Human Services Domain
Data Element Naming Conventions
and
Controlled Vocabulary

Human Services Domain
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1. Executive Summary

The Data Element Naming Conventions and Controlled Vocabulary document details the process of creating standardized data element names for use in the Human Services Domain. Standardizing data element names reduces ambiguity and provides context for reuse of data elements.

The document is intended to guide work groups during the naming process of new data elements for data exchanges. The responsibility for following the naming convention should be assigned to an individual of the work group. This individual should communicate with the Data Standards Coordinator during the design phase.

Data elements should have meaningful names. Data elements names consist of the following terms:

> **Object** – describes something of interest to the Human Services Domain community, e.g. Parent;
> **Property** – a characteristic of an Object Class, e.g. Address;
> **Representation** – describes the kind of data that an element carries, e.g. Text; and
> **Qualifier** – which precedes any of the other terms, e.g. Mailing

The appendix contains a controlled vocabulary of endorsed words categorized by the above terms. Each word in the controlled vocabulary is defined and cited with an authoritative source for the definition.

This document contains the following sections:

- Section 1 provides an introduction to naming data elements.
- Section 2 describes the naming convention, principles and rules, and includes examples.

A critical part of Data Governance is providing a standardized name and definition for data elements. Appendix A includes a template with instructions for constructing a data element name to facilitate the adoption of Human Services Domain Naming Convention and Controlled vocabulary.

2. Introduction

The development of an element name that conveys a business meaning is an important step in the creation of a new data element. Adhering to a data element naming convention enhances data standards definitions as well as information-sharing initiatives within the Human Services Domain community. Naming conventions are recommended to help insure that Human Services Domain will be successful in its role of supporting information exchange among its wide spectrum of stakeholders.

When assembling a data element naming convention, there are a number of issues to

consider.

- **Unique Identification** – Data element names are to be unique; therefore, the naming convention must ensure the unique identification of any item. If left ungoverned, data element naming may create an environment where the same name is used for data elements with slightly different meanings, while identical data elements may be assigned different names.

- **Semantics** – Data element names should convey some representation of the data element's meaning. A naming convention should describe how data element semantics are incorporated into assigned names. This may be as simple as providing guidelines as to what kinds of terms are used to assign a name, and what meanings those terms convey.

- **Syntactic** – The semantics of the naming components convey meanings as long as those components are presented in a way that relates ideas in a consistent and specified order. A naming convention should provide rules regarding the arrangement of parts within a name.

- **Lexical Considerations** – A naming convention should provide support for abbreviations, acronyms, length of terms, and use of synonyms through rules to reduce variability in data element names.

- **Controlled Vocabulary –** A controlled vocabulary reconciles all the various possible words that can be used to identify a data element and helps differentiate among all the possible meanings that can be attached to a data element.

This document provides a set of rules comprising a data element naming convention to be applied for data standards defined for the Human Services Domain. It is based on the ISO-11179-5 standard for data element naming.

2.1   Scope

This data element naming convention applies to all data elements in Human Services Domain to be exchanged. This includes logical names for entities and attributes in exchange content models, column names in flat-file record specifications, and XML tag names for both elements and types.

Although naming conventions may be constrained differently in different environments (e.g., a logical business name in a data model may not be the same as an XML tag), the differences between how data elements are named using this naming convention in different environments should be minimized.

2.2   Oversight

The Human Services Domain Steward is the authority responsible for endorsing the conventions in this document.

2.3   Registration

The Data Standards Registry provides a repository of data elements and supporting metadata among other functions. The conventions set out in this document will be followed as data elements are registered. The conventions can also be used to validate

the names of data elements in the Registry. As new data requirements are developed by workgroups, data elements should be named following the conventions in this document.

3 Human Services Domain Data Element Naming Convention

3.1 Uniqueness Principle

Data element names must be unique within the context of Human Services. Section 3.1.2 defines the rules associated with Human Services Domain naming convention.

3.1.1 Data Element Name Composition

- Following ISO-11179-5, all data element names will be composed of the following terms:

- **Object Class Term**. This is a "prime" word or phrase that describes something of interest to the Human Services Domain. The thing of interest is not a data element, but something that is described by a set of data elements. For instance, in the data element name **Person**FirstName, **Person** is an Object Class term. The Object Class term indicates how data elements are related together. For instance, all the data elements that are characteristics of **Person** have names that begin with the word "Person." No two Object Classes should be described using the same word or phrase. See Appendix B for a full list of currently endorsed Object Class terms.

