An Agency-Specific Approach for DATA Act Readiness

A White Paper for the Federal CIO Community

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Background

On May 9th, President Obama signed the Digital Accountability and Transparency Act (DATA Act) into law. This historic piece of legislation increases transparency and accountability in Federal financial management by requiring Federal agencies to standardize the way they publish the wide variety of government reports related to financial management, procurement, and assistance. The DATA Act strengthens legislation enacted over the past 50 years affecting information, transparency, and financial data[1] and builds on existing capabilities to advance the cause of open data and open government.

A single, consistent electronic reporting format will streamline recipient and agency reporting.

The DATA Act will give public-sector officials – including Congress, Treasury, budget staff, agency leaders, inspectors general, and program managers – easier, automated access to more meaningful dashboards and business analytics as they craft public policy, manage economic development, and make investment decisions. After implementation of the DATA Act, anyone will be able to search and analyze any grant, contract, or expenditure to expose – or avoid – fraud, waste, and abuse. To enable these capabilities, the DATA Act calls for public access to complete, accurate, and searchable spending data through the USASpending.gov Web site and for a single, consistent electronic reporting format to streamline and simplify agency and recipient reporting.

Standardized data will make it easier to trace financial information throughout its lifecycle and answer cross-cutting questions that are difficult to answer today.

Data plays a progressively greater role in the day-to-day operations of government enterprises. The DATA Act offers an unprecedented opportunity to improve mission effectiveness by making it easier to trace financial information throughout its lifecycle and link related spending information from different sources to answer cross-cutting questions that can be difficult to answer today. In addition, standardized data can improve operational efficiencies by reducing complexity across mission programs.

Summary of the DATA Act:

- ✓ **Sets Government-wide financial data standards**
- ✓ **Strengthens transparency by improving accessibility and usability**
- ✓ **Simplifies recipient reporting requirements**
- ✓ **Increases confidence by improving data quality**
- ✓ **Enhances efforts to detect and prevent waste, fraud & abuse**

[1] e.g., Freedom of Information Act, Chief Financial Officers' Act, the E-Government Act, Federal Funding Accountability and Transparency Act (FFATA), Recovery Act (ARRA).

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The Business Challenge

The U.S. government currently does not report its spending through a single online location. Instead, various agencies, grantees and contractors must submit different pieces of related financial information to different offices (Treasury, Office of Management and Budget, Commerce, General Services Administration, etc.) in order to comply with a complex web of legislation. And because each agency uses its own data formats, electronic codes, and identifiers, it is virtually impossible to compare data between sources to check for accuracy or to get a complete picture of obligations or expenditures for any one agency or program. As a result, taxpayers and other public-sector stakeholders cannot analyze spending along its lifecycle or asking cross-cutting questions about how tax dollars are spent.

With the DATA Act signed into law, the Treasury Department and OMB have begun to study existing federal and industry standards; develop and pilot government-wide data standards for grantee and contractor reporting; guide and promote the new data standards; and enable online publishing and access. Treasury and OMB may encounter the following challenges during DATA Act implementation.

Program breakdown. Today, appropriations can be divided into separate accounts, and some accounts may receive funds from multiple appropriations. This many-to-many relationship disconnects the flow of funds between appropriations and Treasury accounts. To correct this flaw, the law requires Treasury to publish a breakdown of each account and show the amounts received, obligated, and spent. Treasury also must group and publish amounts by program activity and object class (categories of items or services purchased.) Treasury must then make all data about the flow of federal funds – from appropriation through account to expenditure – publicly available on USASpending.gov in a machine-readable format. These actions will give any individual or organization the ability to track performance and spending against resource allocation on a program-by-program basis.

Detailed spending data. While the DATA Act does not directly require Treasury to publish checkbook-level payment data, Treasury has announced that it will do so. Detail would include agency expenses and payments to recipients of federal contracts, grants, and loans. Access via machine-readable, standardized data would empower the public to follow a payment through the complete spending cycle – from appropriation through disbursement of grants, contracts, and administrative spending.

Related spending data. Figure 1 uses award recipient information to illustrate why a program manager might have a hard time finding all spending data when assessing the Jones Smith Corporation's past performance. In response to a query on the company name, s/he might get a long list of inconsistent names. Using the parent DUNS number instead may not be reliable; D&B assigns numbers to each business location, and some parent DUNS numbers may not always align with the same physical location. In this example, standardized recipient IDs could help mitigate spelling issues and provide a reliable way to find related spending data. To remedy this, Treasury may consider implementing mechanisms for unique recipient identifiers.

