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**U.S. OFFICE OF PERSONNEL MANAGEMENT  
OFFICE OF THE INSPECTOR GENERAL  
OFFICE OF AUDITS**

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# Management Advisory

**U.S. Office of Personnel Management's  
Fiscal Year 2017 IT Modernization Expenditure  
Plan**

**Report Number 4A-CI-00-18-022  
February 15, 2018**

# ABBREVIATIONS

<b>Appropriations Act</b>	<b>Fiscal Year 2017 Consolidated Appropriations Act</b>
<b>CIO</b>	<b>Chief Information Officer</b>
<b>CPIC</b>	<b>Capital Planning and Investment Control</b>
<b>FITARA</b>	<b>Federal Information Technology Reform Act</b>
<b>FY</b>	<b>Fiscal Year</b>
<b>IT</b>	<b>Information Technology</b>
<b>MaaS</b>	<b>Mainframe as a Service</b>
<b>OCIO</b>	<b>Office of the Chief Information Officer</b>
<b>OMB</b>	<b>U.S. Office of Management and Budget</b>
<b>OPM</b>	<b>U.S. Office of Personnel Management</b>
<b>Plan</b>	<b>IT Modernization Expenditure Plan</b>

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# I. SUMMARY

The Consolidated Appropriations Act of 2017 (P.L. 115-31) (Appropriations Act), made available \$11 million to the U.S. Office of Personnel Management (OPM) “specifically for the operation and strengthening of the security of OPM legacy and Shell ... [information technology (IT)] systems and the modernization, migration and testing of such systems.” The Appropriations Act further requires that “the amount ... may not be obligated until the Director of the Office of Personnel Management submits ... a plan for expenditure of such amount ... that –

- 1) identifies the full scope and cost of the IT systems remediation and stabilization project;
- 2) meets the capital planning and investment control review requirements established by the Office of Management and Budget, including Circular A-11, part 7;
- 3) includes a Major IT Business Case under the requirements established by the Office of Management and Budget Exhibit 300;
- 4) complies with the acquisition rules, requirements, guidelines, and systems acquisition management practices of the Government;
- 5) complies with all Office of Management and Budget, Department of Homeland Security and National Institute of Standards and Technology requirements related to securing the agency’s information system as described in 44 U.S.C. 3554; and
- 6) is reviewed and commented upon within 90 days of plan development by the Inspector General of the Office of Personnel Management . . . .”

On December 4, 2017, the OPM Office of the Chief Information Officer (OCIO) provided its IT Modernization Expenditure Plan (Plan) for our review. While we believe that the Plan is a step in the right direction toward modernizing OPM’s IT environment, it falls short of the requirements outlined in the Appropriations Act. The Plan identifies several modernization-related initiatives and allocates the \$11 million amongst these areas, but the Plan does not identify the full scope of OPM’s modernization effort or contain cost estimates for the individual initiatives or the effort as a whole. All of the other capital budgeting, project planning, and IT security requirements are similarly missing.

On the surface, OPM is continuing to make the same mistakes that plagued its recent unsuccessful “*Shell*” initiative (see Background section). Rather than developing a modernization strategy, evaluating alternatives, estimating the costs, and following established capital budgeting processes, OPM is doing it backwards. The starting point for the Plan is a modernization budget not supported by strategy or cost analysis, which was then followed by a determination of how to spend the money.

In our discussion with OCIO officials on this point, we were told that OPM lacks the IT governance and enterprise architecture to complete a comprehensive modernization strategy or to be able to estimate the costs of implementing it. The current plan is that the bulk of the \$11 million will be devoted to improving the environment that would enable the proper planning and strategy to evolve.

It is concerning that almost three years after the data breach of 2015 and the unsuccessful *Shell* project that followed, OPM has still not clearly identified a comprehensive modernization strategy or established the required planning and budgeting mechanisms that would accompany such a project. While some progress has been made, it remains to be seen whether OPM can effectively manage the modernization of its aging technical infrastructure and implement the security improvements that are only possible with current technology.