- **Property Term**. A Property is a characteristic of an Object Class corresponding to a data element. A Property term may be composed of one or more words. For instance, in the data element name PersonFirst**Name**, the Object Class **Person** has the Property **Name**. The same Property terms may be used to describe properties belonging to more than one Object Class. See Appendix C for a full list of currently endorsed Property terms.

- **Representation Term**. A Representation describes the kind of data that a data element carries. Often this simply describes the data type, e.g., text, date, numeric, Boolean. However, Human Services Domain has a more complex Representation taxonomy that communicates even more information, such as "Code." A Representation term can be composed of one or more words. Representation terms are globally unique for the Child Support Enforcement community, even across different environments. In the example PersonFirstName**Indicator**, **Indicator**, is the Representation term. See Appendix D for a full list of currently endorsed Representation terms.

- **Qualifier (modifier)**. Any of the above terms (Object Class, Property, or Representation) can be further qualified if necessary. There may be subtypes of Object Classes, or there may be a need to distinguish one Property from another, or distinguish very closely related Representation terms. Qualifiers can help in all these cases. However, unnecessary use of Qualifiers is to be discouraged since it lengthens the name of a data element without necessarily adding any benefit. An example of a reasonable use of a Qualifier would be "**First**" in the

data element name Person**First**Name. See Appendix E for a full list of current Qualifier terms.
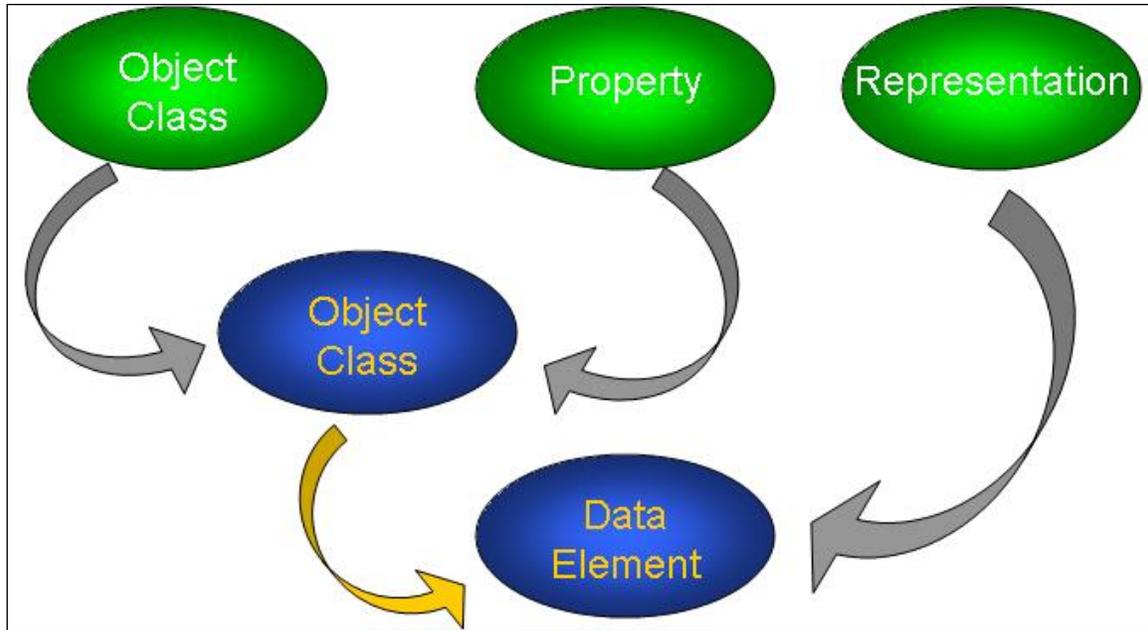
Figure 1 - Graphical depiction of how a name is constructed

Lists of standard words (controlled vocabulary) for Object Class, Property and Qualifiers will be stored in the Data Standards Registry enabling an individual or process to take a data element name and decompose it into its component terms.