Parent DUNS	DUNS number	Company	Address
834951691	078669280	Jones Smith Corporation	Eagan, MN
834951691	780820002	Jones Smith Corp	Virginia Beach, VA
834951691	780820035	Jones Smith Corp.	Reston, VA
724951691	834951691	Jones Smith	Bethesda, MD
724951691	078669111	JS Corp	Los Angeles, CA

Figure 1: Example data-quality Issues with names and DUNS numbers

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Complete spending data. Even if a program manager could find all related spending data, Figure 2 demonstrates why reporting data may be incomplete. In this example, Agency reporting was rejected because of an expired DUNS number. To resolve, Treasury and OMB may elect to identify and prioritize issues related to incomplete data and conduct a similar root-cause analysis.

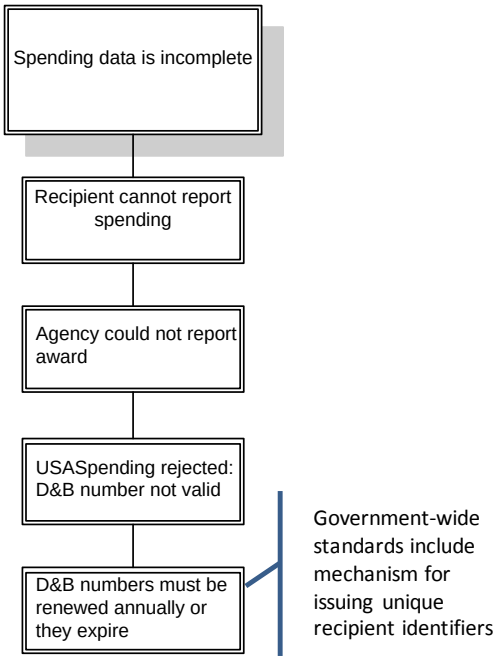

Figure 2: Example root-cause analysis for incomplete spending information

Linking related data from disparate sources. Today, different pieces of related information are reported to different reporting sites. The result is disconnected, non-standard information that increases costs and makes it hard to answer important, cross-cutting questions. To be interoperable, researchers require a reliable way to link related information from disparate sources. Examples that Treasury and OMB may elect standardize for this requirement might include legal entity identifier for agencies or recipients, program codes, product or service codes, and system or equipment codes.

Grouping granularity. Similar to program breakdown, researchers may want to group and sum all spending by other criteria, e.g., a given company. However, Figure 3 offers an example explanation about problems with identifiers and multi-value attributes. To resolve, Treasury and OMB may elect to identify and prioritize interoperable reporting requirements that cannot currently be met, and conduct root-cause analyses.

A common lexicon. A standard taxonomy provides explicit definitions for a wide array of data elements to give diverse users confidence that they have the same understanding of terms and how to use data. Treasury will collaborate across the community to develop an efficient way of talking about and communicating financial information.

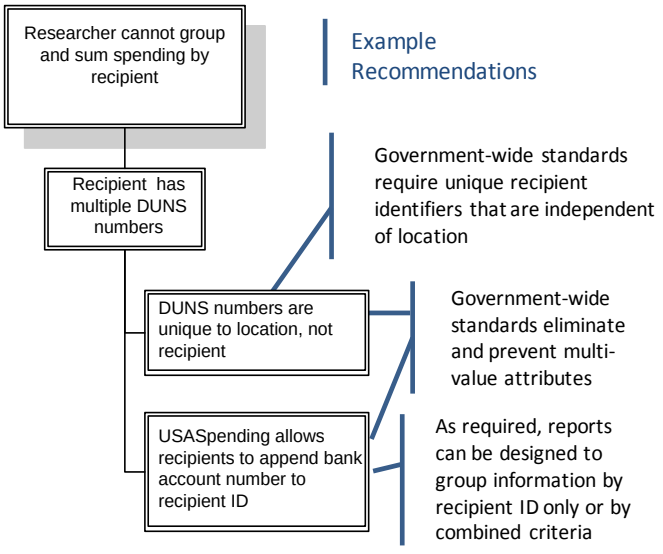

Figure 3: Example root-cause analysis for inability to group spending data by award recipient.

Minimized agency impacts. To minimize the operational impacts of the DATA Act, Government-wide data standards may extend an existing data exchange standard, e.g., the National Information Exchange Model (NIEM), an XML-based information exchange framework for Federal agencies, or eXtensible Business Reporting Language (XBRL), an XML for business information reporting; and/or other domain-specific standards.

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Agency Implementation of the DATA Act

Once data standards are complete, agencies will have two years (figure 3) to begin implementing the data standards. The good news is that Treasury will continue to collect the same kinds of data, so agencies should be well positioned from the start. The standards will be mandatory for grantee and contractor reporting only after OMB conducts the pilot program.

