protest determining that USDA's poor acquisition planning was an insufficient justification to exclude competition.

Importantly, the protester argued that using Google Workspace would cost USDA about \$58 million over five years, a savings over Office's cost of \$170 million.<sup>34</sup> Furthermore, Westwind believed that USDA was focused on "administrative inconvenience" rather than the actual burden of switching out products.

***Considering a single brand name to avoid the perceived administrative inconvenience and risk of transitioning to a new product is not justification for restricting competition when other brands like Google... present innovative approaches...and competitive pricing.***<sup>35</sup>

Westwind's most critical argument was that USDA overstated the burden of switching products. It pointed to migrations of a number of large government and private sector accounts with minimal difficulty – including the New York Department

of Education where it created 1.3 million new accounts, and Ascension Health, where it had activated more than 150 thousand employees on Workspace, during the pandemic.<sup>36</sup>

Switching products can be hard and in some circumstances, impracticable. But savings of \$112 million is significant, especially when the obstacles to switching are sometimes based on perceived inconvenience rather than actual barriers. A more thoughtful approach would have been to determine which part of the Microsoft franchise was reasonably eligible for switching and to carve out those portions to ensure rigorous competition for potential savings. Competitions are not necessarily all or nothing. It is likely that a money saving diversified "co-existence" approach would have been useful but was never considered.

Similarly, in March 2022, the Department of Veterans Affairs (VA) awarded Dell a contract for an omnibus Microsoft enterprise license valued at \$1.6 billion over three years.<sup>37</sup> The Limited Sources Justification to explain why the VA would only consider Microsoft products paints a clear picture of how the government's acceptance of restrictive licensing terms creates overt vendor lock.

***VA must continue to utilize the [existing Microsoft license model] to sustain and expand its tenancy. If any other model or provider is utilized, including procuring Azure credits outside the [existing license agreement] VA will lose its current tenancy...VA's investment in its existing Azure cloud infrastructure will be totally lost and VA will lose access to all Azure services.***<sup>38</sup>

The VA went on to explain Microsoft's use of Azure credits to deter competition and incentivize extension of the agreement.

<sup>34</sup> IT Reseller Challenges USDA's 20-Year Tradition of Sticking With Microsoft, FEDSCOOP, Dec. 23, 2021.

<sup>35</sup> Protest of Westwind Computer Products, Inc. Against U.S. Department of Agriculture Solicitation No. 12314421Q0078 at 7.

<sup>36</sup> Id., 14.

<sup>37</sup> Contract Award Number: 47QTCA22D003G36C10B22F0089

<sup>38</sup> Limited Sources Justification, Department of Veterans Affairs, Office of Procurement at 3. Control Number: VA-22-00007582.

***VA currently has ...workloads...that have credits. These credits can only be retained by VA and repurposed (rolled over) through another [license] with Microsoft.***<sup>39</sup>

The VA also suggested switching out products for its base of almost 500 thousand users was not manageable. Yet, it also indicated, during market research, it had been presented with a table that showed there were ten categories of software applications where Microsoft did, in fact, have “alternative equivalent” competitive products.<sup>40</sup> What is noteworthy is that apparently a series of smaller competitions for specific product categories was never considered. It is likely they believed their license agreement gave them no choice: the license sanctioned vendor-lock in perpetuity with no exceptions for another “model or provider.” Like USDA, it was an all or nothing approach. While it may have been easy to grant Microsoft the entire software estate, this form of vendor-lock provides zero incentive for Microsoft to soften its prices.

The VA essentially capitulated to Microsoft’s dominance, allowing Microsoft to charge whatever it wanted. \$1.6 billion is a significant amount of taxpayer money to spend without meaningful competition. Surely some of this software estate could have been carved out for a competition to drive prices down, if not for Microsoft’s onerous licensing restrictions.

The VA capitulated to Microsoft’s dominance, allowing Microsoft to charge whatever it wanted. **\$1.6 billion** is a significant amount of taxpayer money to spend without meaningful competition.

