National Aeronautics and Space Administration

Headquarters
Washington, DC 20546-0001

March 13, 2020

Reply to Attn of: OLIA/2018-00001:JG:dac

The Honorable Gerald Connolly
Chairman
Subcommittee on Government Operations
Committee on Oversight and Reform
U.S. House of Representatives
Washington, DC 20515

Dear Chairman:

Enclosed is material requested for the record and responses to written questions submitted by Chairman Connolly resulting from the December 11, 2019 hearing, "*FITARA 9.0.*"

This material completes the information requested during that hearing.

Sincerely,

Suzanne M. Gillen

Suzanne M. Gillen
Associate Administrator
for Legislative and Intergovernmental Affairs

Enclosures

cc: The Honorable Mark Meadows, Ranking Member

Questions for Ms. Renee P. Wynn
Chief Information Officer, National Aeronautics and Space Administration
Questions from Chairman Gerald E. Connolly
December 11, 2019, Hearing: "FITARA 9.0"

1. How does data center consolidation and optimization fit into the cloud migration plans for the National Aeronautics and Space Administration?

NASA Response: Since 2010, NASA has closed 60 data centers and through the end of FY 2019 generated $32.36M in data center savings and cost avoidance. This is a 75 percent reduction, resulting in the repurposing of approximately 80,000 square feet of space and generating about $36.2 million in savings since FY 2012. When reducing our data center footprint, we also increased our use of cloud computing. NASA currently has more than 10 petabytes of data in the cloud and uses more than 1.4 million commercial cloud-computing hours per month. While cloud usage is more expensive upfront, ultimately, it is a smarter way of doing business. Newer programs like Artemis are even designing their missions with the cloud in mind from the beginning. However, this is just a start. As NASA becomes more established in the cloud, NASA will return our focus to data center consolidation, seeking additional efficiencies there.

Cloud computing offers some strategic advantages to NASA. The use of cloud computing (and moving the data outside the boundaries of NASA's internal networks) enables NASA's extensive portfolio of public science data to be easily accessible to the global science community and enables greater collaboration with NASA's external partners of all kinds. As computational challenges become larger and more complex and an increasing number of scientists need to analyze larger and larger data sets, leveraging the dynamic scalability of cloud computing to utilize (rent) large quantities of processors on demand that NASA could never afford to own allows NASA to solve much larger computing problems and derive more discoveries from science data sets.

Laying the groundwork for broad cloud adoption, NASA implemented an enterprise cloud framework in order to minimize start-up time and costs. Key infrastructure services including networking, authentication and security compliance are pre-integrated into this environment to allow cloud users to get started quickly. The cloud framework cuts months from the cloud learning curve, significantly reduces "pioneering" costs and reduces duplication of effort.

Determining what applications to migrate to the cloud requires evaluation of a number of business considerations. The migration of legacy applications to the cloud is only marginally efficient if done as a "lift and shift" without redeveloping the application to leverage the benefits of cloud. Redeveloping legacy applications in the cloud is a significant software development project. Consideration should be given to the lifecycle stage of the application, the long-term need for the application and whether that capability is (or might become) available for delivery as Software as a Service. Most modern commercial applications will be available (perhaps exclusively) through cloud-based Software as a Service within the next five years.

NASA is moving toward a state where most new projects, applications and missions will be born in the cloud. In order to support future high data rate missions, science data processing and delivery systems are being redeveloped as cloud native to provide better accessibility of public data and faster delivery to waiting science teams, as well as limiting investments in additional data center computing hardware.

Over the next five to 10 years, NASA's growth in applications will primarily happen in the cloud. Legacy applications that reach end of life will be eliminated from data centers. Legacy applications that

migrate to cloud will further reduce data center inventories. There will likely be a point in time when it will be prudent to revisit the data center utilization vs. data center footprint and consider another round of data center compressions/consolidation.

2. NASA scored its worst grade, an "F," on the risk transparency metric. According to the Government Accountability Office's review, NASA was the only agency to not rate any of its IT investments as a moderate or high risk. Why does NASA not identify any risk associated with more than $400 million in IT spending? Is NASA considering a change to its risk calculation policies?

NASA Response: NASA does identify and assess risks for information technology (IT) investments including the risks associated with the Major IT Investments that make up the $400 million in IT spending. NASA's major IT Investments used in the risk transparency scoring are in the operations and maintenance lifecycle phase. The NASA Chief Information Officer's (CIO) assessments showed that these investments are vital to NASA's mission, are closely monitored and have effective plans in place, resulting in a "green" risk rating. The rating areas assessed include performance, human capital, risk management, contract/acquisition management, requirements management, incremental development, dependency risks and system risk management. In FY 2020, NASA is updating the assessment to incorporate additional cybersecurity metrics into the CIO risk rating process. Additionally, NASA will include Standard IT Investments, currently assessed monthly, to the Major IT Investment in the risk rating reporting.

3. What is the best policy or practice that NASA has implemented to achieve the requirements of the Federal IT Acquisition Reform Act (FITARA)? What improvements to the agency's IT posture did that policy or practice achieve?

NASA Response: When enacted, FITARA facilitated NASA evolution from a highly decentralized to an enterprise IT environment. One area of attention was improving what was included in the overall NASA IT portfolio. Working with our stakeholders, NASA implemented an IT portfolio structure that provides transparency and visibility into NASA's IT spend. Once this was completed, NASA aligned our IT investments with the Technology Business Management taxonomy. Implementing the Technology Business Management taxonomy has provided additional insights into the IT spend for NASA. The IT governance changes implemented by NASA ensured the CIO's participation in Agency IT investment decisions for Agency missions as well as clarified the CIO's IT decision-making authority as chair of the IT Council (ITC) and a member of Agency-level management councils.

Material for the Record Response to Ranking Member Meadows

Ranking Member Meadows asked NASA and DHS to develop list of three things they would each focus on in CY 2020 to improve their next FITARA scores. For NASA, the Congressman said one area should be Data Center consolidation.

NASA Response:

- **Data Center Consolidation & Smart Cloud Expansion** – Since 2010, NASA has closed 60 data centers and through the end of FY 2019 generated $32.4 million in data center savings and cost avoidance. This is a 75 percent reduction, resulting in the repurposing of approximately 80,000 square feet of space and generating about $36.2 million in savings since FY 2012. When reducing our data center footprint, we also increased our use of cloud computing. NASA currently has more than 10 petabytes of data in the cloud and uses more than 1.4 million commercial cloud computing hours per month. While cloud usage is more expensive upfront, ultimately, it is a smarter way of doing business. Newer programs like Artemis are even designing their missions for the cloud. As NASA becomes more established in the cloud, NASA will return our focus to data center usage, seeking additional efficiencies there. Cloud computing offers some strategic advantages to NASA, as it enables NASA's extensive portfolio of public science data to be easily accessible to the global science community and enables greater collaboration with NASA's external partners.

- **Cybersecurity** – Protecting and modernizing NASA's IT infrastructure is and will remain a top Agency priority. NASA will continue our progress to mature our cybersecurity program. This includes, but is not limited to:
    - Supply Chain Risk Management (SCRM): We continue to work diligently to address the findings from the May 2018 NASA Inspector General (OIG) audit related to NASA's IT supply chain risk management efforts and are scheduled to correct the two remaining findings by the end of FY 2020.
    - Cybersecurity Workforce: Working with NASA's Office of the Chief Human Capital Officer to capitalize on the new hiring authority and other hiring practices that may be applicable to the Federal cyber workforce.