

NIH Research & Development Contracts Conceptual Data Model v1.0

Status of This Memo

This document specifies a standard for the National Institutes of Health (NIH) and requests discussion and suggestions for improvements. Distribution of this memo is unlimited.

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1 Executive Summary

The Research and Development (R&D) Contract Conceptual Data Model (CDM) was developed to support the need for better organization of information assets and reporting on the research efforts conducted and supported at National Institutes of Health (NIH). This document identifies the major R&D Contracts data objects and critical business rules. The result of implementing these objects and rules will be flexible information systems that more fully support business needs. The goal of this document is to demonstrate how the identified objects and business rules will mitigate current data quality issues as well as business and reporting challenges. The R&D Contracts CDM considers the NIH's business goals and sets forth concepts that will unify, codify, and formalize the R&D data generated by the various Institutes and Centers (ICs).

Once the overall R&D Contract business processes were documented and understood, this data model was created to standardize data that can be uniformly summarized for tracking and reporting purposes. The model presented in this document is the result of extensive documentation review and numerous discussion sessions with NIH Subject Matter Experts (SMEs) including procurement and extramural specialists. Adherence to the rules identified within this model will result in clearer representation of contracts supporting research.

Several new concepts are presented in this document that allow the R&D Contracts CDM to address ongoing and emerging business needs:

- A **Research Concept** is the first statement of the need for work in a particular area of science. This CDM provides the ability to track the creation and documentation of a **Research Concept**, as well as its potential subsequent development into a **Research Initiative**.
- Once a **Research Initiative** has been defined, the R&D Contract CDM calls for the **early indication of research**. The Office of the IT Architect recommends proactive indication of research early in the business processes, subsequently reducing the current challenges associated with downstream reporting and data quality issues. By the introduction of the object "**Type of Federal Action**," these issues are mitigated instituting the business rules to designate the research to acquire products or services (**contracts**) or to provide financial assistance in support of research (**grants** or **cooperative agreements**).
- "**Acquisition**" is an umbrella term used to manage data from the time a **Research Initiative** is approved until **Award is executed**. It denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc.
- Several concepts have been identified that have potential for broad applicability across NIH:
 - There is a general need for the **Grouping** of various objects together so that formal or informal management of these objects can be achieved. For example, if six contracts are linked and a completion date is extended on one, then should the completion dates be changed on the others? Having these six contracts grouped together would allow a Contracting Officer to perform work more efficiently.

This object is part of the Grants Conceptual Data Model and has been endorsed by both procurement and grants SMEs with whom we have consulted.

- Another area of general relevance deals with **Correspondence**—where there is an exchange of information about an important object (Acquisition, Proposal, Contract) and the exchange must legally be retained for posterity. Capturing these communications facilitates the distribution of questions about the contract and the resulting responses to all of the parties interested in submitting proposals against the solicitation.
- The vast majority of NIH research is conducted through the use of Grants and R&D Contracts. In the development and refinement of the R&D Contracts data model, it was noted that there are similarities between the Grants processes and the R&D contracts processes. Similar objects and business rules are used, the peer review processes are comparable, and there is a shared need to link acquisitions, proposals and/or contracts supporting research efforts. By leveraging identified and approved objects and rules from the Grants CDM, this model hopes to minimize the inconsistencies in data terminology across those common objects. In addition, several areas were targeted for enhancement in the R&D Contract CDM and any further clarification within this document shall apply to both models. In particular, the **Research Concept/Research Initiative** and **Peer Review** sections have been more thoroughly developed.
- This model also continues to call for the use of a common approach for assigning a **Role** to a **Person** based on HL-7 standards. **Roles** are used to assign permissions to a **Person** as they interact within the business processes.

It is important to recognize that far-reaching change requires a comprehensive approach to educating stakeholders, understanding their needs and involving their participation to successfully adopt these concepts within the NIH.

2 Introduction to R&D Contracts CDM

The Research and Development (R&D) Contracts Conceptual Data Model (CDM) provides a description of the key data entities and relationships that support the National Institutes of Health (NIH's) Research and Development Contracts business processes.