3.1.2 Data Element Name Terms Sequence

Qualifiers are associated with the Term that directly follows the qualifier. Since the Domain of the Human Services Domain Data Standards Registry is within the context of the English language, the qualifiers associated with Terms should be as natural as adjectives preceding nouns in the English language.

Terms will be arranged in a data element name as follows:

[Qualifier] Object Class [Qualifier] Property [Qualifier] Representation

The square brackets indicate that the use of a qualifier is optional. Unnecessary qualifiers may be eliminated from an element name as long as the data element's name conveys meaning and is unambiguous. This will reduce the length of the name.

- As an example, consider a person's first name:

Person First Name Text

In this example, *Person* is the Object Class term, *First* is the qualifier, *First Name* is the Property term, and *Text* is the Representation term. Since the use of the qualifier term *First* is unnecessary, it may be removed. This follows the redundancy best practice: redundant words appearing consecutively may be eliminated or modified if not needed to distinguish it from other data element names (e.g., *Loan Interest Amount Amount*).

- Therefore, our element name now becomes:

Person First Name Text

Next in our example *Text* is the Representation term for *First Name*. There is no added meaning conveyed by including *Text* in the element name. This is because through the semantics of associated words, one can determine that in the English language a name will be a textual representation. Therefore, *Text* may be removed. (Note: *Name* could be the Representation term instead of *Text*; however for our example, *Text* was chosen to demonstrate this removal step of the naming procedure.) There are no qualifiers, only the class and Property term.

- The resulting element name clearly identifies the data element:

Person First Name

In our example, *Person First Name,* there are only two term categories used to clearly identify/name this data element: Object Class and Property, respectively. Therefore, an element name must be comprised of no less than two terms, each from different categories, not including Qualifiers.

The following diagram (Figure 2) depicts how a name is constructed using the terms and sequence described above. The data element's name **Person First Name** is shown by example.

Person
Address
Obligation
Payment
Case
Contact
Case Member

Object Class

Person

County
Country
Custodial Party
Deduction
Denial
Disbursement
Document
Eligibility
Entitlement
Error
Expense
Expiration
Family Violence
Fax
FIPS
First Name
Form
Foster Care

Property

First Name

Amount
Code
Count
Date
Identifier
Indicator
Name
Number
Quarter
Quantity
Rate
Text
Year