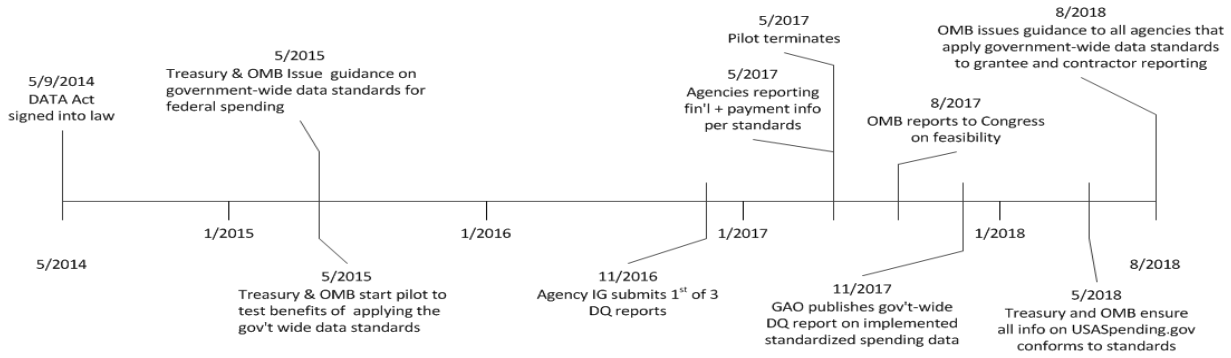

Figure 4: Approximate DATA Act Implementation Milestones

To adopt the new standards, agencies will compare their existing data to the new government-wide standards, identify gaps, and modify data exchanges and source systems. Agencies will be able to map most reports they currently generate for Treasury, OMB, and GSA to the new standards. However, while Treasury Financial Management Services can supply spending detail for agencies that use their services, agencies that disburse directly may have additional reporting requirements.

A Strategic Approach to DATA Act Readiness

Citizant tailors its technology independent, data-centric approach (Table 2) to helping each agency map its spending data to the new data standards while minimizing impacts to existing financial systems.

Activity	Process	Results
Discover & Describe	**Discover required financial spending data and analyze data sources:** • Assess data in context by analyzing enterprise and mission capabilities, program functions, and business processes that produce/consume data • Base-line relevant IT systems by collaborating with business and system owners to map the physical layout and distribution of business systems, applications, and data • Discover "cuff" datasets outside the purview of IT operations	✓ A complete and accurate inventory and understanding of the agency's financial-spending data assets, IT systems, and supporting business processes
Analyze & Map	**Map agency data to the exchange model:** • Analyze data lineage to identify relationships and authoritative sources • Resolve inconsistent data formats, codes, and identifiers to standards • Profile data to determine condition and relative quality • Identify redundant data for reconciliation, consolidation or elimination • Implement data quality controls per the data standards • Document definitions, mappings, business rules, and data quality rules • Map and transform data from agency systems to the data standards	✓ An up-to-date enterprise repository with clear data definitions, business rules, data quality rules ✓ Improved data quality ✓ Updated mappings for delivering data through the USASpending portal
Conform & Deliver	**Tag and deliver agency data to USAspending.gov:** • Tag, package, and deliver agency data through the USASpending portal • Implement agency-treasury feedback for continuous improvement	✓ Standardized reporting of spending data across the Federal government

Figure 5: Citizant's Approach to Enabling the DATA Act

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Agencies must find, describe, expose, and map *all* required data to Treasury's reporting standards while protecting sensitive data – a potentially daunting challenge with numerous, large, and complex datasets. Mapping errors between agency data and standards can distort the meaning of data pulled into analytical software. As such, developers who do the mapping must have a solid understanding of both the agency's budgeting, planning, and administering systems and the new data standards. To succeed, developers will require robust information about business and data assets, and may benefit from enabling technologies.

Within eighteen months of guidance issuance, each agency's inspector general will publish the first of three reports on the completeness, timeliness, quality, and accuracy of standardized spending data. To promote confidence, agencies should strengthen mechanisms in budgeting, planning, and administering processes and systems to ensure data meets data validation requirements. To ensure overall success, agencies should strengthen existing governance structures by clarifying roles and responsibilities, ensuring accountability, and coordinating programs across the enterprise.

Integral Agency Value

Agencies may choose to integrate data standards into existing systems (Figure 6). Doing so will enhance the value of financial, budget, payment, assistance, and procurement systems by improving data quality and interoperability, reducing complexity, and increasing overall agency effectiveness (Figure 7).