## II. BACKGROUND

In 2015 OPM initiated a large-scale IT modernization project referred to as the “*Shell*.” The goal of the *Shell* project was to consolidate OPM’s outdated and decentralized technical infrastructure into two new and modern data centers, and to then modernize the agency’s legacy information systems and migrate them into this new infrastructure. While we generally agreed with the strategy of modernizing the infrastructure, we identified at that time a number of concerns regarding OPM’s capital planning procedures and the project management activities surrounding this project. We issued a series of audit reports expressing our concerns, the most notable of which were:

- OPM did not identify the full scope or cost of the project. The agency did not have a comprehensive inventory of information systems that needed to be upgraded and migrated to the *Shell*, much less any realistic cost estimates or timelines of doing so.
- OPM did not follow the Capital Planning and Investment Control (CPIC) processes required by U.S. Office of Management and Budget (OMB) Circular A-11. OPM initiated its modernization project without preparing a Major IT Business Case (a critical CPIC artifact) to seek approval and secure funding. The process of developing a Business Case should have involved a variety of disciplined project management activities that would have allowed OPM to fully evaluate the costs, benefits, and risks associated with its project, and to present the project to OMB to seek approval and dedicated funding.
- OPM never performed an Analysis of Alternatives to evaluate whether the *Shell* project was the best solution to address the agency’s needs. The agency should have conducted market research to identify as many alternatives as possible and used a benefit-cost approach to selecting the best available alternative within the budget.

Our reports predicted that the *Shell* project would fail to meet its stated objectives, and unfortunately this was the ultimate result. The contractor supporting the development of the *Shell* project suddenly went out of business in May 2016, leaving OPM with an incomplete project. The two new data centers that were set up to host the *Shell* have been subsequently shut down, and OPM is no longer pursuing this modernization project.

It is apparent that OPM’s lack of disciplined project management and capital budgeting processes surrounding the *Shell* project influenced the decision-making process of the Appropriations committees in Congress that drafted the Appropriations Act. This is clear from our prior reporting on the matter, our interactions with the committees during the drafting process, and the committees’ report which amplifies the intent of the language. Congress

appears willing to fund OPM's modernization efforts provided that OPM has developed a clear strategy for the total effort, has identified the technical level of effort involved, and has reasonably estimated the total costs of the project.

### III. PROGRESS AFTER SHELL

In the time since the *Shell* project was abandoned in 2016, OPM has made incremental progress in stabilizing its technical environment. The agency has improved its information system inventory and has implemented a risk assessment process designed to identify critical and high-risk assets. In addition, many of the technical security tools that were procured for the *Shell* environment were successfully incorporated into the legacy technical environment.

The agency has also made significant progress in consolidating its historically decentralized data centers. OPM designated two primary data centers and reconfigured and updated these facilities to absorb systems previously housed at secondary data centers. Several secondary data centers have been closed since 2016.



## IV. CURRENT STRATEGY AND FY 2017 EXPENDITURE PLAN

We reached out to current and former OCIO officials as early as May 2017, shortly after the Appropriations Act was enacted, and many months after the Appropriations committees proposed draft language that would make modernization funding available pending OPM's compliance with certain requirements. Our intention was to establish a common understanding of the requirements, and to communicate our expectations of the OCIO spending plan, based on the language in the Appropriations Act and our discussions with Appropriations committee staff during the legislative drafting process.

While the language in the Appropriations Act describing the requirements and timelines is clear and unequivocal, it was apparent to us that the OCIO's vision for the OPM Plan did not match ours or the Appropriations Act's. It was also obvious that the OCIO had not done the work necessary to support a well-developed, comprehensive IT capital budgeting modernization plan, as our previous audit reports discussed in 2015. The final Plan provided to our office in December 2017, while incorporating some positive elements, does not meet any of the requirements outlined in the Appropriations Act. It also made clear that OPM still does not have a fully developed modernization strategy.

For example, although the Appropriations Act required OPM to "identify the full scope and cost ... of the project," OPM's Plan is essentially a description of how it would spend the \$11 million appropriated for Fiscal Year (FY) 2017 (two-year appropriation), rather than a comprehensive modernization project plan. The Plan allocates the \$11 million to a variety of initiatives, but there is no evidence that an analysis has been done to estimate the total cost of completing each initiative.