Fortunately, some agencies are taking a different approach. In 2010, the General Services Administrative (GSA) competed for a new productivity suite and successfully replaced Office with Google Workspace, saving the government approximately 50 percent over the previous cost of its Office implementation.<sup>41</sup> Since then, the Department of State, the National Oceanic and Atmospheric Administration (NOAA) and the Army have also adopted Workspace in some capacity. The Army announced in October, they are using Workspace as a supplement to their Office implementation.<sup>42</sup> Office and Workspace will co-exist at the Army. This is a welcome development for diversity and future competitions. The next time a licensing position is up for renewal, the Army can legitimately compete the award with the real threat of awarding one product over another, based on quality and price alone. Having the mix of both products puts both vendors on notice that it’s a meaningful competition, likely lowering the price of all.

The Army’s co-existence of Microsoft Office and Google Workspace creates a foundation for future competitions based on price and service quality.

USDA’s 2021 attempt to end-run competition was only on the radar because it was a high value enterprise opportunity that was protested at GAO. Likewise, the VA’s Microsoft license was noticed because the value was so high. Lower value opportunities are not protested because protests are expensive.<sup>43</sup>

<sup>39</sup> Id.

<sup>40</sup> Desktop, Server OS, Database, Security, Email, Identify Management, Customer Response, Cloud Services, Power Platforms. Id. at 10.

<sup>41</sup> See “GSA Becomes First Federal Agency To Move Email to the Cloud,” available at <https://bit.ly/3GqDjiH>

<sup>42</sup> See “US Army Launches Google Workspace For the Troops,” available at <http://bit.ly/3QTNu45>

<sup>43</sup> A simple protest provided by an experienced law firm will cost \$20,000 minimally. Complicated protests can run into six figures.

Furthermore, the most common way to skirt rigorous competition is sanctioned in the FAR. “Brand-name or equal” is an allowable competition quality descriptor. However, the obvious issue with “or equal” is the subjective nature of determining equality, particularly in the scope of technology that can offer similar functionality, security, and mission capability. Furthermore, when the government uses “brand-name or equal,” it telegraphs to industry that it only wants the stated brand and is usually adding “or equal” to meet the FAR requirements of competition. Every vendor knows the possibility of winning those competitions is low and will only mount a serious attempt if the value of the opportunity is appropriately high or there are other signals that the agency is serious.

**“Brand-name or equal” often telegraphs to the industry that **competition** is not truly sought in the procurement process.**

Lastly, incumbent COTS vendors typically know more about their license use at government agencies than the customer agencies themselves. This asymmetry of information sets the stage for unbalanced competitions. In virtually all large-scale procurements, such as contemplated by USDA and the VA, the government seeks information and assistance from the incumbent during the market research portion of the procurement to qualify and quantify what it needs to buy.

Or, it is possible the procurement concept was first presented to USDA and the VA by Microsoft. This is legal, but it creates a type of complicity that makes a true competition difficult. If the government prefers to continue with the incumbent, it is only natural to determine the scope of the competition based on the information provided by the incumbent. In this way, the incumbent indirectly and usually legally sets the requirement. (There are potential solutions to this asymmetry of power, discussed below.)

Finally, because COTS software and cloud are frequently sold through government contract resellers on one of the government’s Governmentwide Acquisition Contracts like NASA’s Solutions for Enterprise-Wide Procurement (SEWP), NIH’s Chief Information Officer Solutions and Partners (CIOSP) or the GSA Multiple Award Schedule (MAS), competitions for the major brands are often lacking, no matter how many quotes are submitted by resellers. When a brand is exclusively required, the competition is effectively only between the product resellers who all share the same underlying price from the brand owner like Microsoft, Oracle, or IBM.

The software manufacturer has won the competition before it started, with the “competition” useful only for limiting nominal reseller margins. The COTS vendor gets its preferred price, under no competitive pricing pressure, regardless of which reseller wins the award. Yet, the government meets the requirement of competition under the FAR. These competitions are formalistic but not meaningful. Real competition requires a competition between different brands or solutions. A competition for only one brand among resellers provides no incentive for the COTS manufacturer to lower its price.

