DATA Act Schema Model

*Draft Version 0.2*

# Background

The DATA Act directs the Office of Management and Budget (OMB) and the U.S. Treasury Department (Treasury) to establish government-wide data standards for federal funds and entities receiving such funds. While standard data definitions will help to ensure that information will be consistent and comparable, a standard data exchange, as part of our implementation will make financial management data accessible and reusable and provide the necessary linkages between financial events. By making federal spending data accessible, searchable, and reliable, the public can understand how government spending impacts their communities. The standard data exchange will also reduce the need for massive system changes across federal agencies to collect information and allow agencies to focus on managing data.

Accordingly, Treasury will issue data exchange guidelines that leverage industry standards to tag financial and non-financial data with metadata, or structured information that describes, explains, locates, or otherwise makes it easier to retrieve data. Treasury will require agencies to submit data for posting on USAspending.gov (or successor site) via a standard data exchange called the “Digital Accountability Transparency Act Schema” (DATA Act Schema).

The standard data exchange, or DATA Act Schema, has two components: a standard taxonomy and a standard format, or “language” for exchanging data. The DATA Act Schema includes the required DATA Act data elements and related metadata, including relationship and validation rules. The DATA Act Schema will provide a comprehensive view of the data definition standards and their relationships to one another.

Treasury has created a draft subset of the DATA Act Schema based upon a subset of U.S. Standard General Ledger (USSGL), which is expressed in XBRL. The draft schema can be found [here](http://fedspendingtransparency.github.io/data-exchange-standard/). Additional components of the DATA Act Schema will be created in the future to capture other data elements (see Figure 1). For data transmission within the federal government and to external stakeholders, Treasury will leverage a combination of XBRL, JSON, Protocol Buffer, CSV, and other formats, as appropriate. This will allow matching of the optimal format given data volume, performance, and data presentation needs.

The DATA Act Schema will be revised periodically and is expected to evolve over time to capture unique requirements for more complex or specialized areas and to reflect changes due to law or regulation.

The DATA Act Schema, including a both the technical representation and “human readable” taxonomy documentation and format are provided [here](http://fedspendingtransparency.github.io/data-exchange-standard/).

**Important:** *The draft schema does not constitute as official USSGL guidance and should not be used as official guidance by federal agencies or the public. For official guidance, see* [*http://tfm.fiscal.treasury.gov/v1/supplements/ussgl.html*](http://tfm.fiscal.treasury.gov/v1/supplements/ussgl.html)*.*

# Summary

The draft DATA Act Schema, as depicted here in Figure 1, is a model that includes the DATA Act data [element](http://fedspendingtransparency.github.io/dataelements/) areas. The model represents both awards (Financial Assistance, Contract, and Loan) and financial data (i.e., Obligations, Outlays).

The DATA Act Schema will be composed of several schemas, standardizing the way we represent financial assistance, contract, and loan award data as well financial data.

Figure : The DATA Act Schema



The structure of the DATA Act Schema is such that a complete representation is “compiled” by assembling a set of schemas via a parent schema to represent a specific business concept around financial assistance, contracts, loans, either singularly or in any combination.

Each of these schemas can be seen as a building block to assemble structured data oriented to USSGL accounting concepts. The USSGL provides a uniform chart of accounts and technical guidance for standardizing federal agency accounting.

# Scope of Release

This document defines the current release of the draft DATA Act Schema for review. The draft DATA Act Schema is a work in progress and, as such, this is a living document intended to change with each new release.

In the current release, a baseline draft of the USSGL-Financial schema (depicted in blue) is being released for review. Subsequent releases will begin to include the other schemas (depicted in grey) as they are drafted.

## Broader Considerations

In anticipation of future releases to both the financial and award schemas, please note the following broad considerations:

### The Interaction of the Awards and Financial Modules

It is important to note that the modular structure of the DATA Act Schema allows for both a one-to-one OR a one-to-many relationship between an award (e.g., contract, loan, etc.) and the [object class](https://fedspendingtransparency.github.io/whitepapers/objectclass/) (objectClass) of a USSGL account and its transactions. The USSGL account transaction and the award are linked by the award identifier (awardNumber) in the DATA Act Schema.

Figure : Awards relationship to USSGL accounts



As depicted in Figure 2, each award transaction entry contains a link called an award identifier which links it directly to the USSGL accounts and transaction for that award. The USSGL accounts and transactions also contain an object class descriptor, which allows the accounts and transactions to be associated with one or more object class values. These can be at both the summary USSGL account level and the detailed transaction level. As stated previously, this representation of object class does not constitute as official USSGL guidance. For official guidance, see <http://tfm.fiscal.treasury.gov/v1/supplements/ussgl.html>.