Research and Development Contracts are those contracts that are in direct support of research being conducted; and usually are peer reviewed for their scientific content prior to being awarded. The R&D Contracts are typically used to acquire products or services that are specific for research or in support of research, such as lab equipment for research, statistical and data coordinating centers, acquisition of human or animal subjects, and maintenance of specimen repositories. R&D Contracts (and this model) do not include grants and cooperative agreements. The R&D Contracts CDM defines the information requirements of R&D Contracts business processes. The R&D Contracts CDM facilitates sharing of R&D Contracts information across ICs and other functional areas. The business owner of the R&D Contracts is the Office of Acquisition and Logistics Management (OALM).

The Research & Development Contracts and Inter-/Intra- Agency Reporting Working Group (R&D C&IWG), a trans-NIH working group sponsored by the NIH Administrative Data Working Group, has compiled multiple descriptions of R&D Contracts used in different regulations, sectors (e.g., government, business) and statutorily mandated reports. Therefore, this document will not attempt to define an R&D Contract at this time.

2.1 Purpose of the R&D Contracts CDM

The purpose of the R&D Contracts CDM is to provide a conceptual view of the key data entities and relationships that support NIH's acquisition of products and/or services in support of scientific research.

The R&D Contracts CDM expands on the Enterprise CDM¹ and complements the Grants CDM² while focusing more narrowly on information directly related to R&D Contracts and the administration of such contracts. NIH needs a CDM specific to R&D Contracts for a number of reasons:

- To provide a foundation for supporting new ways of characterizing Research and Development Contracts and related reporting requirements in the future.
- To provide a common vocabulary for the discussion of key enterprise data elements used for R&D Contracts to allow for more consistent representation of requirements and design of information systems.
- To provide a consistent basis for the development of the next generation of R&D Contracts information systems within NIH.

¹ NIH Enterprise CDM—NRFC0025, version 1.0, January 2007-
<http://enterprisearchitecture.nih.gov/.../NRFC0025.pdf>

² NIH Grants CDM – NIHRFC0026, version 1.0, April 2008 -
<http://enterprisearchitecture.nih.gov/.../NIHRFC0026NIHGrantsConceptualDataModel.pdf>

- To effectively and consistently manage information about R&D Contracts in the future, and to provide an organizing framework for further R&D Contracts Information Architecture activities.
- To document rules and relationships between the departments.

2.2 Intended Audience

This standard is available to the entire NIH community.

2.3 Scope of Standard

This R&D Contracts CDM is an NIH standard for all projects subject to alignment with the NIH Enterprise Architecture (EA) that involve R&D Contracts. This document is intended to provide a high level conceptual view of key data entities required to support NIH's R&D Contracts business processes. In practical terms, this means that data architecture artifacts such as data dictionary, metamodels, etc. developed related to R&D Contracts business processes should:

- Provide a mapping of the artifact to the R&D Contracts CDM
- Align the naming of data elements with those used in the R&D Contracts CDM

The model can also improve quality of design and save time in the development of data models and database designs in support of specific solutions. Additional R&D Contracts data architecture artifacts may be developed by the data architecture teams within the ICs due to their unique business rules and in support of major solution implementation efforts.

Further, solution development efforts subject to alignment with the NIH EA should:

- Develop data models that reflect the explicit and implicit business rules as gleaned from the R&D Contracts CDM.
- Develop data models and map them to the entities defined as part of the R&D Contracts CDM.
- Provide a mapping of the data exchanged with other information systems to the R&D Contracts CDM.

2.4 R&D Contracts CDM Inputs

The R&D Contracts CDM was developed based on a number of key inputs:

- R&D Contracts Business Model (Current State)—OITA has developed a set of current-state business process models for Research and Development Contracts in cooperation with the contracting, budget, and program subject matter experts from across the NIH. These models provided the basis for identifying the initial critical data elements that support information exchange for R&D Contracts. Fifty four (54) Subject Matter Experts (SMEs) representing 12 Institutes and Centers (ICs) participated and validated detailed business process models during this five-month period. One dimension of the business process modeling effort was to identify which data and artifacts support the R&D Contracts business area and to record the information that the business keeps about itself and the various forms in which it is displayed and manipulated.
- Discussions with key stakeholders—The business rules and context for the entities and relationships were also vetted with business stakeholders to ensure the accuracy of the current and future direction of the R&D Contracts processes and future concepts. Data

model working sessions were held with individual Subject Matter Experts (SMEs) and two data model validation workshops were held which involved 15 IT and Business SMEs.