The Plan also does not meet the capital planning and investment control requirements in OMB Circular A-11, part 7, which lays out the principles of acquisition and management of capital IT investments. The basic concept when considering a capital IT project is that agencies should take the following steps:

- Conduct an analysis of alternative options, including maintaining the status quo;
- Select the lowest cost option, based on a discounted net present valuation;
- Prepare a lifecycle cost estimate, showing a future breakeven point, and estimated savings; and

- Submit a Major IT Business Case to OMB, to present a benefit/cost-based request for funding for the investment.

The OCIO provided our office new or updated Major IT Business case documentation to support some of the initiatives in the Plan. However, none of these documents showed any evidence of compliance with basic CPIC guidelines. As an example, OPM's Infrastructure Investment included an updated section for modernizing the agency's mainframe computing environment which hosts many mission-critical applications. OCIO officials have discussed with us their strategy to "get out of the mainframe business" by moving these applications to a mainframe shared-service provider (also known as Mainframe as a Service or MaaS), and ultimately refactoring the applications to be compatible with a more modern distributed computing environment. We were told that such a move could save the agency up to \$10 million annually and significantly reduce operational and security risk.

Indeed, the updated section of the Infrastructure Major IT Business Case document states that the goal of the investment is to "re-host mainframe applications to a commercial provider to significantly reduce operational risks to core applications and provide the foundation to migrate applications to a more modern infrastructure." However, the lifecycle cost section of this document shows estimated development costs of only \$2 million with completion in FY 2018. We know that the actual lifecycle costs of such a project (not including modernizing applications) could potentially exceed \$50 million over several years, based on the OCIO's market research with a mainframe shared service provider.

This example seems to demonstrate that the OCIO may not understand the CPIC process, especially considering that this is the one area in which it has done much of the work that would be required to support this investment. The OCIO has conducted significant market research regarding MaaS over the past year. It is our understanding that OPM is working on an analysis of alternative options and has enough information to establish a total cost estimate for this effort. Since OPM has defined its strategy and can develop a reasonable lifecycle cost estimate, it would seem appropriate for the agency to prepare a fully-developed Major IT Business case for the investment as part of its capital budgeting process to secure adequate funding from OMB for its MaaS initiative.

However, none of this information is included in OPM's Plan. As stated before, the Plan is simply an allocation of how the agency would spend \$11 million. The current version of the Plan allocates \$2 million to mainframe modernization – an amount that OPM already knows is only a small fraction of the total cost estimate.

An additional concern in this area stems from our recommendation in audit Report No. 4A-CI-00-15-055 (“Flash Audit Alert – OPM’s Infrastructure Improvement Project”) that OPM create a comprehensive Major IT Business Case for its modernization effort as a whole. That recommendation was specific to the *Shell* project, which was designed as a consolidated effort that, in our opinion, merited a stand-alone funding and tracking mechanism.

The current modernization effort will be far more decentralized – as a result a different approach is needed. With that said, we do not agree that it is appropriate to link every element of the agency-wide IT modernization effort solely to existing investments. Burrowing a major initiative into existing portfolio elements can give the impression that the agency is not being transparent regarding the scope and scale of its modernization efforts.

We continue to believe that a project of this scale warrants dedicated and centralized tracking. As a specific example of our concern, the Plan currently has “Legacy Application Modernization” associated with the Retirement Benefits Services Investment. However, OPM has many legacy applications that do not relate to Retirement Services – or any of the other existing major investments. OPM could consider tracking “Application Modernization” as a separate investment with a dedicated Major IT Business Case.

In addition to our concerns regarding the lack of strategic focus and CPIC processes, the OCIO’s Plan does not comply with the Appropriations Act provisions regarding acquisition and security requirements. We cannot assess or comment specifically on these areas because the Plan does not include adequate detail to make a determination. However, as noted below, we have significant concerns regarding OPM’s overall adherence to the Federal Information Technology Reform Act (FITARA) requirements regarding the role of an agency’s Chief Information Officer (CIO) in the acquisition of Federal IT systems.

Although OPM’s Plan is lacking in all of the required aspects, it at least appears to outline the basic elements of a full-scope modernization strategy. It describes three broad areas in need of improvement: governance, environment modernization, and business modernization, and subdivides these areas into a total of seven specific initiatives each with its own broad milestones and timelines.