### Benefits: Enhanced Analytic Capabilities

The implementation of a DATA Act Schema creates a common language across information assets and can represent data across multiple systems. This creates some distinct advantages around:

Improved business intelligence capabilities across disparate sources of data

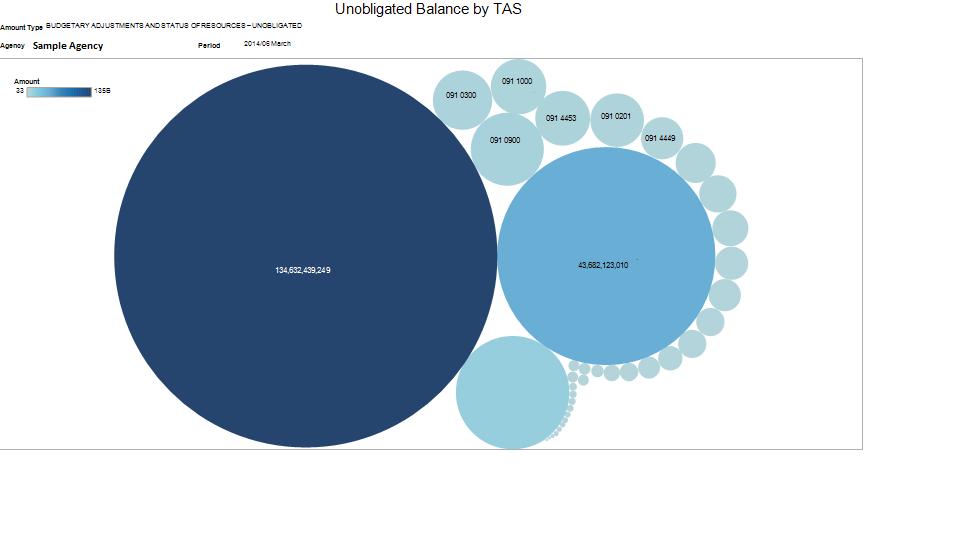
More effective self-service of business intelligence

Cross-agency analysis opportunities

Elimination of redundant reporting/report updates and maintenance

For example, by implementing the DATA Act Schema, a user can enhance and enable real-time analysis of balances of budget authority by appropriations account, which can better enable agencies to manage their programs.

Figure : Budget Authority (illustrative example)

The analysis in Figure 3 represents a sample of how a user could analyze information on obligations unpaid/pre-paid/advanced, segment it by apportionment category, budget authority, etc., and review the detailed USSGL account entries.

# Schema Reference – Common elements

This section defines elements that are common across multiple sections of the DATA Act schema.

## agency

Element: agency

Proposed Type: complex

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** | **Example** |
| agencyIdentifier | The code for the federal department or agency, commission, board or other organization that does not have a parent department that issued the federal award action. | Simple: integerItemType | 3 | **71** |
| agencyName | The code for the federal department or agency, commission, board or other organization that does not have a parent department that issued or provided the predominant amount of funding for the specific federal award action. | Simple: stringItemType | TBD | Department of Agriculture |

## TreasuryAccountingSymbol

An identification code assigned by Treasury, in collaboration with OMB and the owner agency, to an individual appropriation, receipt, or other fund account. (These accounts are defined in TFM Volume I, Part 2, and Chapter 1500.) The term "Treasury Account Symbol" is a generic term used to describe any one of the account identification codes assigned by Treasury. The term "Treasury Appropriation/Fund Symbol" (TAFS) is used to describe a particular type of TAS-one with budget authority. All financial transactions of the Federal Government are classified by TAS for reporting to Treasury and OMB.

Element: treasuryAccountingSymbol

Proposed Type: complex

Source: <http://www.fiscal.treasury.gov/fsservices/gov/acctg/cars/factsheet_tas.htm>

