# TOO BIG TO SUCCEED:
## THE NEED FOR FEDERAL IT REFORM

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**POLICYBRIEF**

## SUMMARY

For IT to become sustainable, the federal government must enable change in three areas: (a) embracing agile development, modular contracting, and open-source software; (b) encouraging small business participation; and (c) shifting the federal IT culture through education and experimentation. The adoption of these reforms is vital. The current state of federal IT undermines good work because of its inefficiency and waste.

### INTRODUCTION

As the world has become dependent on information technology (IT), so has the federal government and its constituencies. Leveraged effectively, technical tools can engage the public, create cost savings, and improve outcomes. These benefits are obscured by regular reminders that federal IT is fundamentally flawed. It is too big to succeed.

For IT to become sustainable, the federal government must enable change in three areas: (a) embracing agile development, modular contracting, and open-source software; (b) encouraging small business participation; and (c) shifting the federal IT culture through education and experimentation. The adoption of these reforms is vital. The current state of federal IT undermines good work because of its inefficiency and waste.

### EMBRACING AGILE DEVELOPMENT, MODULAR CONTRACTING, AND OPEN-SOURCE SOFTWARE

*Waterfall development* describes how government software was traditionally procured. All requirements for the project were listed at the outset. On receiving an award, the winning bidder worked independently until the application was complete. Waterfall development is poorly suited for software development. Federally procured applications are frequently delivered late, over budget, and with a majority of features unused. During multiyear development cycles, agency priorities shift and technology inevitably changes. As a result, applications are obsolete on delivery.

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### Agile Development

*Agile development* is a better option because it embraces the uncertainty that is endemic to programming. It begins with a conceptual outline and becomes more specific as the application is built. The contractor's process is iterative: programmers code features, deploy the application to users for testing, and adjust it on the basis of users' feedback. The contractor learns about shifting customer priorities and adapts.

The government's requirement for technical specifications prior to solicitation discourages contracting officers (COs) from using agile development. The Federal Acquisition Regulations (FAR) provide guidelines for procuring goods and services on behalf of the government.[1] The enormous size and scope of the FAR means it is poorly understood. Avenues for innovation are not widely known. An example is Part 36, which allows for more flexible proposals. When procuring architectural or engineering services, agencies may solicit bids in which competing firms submit technical qualifications and general approaches, without detailed specifications. By expanding the breadth of Part 36 to include computer engineering, the federal government could enable agile development.

### Modular Contracting

Agile development would be augmented by a commitment to modular contracting. Modular contracting allows COs to procure complex systems in separate, interoperable parts and, thus, distribute risk. An adjustment of FAR Part 36 would enable better application of Part 39, which allows contracts to be broken into discrete pieces. This change mirrors the iterative philosophy that fuels agile development.

### Open-Source Software

An open-source software license allows users to use the software however they like, encourages independent study and modification, and may authorize distribution with limited to no restrictions. This arrangement allows many different actors to collaborate and improve operations for shared gain. The commercial, off-the-shelf software most commonly procured is closed, or proprietary, and therefore incurs licensing fees. The FAR requires agencies to "conduct market research to determine [if] commercial items are available" and acquire them whenever possible.[2]

Commercial items are those "customarily used by the general public."[3] The wide adoption of open-source software (such as Firefox, Apache, Sendmail, and GNU/Linux) means government agencies must consider open-source options. Open source allows users to avoid "barriers to exit," which hamper the opportunity to use new technology because data are locked in a proprietary format, requiring expensive customization. As a collaborative discipline, open-source systems thrive on interoperability, meaning that users can make adjustments without being locked to a vendor. Proprietary software has not traditionally embraced interoperability outside the creator's own ecosystem, meaning agencies incur costs if they seek to change.

## ENCOURAGING SMALL BUSINESS PARTICIPATION

A large IT firm's organizational structure mirrors government bureaucracy: high-budget and rigidly hierarchical. The firm's size provides advantages in receiving government contracts. Winning bidders must provide documentation to justify their billing rate. Thus, high overhead (staff, facilities, etc.) provides a justification that leads to contracts being

awarded to the same large firms. Yet small firms are the most apt for agile, modular, and open-source software development.