Activity	Process	Results
Develop and Re-engineer	Leverage and integrate data standards into ongoing DME • Baseline system configurations (applications, databases, and middleware) • Assess COTS products with vendors to determine applicability or customize output to data standards • Instantiate data standards requirements into the development lifecycle for systems that output financial data • Reengineer business processes to leverage data standards to enhance capabilities and functions	✓ Enhanced internal management of IT systems ✓ Quicker, more agile deployment of data analytics with less costs and customization

Figure 6: Leveraging standards to integrate data for agency financial analysis

Further, an early start can give agencies time to integrate the data standards into ongoing modernization for existing federal statutes for efficiencies and sharing (e.g., Digital Government Strategy & Open Data Policy, Federal Data Center Consolidation, Shared First, GPRA (2010)). Detailed analysis of the agency's data assets could expose opportunities to improve mission effectiveness and reduce operational complexity through shared services – including integrating and mastering data, consolidating legacy systems, and enabling business intelligence, cloud computing, COTS, GOTS, and other technology initiatives.

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Conclusions

The DATA Act presents the Federal Government with an important opportunity to strengthen existing capabilities for transparency and accountability. Standardized data provides the foundation for tracing spending throughout its lifecycle, from appropriation to expenditure, and for comparing spending across agencies, programs, products, award recipients, and more. Incorporating the data standards into existing and new agency systems positions CFOs to accelerate interoperability between financial, budgeting, planning, and award systems.

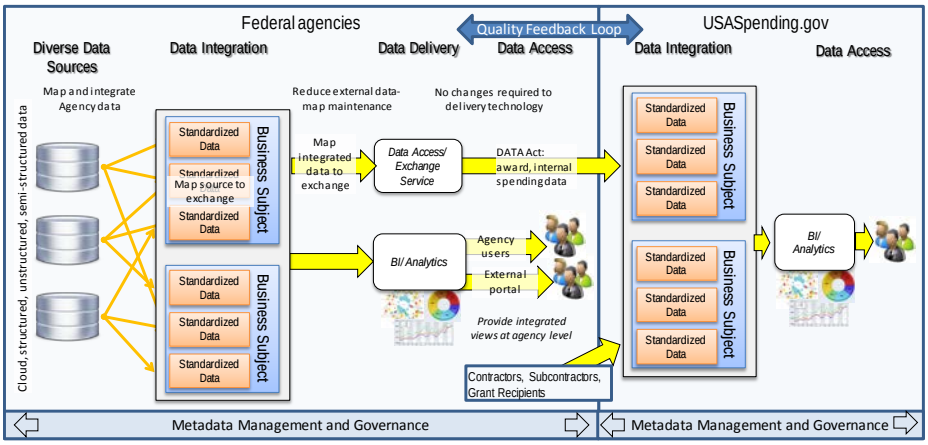

Figure 7: Improving Financial Services through Shared Services

Citizant: Proven Success with Enterprise Data Management

Citizant applies innovative and best-practice approaches to enterprise business analyses and data management. We tailor our proven approach to specific mission needs, and partner with our customers to deliver both immediate, measurable results and sustainable solutions. We collaborate at all levels to build the organizational agility and effectiveness required to succeed in today's fast-changing IT environment. To deliver business value to our customers, Citizant:

- **Supports agency mission, goals, systems, and workforce alignment** by creating greater access to data
- **Improves data quality** by identifying and mapping data to authoritative data sources and by validating, cleansing, and standardizing data during transformation
- **Enables data discovery and reusability** by finding, mapping, and connecting data across the enterprise
- **Increases interoperability** by aggregating, classifying, and promoting data while minimizing impacts to existing business systems
- **Develops robust data management strategies** to deliver a more complete and accurate definition of metadata and associated business rules

For more than 15 years, Citizant has supported multiple mission-critical programs and data management initiatives within the Federal government. We have longstanding experience and the know-how to architect information exchange standards across an enterprise; aggregate and manage data to align with business and mission requirements; and standardize large structured and unstructured data sets to support inter-agency reporting and enterprise data analytics. We look forward to an opportunity to discuss approaches to your data-centric challenges.

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About Citizant

Citizant designs and delivers smarter, leaner business and IT transformation solutions to the U.S. government, employing leading experts in data management; application development; business process re-engineering; and program management support. Citizant has been independently appraised at the Software Engineering Institute's CMMI-DEV Maturity Level 3 and CMMI-SVC Maturity Level 2.

Citizant has designed and implemented enterprise data management and data quality programs that have been recognized with numerous awards, including the *Government Computer News* Promising Practice citation for Data Management excellence at HUD and DOI, and the Wilshire Enterprise Metadata Management Implementation Award for DOI in 2008 – the first time this award was ever granted to a Federal government recipient. Citizant co-chairs the ACT-IAC Open Data Best Practices Committee.

Citizant has a long-standing partnership with Dr. Richard Wang, founder of the Information Quality program at MIT. Dr. Wang is an internationally recognized expert in enterprise data quality and the chief proponent of the Chief Data Officer role in Federal agencies. Citizant employees have presented several Federal case studies at the MIT Information Quality Conference.

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