- Documentation Reviewed—OITA also reviewed and analyzed a sample R&D Contract. This sample was extensive and included over 65 documents that were required in support of the administration and management of an R&D Contract.
- Federal and Departmental Regulations—The regulations that were referenced include the Federal Acquisition Regulations (FAR), the Code of Federal Register (CFR) and Manual Chapters 6315-1, Health and Human Services Acquisition Regulations (HHSAR).

The R&D Contracts CDM inherits all the applicable and related entities, attributes and relationships from the NIH Enterprise Conceptual Data Model standard (NRFC 0025/STD0012) and the Grants Conceptual Data Model standard (NIHRFC0026). By not including all related and inherited entities, attributes and relationships in this model, the R&D Contracts CDM is able to focus exclusively on the R&D Contracts business area. This allows for the business area specific entities, attributes and relationships to be captured and easily understood. The R&D Contracts CDM does not address the requirements of entities, attributes, and relationships to be mandatory and/or optional as these are dependent on the business process that uses these rules. For example, the model identifies the rule that it is valid to have zero proposals to exist against a solicitation (i.e., no Offeror responded to a solicitation). However, the initiation of the peer review process requires one or more proposals.

All entities and attributes that are specific to a focus area (the topics into which the CDM has been divided for clarity) have been presented in a tabular form in the document. A readable version of the comprehensive R&D Contracts conceptual data model (ORM version) has been presented in Appendix A – Comprehensive R&D Contracts CDM – ORM Notation. The table structure in an ER diagram is presented in Appendix B – Comprehensive R&D Contracts CDM – ERD Notation. An overview of the NIH Information Architecture is included in Appendix C. An explanation for reading and evaluating the ORM model and sentences is provided in Appendix D – Data Modeling Tutorial. An entire glossary of all entities and attributes and the areas where they are used is listed in Appendix E – Glossary of Entities and Attributes used in R&D Contracts CDM.

2.5 Key R&D Contracts CDM Entities and Structures

There are a few key concepts associated with the R&D Contracts CDM that are integral to providing the flexibility that will be needed by NIH in its management of contracts in the future.

The definitions of the following terms may differ slightly from current common usage at NIH or may be somewhat limited. These deviations must be addressed and precise definitions will be needed to ensure that each object has a single, clear meaning within the context of the CDM or to address requirements that will allow for more flexibility in information systems and/or improved reporting.

These core elements of the model are summarized in this section and are useful in understanding the remaining sections of this document. Some of the key entities represented in the model include:

- *Research Concept* — Represents the earliest planning stage of a research idea based on an identified scientific need. This may have limited supporting documentation.
- *Research Initiative* – Constitutes the formal artifacts of research concepts that announce and stimulate research in high priority or high opportunity areas of science. This also specifies the approach and initial approval for performing the science.
- *Type of Federal Action* - An action performed to determine how the research initiative would be supported. This designation is for the research initiative to acquire services by a contract or provide assistance by a grant.
- *Acquisition* — An umbrella term that denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc.
- *Proposal*— Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed.
- *Contract*— An award instrument establishing a binding legal procurement relationship between NIH and an Offeror obligating the latter to furnish a product or service defined in detail by NIH.

The R&D Contracts CDM also addresses a number of ongoing and emerging business needs which includes:

- linking acquisitions, proposals and/or contracts supporting a single or related research effort;
- defining rules for managing related acquisitions, proposals and/or contracts;
- the ability to manage all the correspondence involved in an R&D Contract; and
- the categorization of contracts as research at the beginning of the business process to drive rules for classification in both the grant and acquisition communities to support reporting.