# SPECIFIC GOVERNMENT ACTIONS TO HELP REDUCE VENDOR-LOCK AND LOWER THE COST OF THE COTS SOFTWARE ESTATE

Vendors are entitled to a fair return on their investments, but they should not be positioned to extract unnatural price premiums based on vendor-lock leverage and questionable business practices. **The government is the largest single consumer of COTS IT** and has the unique ability to mandate change to increase competition and defeat contractual clauses that promote even more vendor-lock.

There are several specific actions the government should take to promote vendor diversity and competition to reduce calcification and drive COTS software pricing down and innovation up. All of these recommendations focus on improving knowledge of the government's software asset base, building expertise to defend against abusive business practices that facilitate or reinforce vendor-lock, and a movement toward diversity where possible.

## THE SAMOSA ACT: LEGISLATION TO IMPROVE VISIBILITY, ACCOUNTABILITY, AND OVERSIGHT OF SOFTWARE

To better ensure competition and diversity, the government needs to manage its COTS software estate like an asset so it may gain situational awareness and curtail the abuses caused by vendor-lock. Recent useful IT asset management work has been done under the Making Electronic Government Accountable By Yielding Tangible Efficiencies Act of 2016 (MEGABYTE),<sup>44</sup> but the focus has been reducing waste through compiling inventories of software

products at agencies and establishing agency management programs to consider the proper way to manage the life-cycle phases of software - from requisition, deployment to retirement.

It is legislation built to reduce redundancies and waste, but it does not address competition or cost reduction through competitive software procurement.

The newly introduced bipartisan bill - Strengthening Agency Management and Oversight of Software Assets Act (SAMOSA) (S. 4908; H.R. 9330) - is a welcome legislative attempt to take the MEGABYTE<sup>45</sup> act one step further by making software inventory management data actionable.

There is much to recommend in the Act, especially because it calls for agencies to use independent 3rd party expertise to compile their software licenses by vendor.<sup>46</sup> The end goal is to consolidate disparate one-off agency licenses from large vendors into larger enterprise licenses and to drive out redundancies and unused software.

The Act's logical conclusion is that consolidation will save money by creating economies of scale and reduction of unnecessary payments for unused software. It also requires agencies to identify licensing restrictions to help the government maximize utility while eliminating barriers to flexibility.

<sup>44</sup> Making Electronic Government Accountable By Yielding Tangible Efficiencies Act of 2016 (Public Law 114-210; 130 Stat. 824).

<sup>45</sup> Strengthening Agency Management and Oversight of Software Assets Act, available at <https://bit.ly/3QwRB63>

<sup>46</sup> Id. at Sec 4. (a)(1).



The SAMOSA Act is a strong step in the right direction. Furthermore, the comprehensive collection of this software inventory data mandated by SAMOSA could form the basis of future procurement decisions.

In addition to appropriate consolidation and reduction of redundancies, agencies should also use the new asset management data to determine how best to diversify the software estate, where possible, and to build a multi-year plan to build future competitions with the real threat of switching solutions or vendor diversification. As the Army has proven, it need not be an “all or nothing” proposition. There is merit in using multiple competitive products, where possible, to put all the vendors on notice that agencies refuse to be vendor-locked and that options exist. License consolidation is fine, but let’s hope the data collected by SAMOSA can serve multiple purposes, including asset management visibility for the reduction of vendor-lock.

**The SAMOSA Act will provide valuable data to help the U.S. government identify and diversify out of vendor-lock.**



## REDUCTION OF OPAQUE LICENSING AND MANDATING FAIR LICENSING PROVISIONS

It is not unusual for the government to eliminate specific clauses from license agreements because they are antithetical to government regulation or law. When a vendor wishes to sell software through GSA, its license must first undergo a screening by GSA’s legal counsel to eliminate clauses that the government is not allowed to accept. Removal of clauses that violate the government’s ability to pay for future unfunded liabilities under the Anti-Deficiency Act are routinely removed from all agreements, as just one example. Therefore, it is already the case that most software companies must write a software license uniquely for government use, as most licenses have a variety of clauses that attempt to bind the government to provisions it cannot legally accept.<sup>47</sup>

The government should therefore also seek to eliminate clauses that are impossibly opaque, restrict mobility and interoperability, or cause unfair penalties. There are several good sources that guide best software acquisition practices and demonstrate how to eliminate onerous provisions in licensing agreements.