### Small IT Firms as Subcontractors

When small businesses do receive government IT contracts, it is often under difficult circumstances that discourage participation. Competing for government IT work is expensive and time consuming. Smaller firms lack the infrastructure and staff of their larger counterparts, so they have limited options to enter the federal space.

Quick turnaround, limited-scope programming is apt for a small business. However, federal procurement takes so long that agencies have an incentive to choose a large, previously used vendor. A smaller IT firm might receive a subcontract for the coding, while a larger firm manages the procurement process. Although the smaller firm does the substantive work, it must pay a percentage to the larger firm. If the small firm performs well, the larger firm receives credit, further entrenching the larger firm as a preferred contractor. Many small IT firms choose not to participate rather than jump through these hoops.

### The Simplified Acquisition Threshold and RFP-EZ

The solution is to simplify the request for proposal (RFP) process both by using existing regulations and by supporting innovations that streamline procurement. Agencies can begin to build better relationships with small businesses by taking advantage of FAR Part 13, which contains the simplified acquisition threshold. Part 13 allows a much less complex and less expensive acquisition process if the total cost of the contract is relatively low. Agencies can provide work to small firms by breaking larger projects into smaller, modular contracts below the price threshold of Part 13.

RFP-EZ is a program that encourages the use of historically undervalued small IT firms. RFP-EZ will provide a simple application by which COs can write RFPs and thus acquire effective contracts in a fraction of the time. The RFP-EZ project team has released SOWComposer, which provides a simplified, standardized vehicle to create statements of work. This tool is designed for contracts below the simplified acquisition threshold, not for large RFPs. Agencies with small modular jobs can use SOW-Composer to quickly create the types of requests that are ideal for small businesses.

## SHIFTING THE FEDERAL IT CULTURE THROUGH EDUCATION AND EXPERIMENTATION

The previous sections have identified specific issues and adjustments that can support a leaner and more sustainable vision of federal IT. Applications that facilitate smaller and faster acquisitions can be written. Regulations can be adjusted to support agile development. This progress does not guarantee that COs will internalize reforms and take them seriously. Federal procurement is controlled by COs, so durable IT reform must center on the acquisition process.

### CO Education and the Ability to Take Risks

The federal government undertakes so many IT acquisitions that top-down management of these resources is unrealistic. Expecting a central authority to monitor COs would delay an already lengthy process. Instead, personnel across the federal government must be educated about more efficient options and be encouraged to adopt them. Faulting employees for not using new tools and techniques is unfair when they do not know such tools exist. The government should conduct a widespread campaign to internalize these principles and create incentives for their use.

COs must be empowered to try new methods without fear of reprisal. Approaches such as waterfall development are used because that is how things have been done. The infrastructure supports these choices, and although the outcomes are frequently less than ideal, familiarity means they are repeated. Agile development is a dramatic break: it eschews detailed specifications and highly detailed cost estimates. COs could risk their job by approving a loosely defined contract without a firm price tag. To aid this transition, COs need a mandate to experiment. Government leadership must accept that the lessons learned from short-term failures can create long-term success.

*Embracing Automation*

Whenever possible, the bureaucratic duties involved in federal IT must be automated. Tasks such as running database checks on potential contractors and collecting data on agency-specific purchases are time consuming. Many citizens and small businesses complain about the frustration of communicating with the federal government. COs are burdened because a significant portion of their working hours is dedicated to documentation and information collection.

Affordable tools that streamline menial tasks must be adopted. Freeing COs from low-value tasks gives them more time for market research. Thus, they are less likely to return to the traditional, familiar options. A destructive idea has taken root in many agencies: the time of federal employees is a sunk cost, not included in the metrics for estimating price. This approach marginalizes COs and limits their skill sets. Employee time is valuable and should be dedicated to meaningful, constituent-driven work. Automation saves money and increases efficiency.

## CONCLUSION

Federal IT has become too big to succeed. The current environment prioritizes familiarity over efficiency. Many within the government and small business community are eager for change, and encouraging projects and policies have emerged. More needs to be done to make these upgrades sustainable. By enabling agile development, modular contracting, and open-source software; prioritizing small business participation; and shifting the federal IT culture through education and experimentation, the government can realize a technological framework that is flexible, low cost, and built to last.

## ENDNOTES

1    The FAR is available at https://www.acquisition.gov/far/.
2    FAR Part 12.101.
3    FAR Part 2.101.

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