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** |
| [agency](#_Agency)  (Agency Identifier) | Identifies the department or agency that is responsible for the account. | Complex: agencyComplexType | 3 digits |
| allocationTransferAgencyIdentifier | Identifies the department or agency that is receiving funds through an allocation (non-expenditure) transfer. | simple: IntegerItemType | 3 digits |
| mainAccountNumber  (MainAccountCode) | Identifies the account in statute. Represents the type of Fund and the purpose of the account within that Fund. For Example:  Trust Fund: 8501  Trust Revolving Fund: 8402  General Fund (customs duties): 0300 | Simple: integerItemType | 4 digits |
| subAccountSymbol  (Sub Account Code) | Identifies a Treasury-defined sub-division of the main account. Example: available receipt. | Simple: integerItemType | 3 digits |
| beginningPeriodOfAvailability | In annual and multi-year funds, identifies the first year of availability under law that an appropriation account may incur new obligations. | YYYY | 4 digits |
| endingPeriodOfAvailability | In annual and multi-year funds, identifies the last year of funds availability under law that an appropriation account may incur new obligations. | YYYY | 4 digits |
| availabiltyTypeCode (Proposed/Future) | In appropriations accounts, identifies an unlimited period to incur new obligations; this is denoted by the letter "X" | Enumeration: availabilityTypeCodeItemType | 1 character |

# Derived DATA Act Elements

The DATA Act schema provides detailed data and aggregates that detail into summary level information. Below are a list of DATA Act elements which are considered summary-level and a description of how those values are derived from the detailed account transaction-level data.

|  |  |
| --- | --- |
| **Data Element Name** | **Aggregate values** |
| Appropriations Account | Summary based on the TAS/TAFS (i.e. 01X1234) |
| Amount of Budget Authority Appropriated | Calculated based on USSGL account balances, There are a number of USSGL accounts which make up this value including; Appropriated. |
| Obligated Amount | Calculated based on USSGL account balances and difference between opening and closing balances, Main USSGL accounts are 480100, 480200, 490100, 490200\*\* |
| Unobligated Amount | Calculated based on USSGL account balances, Main USSGL accounts are 445000, 451000, 461000 and 465000\*\* |
| Amount of other budgetary resources | Calculated based on USSGL account balances, including Contract, Borrowing, and Spending Authority from Offsetting Collections |
| Outlay | Calculated based on USSGL account balances and difference between opening and closing balances, Main USSGL accounts are 480200 and 490200\*\* |

\*\*Note that the USSGL accounts listed don't make up the entire population of possible USSGL accounts for those balances, but those will be the biggest accounts.

# Schema reference – Financial elements

## Financial DATA Act Elements

Element: accountingEntries

Proposed Type: complex

Source: Financial Conceptual model.pdf, Financial Macro Model.pdf

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** | **Example** |
| fiscalYear | Designates the fiscal year for which the data is being submitted. | Simple: stringItemType | 4 | 2014 |
| period | Designates the month for which the data is being submitted. This is a 2 digit number that starts with 01 for October and goes through 12 for September. | Simple: stringItemType | 1 digit | 6 |
| [USSGLentryHeader](#_Type:USSGLentryHeader) | - | Complex: USSGLentryHeaderComplexType | - | - |

### USSGLentryHeader

Element: USSGLentryHeader

Proposed Xml Type: complex

Source: Financial Conceptual model.pdf, Financial Macro Model.pdf

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** |
| [treasuryAccountingSymbol](#_Type:_TreasuryAccountSymbol) | Complex element representing the component Treasury Accounting Symbol. Refer to the complex type treasuryAccountingSymbol (linked at the left) for more details. | Complex: treasuryAccountingSymbolComplexType | - |
| [entryDetail](#_Type:USSGLentryDetail) | Complex element representing the entry detail for USSGL accounting entries. Refer to the complex type entryDetail (linked at the left) for more details. | Complex: entryDetailComplexType | - |
| obligatedAmount | Obligation means a legally binding agreement that will result in outlays, immediately or in the future. When you place an order, sign a contract, award a grant, purchase a service, or take other actions that require the Government to make payments to the public or from one Government account to another, you incur an obligation. It is a violation of the Antideficiency Act (31 U.S.C. 1341(a)) to involve the Federal Government in a contract or obligation for payment of money before an appropriation is made, unless authorized by law. This means you cannot incur obligations in a vacuum; you incur an obligation against budget authority in a Treasury account that belongs to your agency. It is a violation of the Antideficiency Act to incur an obligation in an amount greater than the amount available in the Treasury account that is available. This means that the account must have budget authority sufficient to cover the total of such obligations at the time the obligation is incurred. In addition, the obligation you incur must conform to other applicable provisions of law, and you must be able to support the amounts reported by the documentary evidence required by 31 U.S.C. 1501. Moreover, you are required to maintain certifications and records showing that the amounts have been obligated (31 U.S.C. 1108). Additional detail is provided in Circular A‐11. | Simple: amountItemType | Unbounded |
| unobligatedAmount | Unobligated balance means the cumulative amount of budget authority that remains available for obligation under law in unexpired accounts at a point in time. The term “expired balances available for adjustment only” refers to unobligated amounts in expired accounts.  Additional detail is provided in Circular A‐11. | Simple: amountItemType | Unbounded |
| budgetAuthorityAppropriated | A provision of law (not necessarily in an appropriations act) authorizing an account to incur obligations and to make outlays for a given purpose. Usually, but not always, an appropriation provides budget authority. | Simple: amountItemType | Unbounded |
| otherBudgetaryResources | New borrowing authority, contract authority, and spending authority from offsetting collections provided by Congress in an appropriations act or other legislation, or unobligated balances of budgetary resources made available in previous legislation, to incur obligations and to make outlays. | Simple: amountItemType | Unbounded |
| Outlays | Payments made to liquidate an obligation (other than the repayment of debt principal or other disbursements that are "means of financing" transactions). Outlays generally are equal to cash disbursements but also are recorded for cash-equivalent transactions, such as the issuance of debentures to pay insurance claims, and in a few cases are recorded on an accrual basis such as interest on public issues of the public debt. Outlays are the measure of Government spending. | Simple: amountItemType | Unbounded |
| appropriationAccount | The basic unit of an appropriation generally reflecting each unnumbered paragraph in an appropriation act. An appropriation account typically encompasses a number of activities or projects and may be subject to restrictions or conditions applicable to only the account, the appropriation act, titles within an appropriation act, other appropriation acts, or the government as a whole. An appropriations account is represented by a TAFS. | Simple: stringItemType | TBD |