The Cloud Infrastructure Service Providers in Europe (CISPE), an E.U. trade association of cloud providers, has produced a handbook entitled “Buying Cloud Services in Public Sector” which includes model language for licenses.<sup>48</sup>

<sup>47</sup> Arguments exist that commercial enterprises will eschew government business if regulation is too onerous. However, the government software market is lucrative and commercial software companies have previously shown a willingness to accommodate their licenses to unique government requirements

<sup>48</sup> See “Buying Cloud Services in Public Sector,” available at <https://bit.ly/3jZJpPw>

Likewise, The Coalition for Fair Software Licensing has produced a list of specific fair licensing goals, useful for all IT consumers, that Congress or the FAR Council should attempt to memorialize to prevent future abuses.<sup>49</sup>

**The government has an imperative to eliminate licensing clauses that are opaque, restrict mobility, and enforce unfair penalties.**

**Some of the principles include:**

- Licensing Terms Should Be Clear and Intelligible
- Freedom to Bring Previously Purchased Software to the Cloud
- Freedom to Run On-Premise Software on the Cloud of Choice
- Equal Treatment for Software Licensing Fees in the Cloud
- Permitted Uses of Software Should Be Reliable and Predictable
- Licenses Should Cover Reasonably Expected Uses

The current approach to elimination of problematic license clauses is to inform COTS vendors which provisions are not acceptable and then to wait for vendors to rewrite their licenses. A more efficient approach might be to create a legal task force, of government and industry, to design a standard elegant clause, incorporating the ethos of the fair licensing goals, positioned in the FAR, functioning to negate specific provisions that facilitate vendor-lock.

It would be worth a study to see if it could be fairly and equitably drafted to accommodate both COTS vendors legitimate licensing needs and the government's desire for fairness. If an appropriate clause could be drafted, it only need be appended to license agreements at the time of acquisition. This could also reduce the burden on all parties to negotiate licenses individually.

It is further noteworthy that IT has evolved and accelerated at an intense pace over the last twenty-five years, but there has been no significant update to the IT section of the FAR,<sup>50</sup> since the passage of Clinger-Cohen in 1996. The FAR does not account for a host of new IT procurement difficulties especially in relation to the massive migration to cloud computing. Among other things, the FAR does not help contracting officers deal with consumption-based services like cloud computing. Cloud is a hybrid product, more like a service than a good. It presents unique problems related to contract types, monetary obligations, support payments and the difficulties of paying in arrears for services versus in advance for goods.

There are approximately 40,000 contracting officers and some of them only buy IT products a few times in their career, if ever.

<sup>49</sup> See the Coalition for Fair Software Licensing, available at <https://www.fairsoftwarelicensing.com/>

<sup>50</sup> Acquisition of Information Technology, FAR Part 39, available at <https://www.acquisition.gov/far/part-39>

It would well serve the contracting community to update the FAR to facilitate the purchase of cloud and provide guidance to the acquisition workforce. It would also be an excellent opportunity to mandate the negotiation of specific vendor-locking licensing clauses.

**FAR regulations have had no significant update for IT since 1996**

**CENTERS OF EXCELLENCE FOR SOFTWARE LICENSING, CATEGORY MANAGEMENT AND AUDIT DEFENSE**

In 2014, Congress passed the Federal IT Acquisition Reform Act (FITARA) which codified IT directives that had been issued from OMB since 2009, including the formalization of the government's IT Dashboard. It also granted new authorities to agency Chief Information Officers (CIOs) including a requirement that CIOs be included in the annual budget submission process as it relates to IT.

Unfortunately, there were some useful provisions in the original draft bill that did not make it into the final legislation.