2.6 Assumptions

The following assumptions have been made in the development of the R&D Contracts CDM:

1. The CDM does not contain any Interagency Agreement data elements
2. This model contains overlaps between the R&D Contract and the Contract objects, but the primary focus has been on the R&D Contract and its applicable business rules.
3. The Research Initiative object has been structured to apply to several disciplines of scientific research such as biomedical, behavioral, etc.
4. The Research Initiative object has been modeled to include multiple financial methods to support the desired scientific research
5. The Acquisition object contains peer review fact types which are specific to R&D Contracts

6. The Contract object is generalized since there are no specific R&D Contract business rules that have been identified

2.7 Limitations of R&D Contracts CDM

The scope of this standard is focused on the high-level conceptual view of the data entities and their key relationships in support of the management of R&D Contracts. The model addresses how R&D Contracts support research projects. The scope of the R&D Contracts CDM is narrow in focus in that it addresses only the research and development and peer review area of the contracting business process. However, most of the objects with minimal changes to the business rules can be adapted to the overall NIH acquisition process. The current model also does not address the data objects and rules related to Inter-Agency agreements.

Detailed descriptions and development of R&D Contracts – logical and physical data models – are left for subsequent data architecture efforts or specific implementation efforts. It is recognized that this model represents a subset of the data entities required to support NIH R&D Contracts business processes; and that most follow-on architecture and implementation efforts will need to create additional data entities that are not addressed in this version of the CDM.

3 Research & Development Contracts CDM

This section describes the R&D Contracts CDM in detail, including definitions of all the Entities, Key Attributes and Relationships that comprise the model. The CDM has been decomposed into the following focus areas to provide greater clarity:

1. Organization, Person and Roles
2. Research Concept & Research Initiative
3. Acquisition
4. Proposal
5. Peer Review
6. Contract
7. Overarching Concepts – Correspondence and Grouping

A subsection for each of these focus areas presents an Object Role Model (ORM) model for the area, a definition for each entity, and attributes, and a sentence about relationships amongst the entities and/or attributes. The constraint on each relationship is abbreviated as 1:1 (one-to-one), M:1 (many-to-one), 1:M (one-to-many), or M:M (many-to-many) when the sentence is read from left to right.

Critical objects relevant to the R&D CDM have been bolded in each introductory section.

A complete list of entities and attributes has been defined in Appendix E - Glossary of Entities and Attributes in the R&D Contracts CDM.

3.1 ORGANIZATION, PERSON AND ROLE

3.1.1 Introduction

This section describes the structure that is used to manage organizations and people and lists the roles played by a person in relation to high-level objects. The effective management of information about the roles individuals and organizations play in the life cycle of an R&D Contract is essential to meeting NIH's business needs.

An individual **Person** can play multiple **Roles**, such as Contracting Officer and/or Contract Specialist depending on the institute, type and size of the R&D Contract, and timeline of the R&D Contract, etc. The role of a Contracting Officer Technical Representative (COTR) was previously known as Project Officer, Program Officer or Program Official depending on the NIH Institute. Depending upon the **Roles** assigned by an **Organization**, a **Person** can be granted specific permissions and responsibilities.

This model allows for continued flexibility and expansion of the number of roles that NIH manages about the R&D Contracts business area, which allows for progress of business processes over time. By allowing for many roles in the research activities to be tracked, NIH will be able to understand the history of the persons involved, such as principal investigator, etc.

3.1.2 Organization, Person and Role—Data Entities and Attributes

Table 1 shows the main objects that have been defined as part of the Organization, Person and Roles. These are the high-level objects that represent the relationships between Party, Person and Organization and the Roles they play in the R&D Contracts business area.

All of these entities have been defined as part of the R&D Contracts CDM as related to the Organization, Person and Roles. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard.)
- *Attribute Name*: The name used to refer to a key attribute. (*Italicized* within this standard.)
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH whenever possible.
- *Source*: The point of origin for the definitions identified within this standard.