But in our discussions about the Plan with OCIO officials from May through December 2017, it seemed obvious that a comprehensive, post-*Shell* IT modernization strategy is still a work in progress. For example, the draft version of the Plan was strictly focused on operational priorities with no strategic vision at all. Further discussions between the OIG and the OCIO helped lead to the improved final Plan; however, the strategic focus of the Appropriations Act provisions is still missing from the Plan.

As this understanding continued to evolve, the timeline of the appropriations process influenced the quality of the Plan. It was clearly started too late and hastily prepared in view of the September 30, 2018, deadline to obligate the \$11 million appropriated in the Appropriations Act. In addition, there only appeared to be one or two individuals working on the Plan under the direction of the Deputy CIO. We would expect to see an Integrated Project Team, as required by OMB Circular A-11, Part 7, made up of subject matter experts from all of the relevant disciplines intimately involved in such a critical initiative.

With that said, this document could be the starting point of a modernization strategy. However, OCIO officials stressed that they were unable to fully define a modernization strategy because of an overall lack of governance and consistent enterprise architecture in the agency. Their focus in spending the \$11 million will be to establish the structures that will be the necessary baseline from which to evolve a fully mature modernization strategy.

There are at least two significant barriers to good IT governance and enterprise architecture at OPM. First, continuous turnover of the CIO position has prevented the agency from focusing on a single modernization strategy. There have been six different individuals in the CIO role since June 2015, when we first raised our concerns about the IT modernization efforts at OPM. Although each CIO has recognized the need to modernize OPM's outdated IT infrastructure, none has been in place long enough to establish a tangible strategy. This is why it is particularly critical for the current CIO to document a centralized and consolidated strategy complete with the appropriate CPIC artifacts to support a well-managed project. Once this is in place, it will be easier for future CIOs to continue the efforts of his or her predecessor, instead of starting with a clean slate as the last six CIOs have.

Second, OPM continues to be plagued by a decades-old, decentralized IT organizational structure. Major IT investments (up to and including the mainframe) were procured, managed, and owned by OPM's various business units. There was a time when OPM had no CIO. Starting in the mid-2000s, incumbents in the CIO role have struggled to consolidate control over technology management. Information security was also the responsibility of the business units, and while the CIO could develop policies, procedures, and guidelines – it was up to the business owners to enforce them.

Although there has been improvement in recent years in centralizing all technology management under the CIO, the historical decentralization continues to hinder OPM's technology modernization efforts. There are still many examples of patchwork systems with different platforms, operating systems, vendors, and applications that support program office activities. The OCIO does not have full control of these resources and cannot effectively manage them. In addition, there are several application development initiatives underway by program offices

within OPM, in particular the Office of the Chief Financial Officer and the Healthcare and Insurance Office, with limited or no OCIO involvement. This is, in our view, a major impediment to a truly effective enterprise architecture and IT security program.

Budgetary resources are also a significant problem, as funding for technology procurement and operation is still routed through OPM's business units, and the OCIO is reimbursed through an antiquated "common services" methodology. The scope and scale of the CIO's technology expenditures rarely align with the funding it receives from the business units. This is another reason why it is critical that the agency's modernization efforts be tracked in a centralized and transparent investment that outlines the entire scope and cost of modernization – to help ensure that the OCIO can receive the dedicated funding that it needs for such efforts.

FITARA requires that the "Chief Information Officer of the agency has a significant role in ... the management, governance, and oversight process related to information technology." Although we are not explicitly reporting that OPM is operating in violation of FITARA regulations, we do believe that OPM's business units continue to have an improper level of influence over IT management, and that the CIO's office does not directly receive the dedicated funding needed to fulfill its mission.

# V. RECOMMENDATIONS

## **Recommendations:**

1. We recommend that OPM establish baseline governance and enterprise architecture improvements that can facilitate the planning and execution of a successful IT modernization strategy.
2. We recommend that OPM's OCIO focus its spending priorities on establishing the necessary governance and enterprise architecture improvements, including an enterprise IT program management office and an enterprise architecture program management office.
3. We recommend that OPM develop a comprehensive IT modernization strategy with input from the appropriate stakeholders and convene an Integrated Project Team, as required by OMB Circular A-11, Part 7, to manage the overall modernization program and ensure that proper CPIC processes are followed.
4. We recommend that the OPM Director ensure that the CIO has the appropriate level of control over the IT acquisition and budgeting process across all of OPM.