FITARA originally included the permanent creation of Assisted Acquisition Centers of Excellence (AACE) that would “provide technical expertise necessary for coordinated IT acquisition best practices.”<sup>51</sup> The AACEs were to be a series of government-wide centers specializing in specific IT topic areas related to IT product categories.

The creation of an AACE for the purpose of providing the government best practices and case studies on how to deal with the largest incumbent software vendors is still a useful idea.

Among other things, such centers could have relationships with the independent industry consultants like Gartner and Forrester to apprise government buyers of the quality and relative strength and weaknesses of each software product by category. It would be able to collect best practices from agencies who have successfully reduced vendor-lock or created heterogenous mixes of products to reduce calcification.

These need not be large organizations. They only need to be highly knowledgeable on the unique benefits and pitfalls of the major COTS software vendors and how to diversify when possible or appropriate.

It could be housed at GSA which already undertakes some IT category management functions, as well as the FEDRAMP program for cloud authorizations.

<sup>51</sup> See “FITARA House Report” (113-359) 113th Cong.

The U.S. government needs Centers of Excellence for software acquisition best practices and for facilitating competition and the reduction of vendor-lock.

Additionally, no government agency should ever enter a software audit without specialized in-house knowledge or the assistance of an independent firm that specializes in audit defense.

## PROCUREMENT AND COMPETITION DATA

Government acquisition data that are available on competition and COTS software/cloud, in general, are inadequate. As a result, a true picture of vendor-lock and insufficient competition is under the surface, invisible. Although public spending data indicated that acquisition of COTS software was not rigorously competed about 25 to 30 percent of the time, these numbers are likely low.<sup>52</sup>

FPDS is reasonably accurate as to who receives government awards and the value of the awards. However, it was not designed for the level of detail required to explicitly track COTS software brands. This is further complicated because most IT COTS acquisitions are transacted through government resellers, blurring what is sold. For example, Dell and Carahsoft are large software and cloud resellers who sold about \$1.8 billion and \$1.1 billion, respectively, in fiscal year 2022.<sup>53</sup> But based on the data collected by FPDS, we don't know what they sold.

It is only possible to find COTS software and cloud data when a contracting officer includes the name of the brand in an open text field. Only some do, as evidenced by the paucity of acquisitions displayed in the spreadsheet below. These numbers may be adequate to describe general trends, but they only report a fraction of actual spending by brand. In the future, it would be highly advisable for the next iteration of FPDS to include the fields necessary to provide greater granularity and visibility on brand acquisitions.

**Public spending data does not include COTS brands by name, making reality of vendor-lock largely hidden.**

<sup>52</sup> Data was compiled and analyzed by GovPulse, a firm specializing in analysis of government procurement data. Queries used to produce results are available upon request.

<sup>53</sup> Washington Technology Rankings available at <https://bit.ly/3vOSHRc>

# COTS SOFTWARE SPENDING BY BRAND (2018-2022)<sup>54</sup>

\*These numbers are presented in thousands of dollars.