Representation
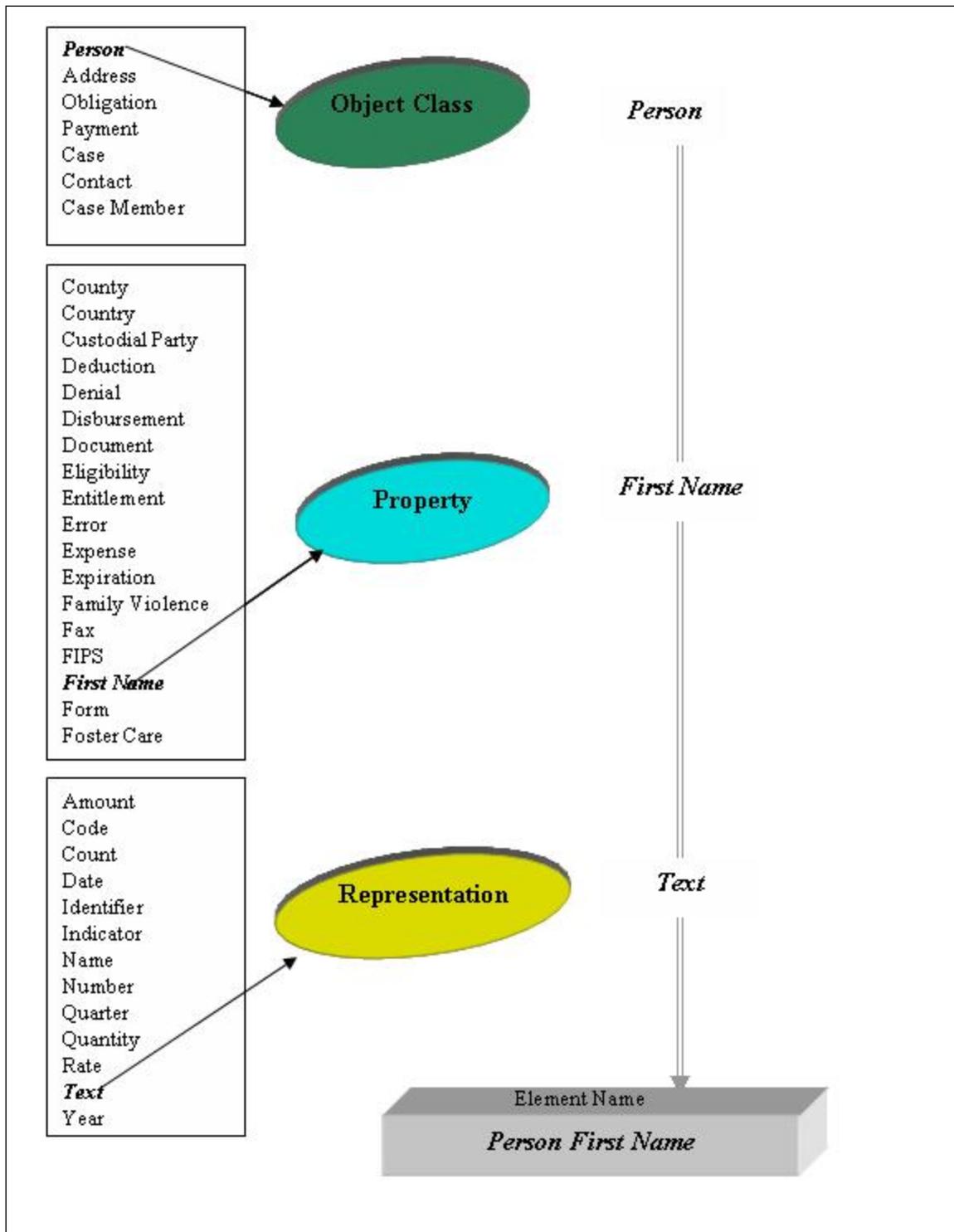
Text

Element Name
Person First Name

Figure 2 - Unique Name Construction Using Accepted Terms - Object Class and Property

3.1.3 Naming Rules

1) Object Classes represent specific items of interest.

   a. The Object Class term will occupy the first (leftmost) position in the name unless preceded by a qualifier term.

   b. Each data element name has at most a single Object Class term.

2) A Property term is derived from the properties associated with each Object Class and represents a single characteristic of that Object Class.

   a. Each data element name has at most a single Property name.

   b. The Property term occupies the second position in the name, unless preceded by a qualifier term.

3) The Representation term occupies the last position in the name.

   a. The Representation type of the data is described by this term.

   b. Each name has at most a single Representation term.

   c. The Representation term occupies the last (rightmost) position in the name.

4) A name may have zero or more qualifier terms and may be added to ensure uniqueness within a specific context.

   a. Qualifier terms precede the term it modifies.

5) Nouns are used in singular form only.

6) Verbs are in the present tense.

7) All words are in mixed-case.

8) Abbreviations and acronyms from the approved list are allowed.

9) Minimal Form will be used to ensure concise and clear names.

10) A name must consist of at least two terms from different categories of the set {Object Class, Property, and Representation}.

11) The use of acronyms is limited to at most one per element name.

   a. When an acronym contains an Object Class, Property or Representation, it is unnecessary to include the term itself unless uniqueness value is added (e.g., SSN Number is considered redundant).

12) An acronym may be an element name if it meets the naming requirements.

3.2   Controlled Vocabulary

Terms used for data element names are provided in a controlled vocabulary. Each of these terms is administered following the data standards governance process.

The governance process is implemented to ensure the following:

- A rich and accurate vocabulary

- Appropriate categorization of terms

- Proper placement of terms within the vocabulary taxonomy

3.2.1 Vocabulary Rules

1) An Object Class term is a real world thing or abstraction, or an idea.

   a. Terms in this category should not appear in any other category.

   b. The use of a subclass infers the super class; i.e., Child infers Person.

2) A Property term is an attribute or characteristic that is common to all instances of an object class term.

   a. This term may be a composition of terms from the set of property terms, set of representation terms, and/or set of qualifier terms. The composed term, or complex term, must be discrete, complete, and semantically correct.

3) A Representation term should describe the form of representation of the data.

   a. This term is limited to a single word.

   b. Terms in this category may only appear in the property category if, and only if, used to compose a complex Property term.