## **OCIO Response:**

We provided the OCIO with a draft copy of this Management Advisory and our recommendations for its review and comment. The OCIO concurred with all four recommendations and stated its commitment to improving the necessary elements that will serve as the starting point for a comprehensive IT improvement strategy. We will continue to work closely with the OCIO and monitor its progress in implementing these recommendations. The OCIO's complete response to the draft Management Advisory is attached as an appendix.

## VI. CONCLUSION

Even though OPM's IT Modernization Expenditure Plan does not comply with the provisions in the Appropriations Act, it does outline critical modernization elements and could serve as a starting point for a comprehensive IT improvement strategy. We understand that OPM intends to use much of the \$11 million made available for improving IT governance and enterprise architecture, a necessary prerequisite to developing and executing a modernization strategy. OCIO officials seem to understand the need for a strategy and have committed to us that their focus will be on strengthening these areas.

Modernization of OPM's aging infrastructure is needed to promote better services to its customers – for example, automating retirement claims processing and improving the background investigations process – but it is also, and primarily, a critical element of improved IT security and preventing future data breaches. The legacy environment is simply too complicated and antiquated to adequately secure, even though significant improvements have already been put in place. A strategy that will lead to a modern, secure environment for the agency's mission-critical applications is crucial to prevent another major security incident.

Therefore, it is our opinion that the Congressional Appropriations committees should approve OPM to obligate \$11 million pursuant to the FY 2017 Consolidated Appropriations Act, with the understanding that OPM will adhere to the recommendations in this report. We will continue to very closely monitor OPM's progress in this respect.

# APPENDIX



Chief Information  
Officer

UNITED STATES OFFICE OF PERSONNEL MANAGEMENT  
Washington, DC 20415

MEMORANDUM FOR MICHAEL ESSER  
ASSISTANT INSPECTOR GENERAL FOR AUDITS  
OFFICE OF PERSONNEL MANAGEMENT  
OFFICE OF THE INSPECTOR GENERAL

FROM: DAVID A. GARCIA  
CHIEF INFORMATION OFFICER  
OFFICE OF PERSONNEL MANAGEMENT

FEB 07 2018

Subject: Response to the Draft Management Advisory Letter –  
Comments on IT Modernization Expenditure Plan

Thank you for providing the Office of Personnel Management (OPM) the opportunity to respond to the Office of the Inspector General (OIG) Draft Management Advisory Letter – Comments on IT Modernization Expenditure Plan.

We appreciate that your “opinion is that the Congressional Appropriations committees should approve OPM to obligate the \$11M” in FY17 IT modernization funds. We also appreciate the critical nature of much of your review and are committed to improving the necessary elements that will serve as the starting point for a comprehensive IT improvement strategy. Specifically focusing on improving IT governance and enterprise architecture as “a necessary prerequisite to developing and executing a modernization strategy” that will improve OPM’s capabilities to develop and execute IT improvements and modernization. We look forward to continuing to closely work with you on our progress.

Responses to your recommendations are provided below.

**Recommendation #1:** We recommend that OPM establish baseline governance and enterprise architecture improvements that can facilitate the planning and execution of a successful IT modernization strategy.

**Management Response:** We concur.

**Recommendation #2:** We recommend that OPM’s OCIO focus its spending priorities on establishing the necessary governance and enterprise architecture improvements, including an enterprise IT program management office and an enterprise architecture program management office.

**Management Response:** We concur.



Subject: Response to the Draft Management Advisory Letter –  
Comments on IT Modernization Expenditure Plan

**Recommendation #3:** We recommend that OPM develop a comprehensive IT modernization strategy with input from the appropriate stakeholders and convene an Integrated Project Team, as required by OMB Circular A-11, Part 7, to manage the overall modernization program and ensure that proper CPIC processes are followed.

**Management Response:** We concur.

**Recommendation #4:** We recommend that the OPM Director ensure that the CIO has the appropriate level of control over the IT acquisition and budgeting process.

**Management Response:** We concur and will continue to ensure the CIO has the appropriate level of control over the IT acquisition and budgeting process.

I appreciate the opportunity to respond to this draft report. If you have any questions regarding our response, please contact me or Robert Leahy, Deputy CIO.



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