#### entryDetail

Element: entryDetail

Proposed Xml Type: complex

Source: Financial Conceptual model.pdf, Financial Macro Model.pdf

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** |
| [account](#_Type:USSGLaccount)Number | Identifies the USSGL account. The USSGL account must be in the USSGL chart of accounts. | Complex: accountComplexType | - |
| Amount | This field contains the balance of the USSGL account. Each USSGL account on each row of the bulk file must have a balance. | Simple: amountItemType | Unbounded |
| debitCreditCode | Indicates whether the amount reported is debited or credited to the USSGL account | Enumeration: debitCreditCodeItemType | - |
| beginningEndIndicator | Indicates whether the balance or an USSGL account/attribute combination is at the start of the fiscal year or at the end of a period | Enumeration: beginningEndIndicatorItemType | - |
| programActivity | A specific activity or project as listed in the program and financing schedules of the annual budget of the United States Government. | Simple: stringItemType | TBD |

#### Account

Element: account

Proposed Xml Type: complex

Source: Financial Conceptual model.pdf, Financial Macro Model.pdf

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Element** | **Description** | **Type** | **Length** | **Example** |
| accountNumber |  | Simple: stringItemType | TBD | 101000 |
| [objectClass](#_Type:USSGLentryDetail) | Categories in a classification system that presents obligations by the items or services purchased by the Federal Government. Each specific object class is defined in OMB Circular A-11 Section 83.6. | Enumeration  objectClassComplexType | - | - |
| awardNumber | Award ID | Simple: stringItemType | TBD | FSA-5000000-14-0012 |
| accountDescription | The description of the account | Simple: stringItemType | TBD |  |

# Glossary

The following is a list of important terms and definitions.

**Common elements:** An element of the XML schema which are shared across various modules of the DATA Act schema.

**Complex type element** (complex type): An XML element that contains other elements and/or attributes.

**Element**: A block of text in an XML document made up of a start and end tag, and the content between the tags. Empty tags are also elements. For example, <price>$12.60</price> and <price/> are both elements.

**Schema**: A technology-neutral term for the definition of the structure of an XML document.

**XML**: XML stands for EXtensible Markup Language and is designed to describe data. XML is a software- and hardware-independent tool for carrying information.

# Appendix

## Supporting Meta-data Identified

Meta-data is descriptive data which creates context for the data it is describing. For example, an agency identifier is typically a number (e.g., 71) but the meta-data of a description (e.g., Department of Agriculture) provides the end user with an understanding of what “71” means.

* USSGL Chart of Accounts Descriptions
* Agency descriptions/names

## Version History

Version 0.1 – Public Release: Initial release of the draft DATA Act schema financial taxonomy

Version 0.2 – Public Release: Baseline release of DATA Act schema financial taxonomy.

* Updated DATA Act schema’s Treasury Accounting Symbol (TAS) to component TAS.
* Updated DATA Act schema to include an agency complex type consisting of an agency name and agency identifier and formalized folder structure for supporting future module releases.