Brand	2018	2019	2020	2021	2022	Total	10-Yr %
<b>Totals</b>	<b>2,150,748</b>	<b>2,395,665</b>	<b>2,420,537</b>	<b>1,069,384</b>	<b>639,077</b>	<b>17,608,721</b>	
<b>Microsoft</b>	<b>817,899</b>	<b>956,897</b>	<b>830,887</b>	<b>392,545</b>	<b>250,254</b>	<b>6,406,557</b>	<b>36%</b>
Competitive	570,132	692,701	670,154	332,176	208,179	4,444,317	69%
Full and Open (F&O) After Exclusion of Sources	22,337	31,562	58,766	50,364	34,975	309,663	5%
Non-Competitive	225,429	232,634	101,967	10,005	7,100	1,652,577	26%
<b>Oracle</b>	<b>506,366</b>	<b>524,056</b>	<b>511,492</b>	<b>224,409</b>	<b>67,160</b>	<b>3,670,192</b>	<b>21%</b>
Competitive	361,898	355,323	265,220	120,878	34,872	2,772,950	76%
F&O After Exclusion of Sources	101,865	132,938	205,796	96,310	20,112	640,471	17%
Non-Competitive	42,602	35,795	40,477	7,221	12,176	256,770	7%
<b>IBM</b>	<b>341,877</b>	<b>261,511</b>	<b>232,989</b>	<b>162,102</b>	<b>141,318</b>	<b>2,814,904</b>	<b>16%</b>
Competitive	241,416	178,312	154,624	102,700	86,266	2,200,507	78%
F&O After Exclusion of Sources	61,807	70,136	70,462	56,760	51,895	437,802	16%
Non-Competitive	38,654	13,063	7,904	2,642	3,158	176,594	6%
<b>VMWare</b>	<b>93,388</b>	<b>165,421</b>	<b>254,741</b>	<b>78,071</b>	<b>29,540</b>	<b>1,093,179</b>	<b>6%</b>
Competitive	75,394	141,413	219,170	62,499	17,281	937,222	86%
F&O After Exclusion of Sources	16,359	23,317	34,687	14,866	11,602	145,527	13%
Non-Competitive	1,635	690	885	705	657	10,430	1%
<b>CISCO</b>	<b>66,289</b>	<b>96,741</b>	<b>124,522</b>	<b>56,297</b>	<b>46,922</b>	<b>944,520</b>	<b>5%</b>
Competitive	35,019	34,306	37,314	13,313	9,528	538,377	57%
F&O After Exclusion of Sources	30,191	61,307	67,383	30,734	24,417	340,898	36%
Non-Competitive	1,078	1,128	19,824	12,250	12,976	65,245	7%
<b>Palantir</b>	<b>91,436</b>	<b>101,518</b>	<b>135,693</b>	<b>19,894</b>	<b>6,103</b>	<b>651,976</b>	<b>4%</b>
Competitive	90,358	100,390	115,868	7,644	-6,873	578,991	89%
F&O After Exclusion of Sources	0	0	0	0	0	7,739	1%
Non-Competitive	1,078	1,128	19,824	12,250	12,976	65,245	10%
<b>SalesForce</b>	<b>79,242</b>	<b>112,036</b>	<b>150,535</b>	<b>83,997</b>	<b>91,220</b>	<b>616,733</b>	<b>4%</b>
Competitive	53,861	90,943	110,204	69,740	77,409	463,560	75%
F&O After Exclusion of Sources	24,303	19,964	20,508	2,007	835	87,928	14%
Non-Competitive	1,078	1,128	19,824	12,250	12,976	65,245	11%
<b>Adobe</b>	<b>65,193</b>	<b>69,826</b>	<b>78,300</b>	<b>13,123</b>	<b>4,147</b>	<b>498,080</b>	<b>3%</b>
Competitive	47,579	45,106	35,863	-2,637	-11,866	349,359	70%
F&O After Exclusion of Sources	16,536	23,591	22,613	3,510	3,036	83,476	17%
Non-Competitive	1,078	1,128	19,824	12,250	12,976	65,245	13%

\*% of Market Share over a 10 year period

<sup>54</sup> For visibility, only the last 5 years are displayed, although the totals are for the last 10 years. This sample set of data is large enough to be indicative of trends but total data is unavailable. The full spreadsheet and queries used to create the report are available upon request.

We know these reported numbers are misleading for several reasons. As one proof point, GSA independently reports that it acquired \$5.7 billion in COTS software through the MAS Schedule in 2022.<sup>55</sup> GSA provides only one of many vehicles for the acquisition of COTS software. As mentioned before, NASA SEWP, and NIH CIOSP also do a robust business in software. Additionally, there are a variety of large prime contracts for major programs like the aforementioned DHMSM which also procure enormous amounts of software. Meanwhile, FPDS, when interrogated for COTS acquisitions by brands, reports the entire government spent only \$640 million on the top ten COTS software products in FY2022. Apparently, the aforementioned \$1.6 billion license for the VA is missing. The FPDS software by brand amount is only about 11 percent of what GSA self-reports alone, making the public data on COTS software acquisition less than complete.