4) A qualifier term should disambiguate or distinguish terms from the other categories.

   a. This term should be limited to a singleton.

   b. Terms in this category may appear in the Property category as a singleton or in a complex term.

5) Terms that appear in the Vocabulary may not be modified through the addition or removal of prefix or suffix.

3.3   Acronyms

Some terms are better known by their acronyms than their full names. In other cases, acronyms are used because they represent easy-to-use shorthand that reduces unnecessary oral or written verbosity. Some caveats of acronym use include the following.

- The same acronym may be used for two different terms.

- New staff, or staff not familiar with a particular subject, may not understand an acronym.

- Acronyms may be invented for rarely used terms that only a few may understand.

- Acronyms may be invented unnecessarily.

Only the acronyms (and their corresponding expansions) listed in the Data Standards Registry may be used in data element names. If a new acronym is required, it must be proposed to the Data Standards Steering committee for insertion into the Data Standards Registry. A data element name may contain one acronym at most.

3.4 Abbreviations

Because some terms are very long, this might lead to relatively long names. In some instances, a data element name could become greater than the length allowed. For instance, some databases restrict the length of a column name to 32 characters or less. This suggests allowing the use of abbreviations, provided the following guidelines are maintained.

1. If abbreviations are to be used, then a key requirement is that the same word has only one abbreviation.

2. If a well-known abbreviation for the word exists, then it should be used, e.g., "Amt" for "Amount."

3. If there is no well-known abbreviation, then vowels should be removed from the word, except for the first letter of the word. If the abbreviation is still not short enough, then remove those consonants that provide the least indication of what the word might be.

A list of allowable abbreviations and their expansions will be maintained in the Data Standards Registry controlled vocabulary, and only these abbreviations may be used in data element names. If a new abbreviation is required, it must be proposed to the Human Services Domain Steward for insertion into the Data Standards Registry.

3.5 General Conventions for Terms

There are a number of general conventions for terms as follows.

1. Plural forms shall not be used unless the plural form is the standard business term.

2. Possessive forms will not be used. They will be implicit, or the words shall be rearranged to make them unnecessary.

3. Punctuation will not be used except as a separator (see 2.7 Separators).

4. Articles ("a", "an", "the") will not be used.

5. Conjunctions ("and", "or", "but") will not be used unless part of a standard business term.

6. Verbs will not be used unless part of a standard business term.

7. Prepositions will not be used unless part of a standard business term.

3.6 Length

The length of a data element name should not exceed 32 characters.

3.7 Separators

Separators are characters used to separate terms within a data element name. Some environments allow case-sensitivity to indicate term separation using "CamelCase" words (where the beginning of each term is indicated using upper case letters, while the rest of the term uses lower case letters). In logical business names, each term is separated by a space. In other cases, especially where mixed case may not be used (e.g., database column names), separators may be used. A separator should be used only to separate words and should not have any semantic meaning.

3.8 Synonyms and Homonyms

Even if well-formed logical data element names are constructed according to the conventions set out in this document, it is still possible that synonyms may be used by various business users. This is particularly possible in the Human Services Domain community given the number of organizations involved. In addition, technical data element names (e.g., database column names) may exist in non-standard forms in legacy applications. The Data Standards Registry will maintain a list of synonyms for each data element. Data element names that are homonyms are not permitted.

3.9 Data Element Names in Different Environments

Data elements exist in many different environments. In the pure business environment they are logical data elements. In a physical database, they are column names, while in XML they may be represented by tag names. Each of these different environments may have additional constraints that affect data element names. These constraints should not affect the conventions laid out in this document, but they may add to these conventions. The constraints must be listed in the appropriate standard for each of these environments.

For questions or comments about this document, contact the Human Services Domain POC at interoperability@acf.hhs.gov.