GAO has also noted that competition data cannot be trusted. In 2018, GAO closely examined a subset of \$15 billion in IT orders for the years 2013 to 2017. The original data showed that about 30 percent of the orders were noncompetitive. However, upon closer examination of actual contract files, GAO found that at least \$3 billion worth of orders, over half of the orders placed by DoD, DHS, and HHS, were incorrectly coded. GAO stated that “miscoding occurred at such a high rate that it put into question the reliability of the competition,” leading to an acknowledgment that GAO was “not in a position to assess the overall reliability of competition information on IT-related contracts.”<sup>56</sup>

**GAO reports that actual competition data may be misleading and/or unreliable.**

In summary, we have to augment our research about vendor-lock through other means, including the lack of visible competitions, the paucity of bid protests for COTS software/cloud opportunities despite frequent renewals, and the anecdotal reality of the installed COTS products the government uses on a daily basis.

There may be a relatively simple answer to the lack of good acquisition data. Congress should mandate that major brands annually submit their government revenue data. To make it easy and non-intrusive, this paper recommends requesting only a few data points for the 24 major agencies covered under the Chief Financial Officers Act of 1990 (CFO Act). The data points needed are simple: license revenue, support revenue, and combined total of all federal revenue, by product set. This information would also be used to validate the collection of license information collected independently by agencies under the SAMOSA and MEGABYTE ACTS.

These data are not especially onerous to report, and the major COTS brands have it. Without such data, they would have no ability to charge their annual support fees.

<sup>55</sup> See GSA FY22 in review, available at <https://bit.ly/3CuVd2Q>

<sup>56</sup> Agencies Need Better Information On The Use of Noncompetitive And Bridge Contracts, GAO-19-63 (December 2018)

# CONCLUSION

Avoiding vendor-lock is difficult. The forces that drive the software estate into calcification are persistent and often invisible, particularly for a government that has little centralized command and control over IT decision making. In the federal government, each agency steers its own IT budget and is generally only accountable for how well the agency delivers its over-arching mission. In the big scheme, IT is an after-thought. Fragmented and independent decision making, combined with myopic focus on mission success, are the same cultural forces that allowed the government to simultaneously build and support 622 H.R. Managements Systems and 777 Supply Chain Management Systems according to a GAO study in 2011.<sup>57</sup> Perhaps conversely, but equally inefficient, it appears the government has inadvertently bound itself to only a few COTS software vendors, diminishing competition, thwarting innovation, while inflating prices.

The thesis of this paper is that the government has never appreciated the global effects of independent acquisition decisions that aggregate into a vendor-locked software estate. There are individuals, within agencies, who may experience the pain of vendor-lock on their budgets, but the lessons are not well shared across the government. It is likely that the deleterious case studies illustrated in this paper are not well known, despite the fact they dramatically affect the real cost of government IT every day.

There's no suggestion here that the government throw-out its legacy COTS software investments and start over.

Replacing operating systems and embedded data products are far too complicated and indeed switching costs make those actions absurd. Instead, this is a call to diversify moving forward as applications are replaced or modernized. It's a call for promoting a mix of heterogeneous products and future architecture decisions based on keeping diversity and competition in play. The government need not pull its Oracle database out from an existing functional application. Instead, for its next implementation, it would be wise to consider a diversified approach that helps to break a vendor's grip.

A significant part of the problem has been the lack of visibility. FPDS is not designed to provide the insight needed to determine where the government may be vulnerable. With the data provided by SAMOSA, the government would be well served to examine where it can make improvements. Further, with the help of designated acquisition centers of excellence, the government can use expertise to better understand its options for rigorous competitions and to arm itself for audit defense. Finally, the government should avoid locking itself into untenable positions by virtue of unfair license clauses that restrict mobility or levy unpredictable penalties.

The COTS software estate can be managed better, vendor-lock and its negative effects can be mitigated, and the government can gain better pricing and innovation by simply putting a focus on competition, diversity and interoperability.

<sup>57</sup> See U.S. Gov't Accountability Office, GAO-13-796T, "OMB and Agencies Need to More Effectively Implement Initiatives to Save Billions of Dollars" (2013).

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