Appendix A: Naming Convention Template Form

(If applicable) **Data Field Name:** _____

Description:_____

_____

_____

Key Description Terms: _____

(Optional) **Core Element:** _____ _____ _____

Create Element Name:
Qualifier (opt)   Object Class   Qualifier (opt)   Property   Qualifier (opt)
Representation

_____ _____ _____ _____ _____ _____

Instructions
1) If the Element being created is an existing Data Field, enter its name in the *Data Field Name*. If the Element being created is a field form a form, enter the label name in the *Data Field Name*
2) Enter the Human Services Domain description of the Element or Field into the lines provided for "*Description*".
3) Select the key terms from the *Data Field Name* and the *Description*. Enter these terms into "*Key Description Terms*".
4) If the Element being created will use a Core Data Element, enter the name of the Core Data Element into "*Core Element*".
5) From the Core Element, identify the terms (Object, Property, or Representation) and enter them into the appropriate spaces in "*Create Element Name*".
6) Using terms from the description and name, identify related terms in the Controlled Vocabulary which can be placed in the blank fields of "*Create Element Name*" to disambiguate the Element name which is being created.
7) Verify the created name:
    i.   Does it follow the Naming Convention Rules?
    ii.   Does it convey the meaning of the Element?
    iii.   Does it disambiguate the Element?
    iv.   Are any new terms used that need to be proposed for acceptance into the Controlled Vocabulary?

Appendix B: Controlled Vocabulary of Object Class Terms Used in Human Services Domain

Object Class Term	Definition	Authoritative Source
Address		
Agency	A single organizational unit that has the responsibility for administration or supervising.	CFR § 301.0 (paraphrase from multiple occurrences)
Agent		
Attorney		
Case		
Child	A minor.	CFR § 301.1
Child Support	A judgment, decree, or order, whether temporary, final or subject to modification, issued by a court of competent jurisdiction, tribunal or an administrative agency for the support and maintenance of a child, including a child who has attained the age of majority under the law of the issuing jurisdiction, or of the parent with whom the child is living, which provides for monetary support, health care, arrearages, or reimbursement, and which may include related costs and fees, interest and penalties, income withholding, attorneys' fees, and other relief.	CFR § 309.05
Claimant		
Court		
Electronic Income Withholding Order		
Employee		
Employer		
Father		
Fees		
Income Withholding		
Individual		
Law		
Medical Support		
Member		
Mother		

Object Class Term	Definition	Authoritative Source
Obligation	Noncustodial parent's legal obligation to support his or her dependent children, including paternity determination when necessary.	CFR § 303.20.c.2
Obligee		
Obligor		
Order		
Organization		
Parent	Any custodial parent or noncustodial parent (or for purposes of requesting a review, any other person or entity who may have standing to request an adjustment to the child support order).	CFR § 303.8.a
Paternity		
Person		
Petitioner		
Respondent		
Support		
Grant		

Appendix C: Controlled Vocabulary of Property Terms Used in Human Services Domain

Property Term	Definition	Authoritative Source
Areas		
Birth Date		
City		
Contact		
Country		
County		
FEIN		
License		
Postal		
Social Security Number		
State		
Telephone (Number)		
Tribunal		
Zip Code		

Appendix D: Controlled Vocabulary of Representation Terms Used in Human Services Domain

Representation Term	Definition	Authoritative Source
Amount	The total number or quantity.	Merriam-Webster
Code	A system of signal or symbols for communication.	Merriam-Webster
Count	The total number of individual things in a given unit or sample obtained by counting.	Merriam-Webster
Date	A statement of the time at which an event occurs.	Merriam-Webster
Frequency	The number of repetitions of a periodic process in a unit of time	Merriam-Webster
Identifier	A unique sequence of characters that unambiguously referrers to a resource, object, program, value, entity, order, or case.	Dublin Core
Indicator	A condition capable of having one or two values.	
Name	A word or phrase that constitutes the distinctive designation of a person or thing.	Merriam-Webster
Number	A numeral or combination of numerals or other symbols used to identify or designate.	Merriam-Webster
Quantity	A non-monetary numeric value (includes average, balance, deviation, index, level, mean, median, and mode).	Dublin Core
Rate	A percentage or quantity used as a multiplier in a calculation.	Princeton Dictionary
Text	An unformatted character string, generally in the form of words.	Convention
Year	A calendar year specified usually by a number	Merriam-Webster

Appendix E: Controlled Vocabulary of Qualifier Terms Used in Human Services Domain

Qualifier Term	Definition	Authoritative Source
Address		
Approval		
Complete		
Custodial		
Driver		
Extension		
First		
Home		
International		
Last		
Last Known		
Mailing		
Middle		
Noncustodial		
Tribunal		