Table 1—Party and Organization—CDM Entities and Attributes

| # | Name | Definition | Source |
|---|----------------------------|---|--|
| 1 | Party | Information about people, organizations and other actors in NIH processes, and their roles. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 2 | <i>Party ID</i> | <i>A unique identifier of a Party.</i> | <i>NIH Enterprise Conceptual Data Model NRFC0025/STD0012</i> |
| 3 | <i>Party Name</i> | <i>The name of party (organization or person)</i> | <i>Proposed by The Office of the Architect</i> |
| 4 | <i>Address</i> | <i>The professional address of the party (organization or person)</i> | <i>Proposed by The Office of the Architect</i> |
| 5 | Organization | A formal grouping of people and/or business units coordinated to perform a specific purpose or obtain a specified objective. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 6 | <i>Legal Business Name</i> | The label by which an organization is known officially | <i>NIH Enterprise Conceptual Data Model NRFC0025/STD0012</i> |
| 7 | <i>DUNS Number</i> | <i>The DUNS number is a unique nine-digit number assigned by Dun and Bradstreet Information Services. It is recognized as the universal standard for identifying and keeping track of more than 92 million businesses worldwide. This is also known as Data Universal Numbering System (DUNS)</i> | <i>NIH Research Portfolio Online Reporting Tool (RePORT) http://report.nih.gov/glossary.aspx?filter=P</i> |

| # | Name | Definition | Source |
|----|---|---|---|
| 8 | <i>NAICS Code</i> | <i>A six digit code that defines and groups establishments into a set of industry categories according to their primary economic activities. It facilitates the collection, calculation, presentation and analysis of statistical data by industries, which are standardized between USA, Canada and Mexico. This is also known as the North American Industry Classification System (NAICS).</i> | <i>Proposed by The Office of the Architect</i> |
| 9 | <i>Taxpayer Identification Number (TIN)</i> | <i>The number required by the Internal Revenue Service (IRS) to be used by the Offeror in reporting income tax and other business activities. The TIN may be either an Employee Identification Number or a Social Security Number</i> | <i>Proposed by The Office of the Architect</i> |
| 10 | Person | Any individual of interest to the NIH for whom the NIH maintains information. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 11 | <i>Professional Name</i> | <i>The specific word or term by which a person is known in an organization</i> | <i>Proposed by The Office of the Architect</i> |
| 12 | <i>Title</i> | <i>The name given to an individual in an organization that signifies rank, office or function</i> | <i>Proposed by The Office of the Architect</i> |

Table 2 shows a representative set of defined roles within the R&D Contracts business area and relationships with the objects. We have provided an example of how to read these constraints in English and also provided the technical rules for the set of known and allowable roles that can interact with the object.

Table 2—Roles and Organization—Allowable Roles associated with Objects

| # | Object | Constraint | Allowed Role(s) | Role Object |
|---|---|------------|--|-------------|
| 1 | Research Initiative is approved by Person playing the Role. | | | |
| | Research Initiative | M:1 | Director | Person |
| | Rule: Research Initiative is approved by one Person playing the role. | | | |
| 2 | Acquisition has Person playing the Role. | | | |
| | Acquisition | M:1 | Contracting Officer; Contract Specialist; Contracting Officer Technical Representative (Project Officer/ Program Officer/ Program Official) | Person |
| | Rule: Acquisition has one Person playing the Role. All roles must be played. Person cannot play more than one role. | | | |
| 3 | Proposal has Person playing the Role. | | | |
| | Proposal | M:M | Principal Investigator | Person |
| | Rule: Proposal has many Persons playing the Role. | | | |

| | | | | |
|---|--|-----|--|--------|
| 4 | Person is playing Role at Scientific Review Group Meeting. | | | |
| | Scientific Review Group Meeting | 1:M | Chairperson, Member, Scientific Review Officer, Contracting Officer, Contract Specialist, Contracting Officer Technical Representative (Project Officer, Program Officer, Program Official), Other | Person |
| | Rules: Person plays only one Role at Scientific Review Group Meeting. Not all roles need to be played at a meeting. In order to score, person must be in attendance at SRG Meeting with Role of "Member" or "Chairperson." | | | |
| 5 | Person playing Role certifies meeting minutes for Scientific Review Group Meeting. | | | |
| | Scientific Review Group Meeting | 1:M | Chairperson, Scientific Review Officer | Person |
| | Rules: One Person playing Role certifies meeting minutes for Scientific Review Group Meeting. Both roles must certify minutes. | | | |

Table 3 shows the sample organizations and their definitions and Table 4 provides the sample definitions for the roles that have been allowed in this model at this time.

Table 3—Organization—CDM Entities

| # | Name | Definition | Source |
|---|--------------------------------------|---|---|
| 1 | External Organization | A formal grouping of people and/or business units coordinated to perform a specific purpose that is outside of NIH purview. | Proposed by The Office of the Architect |
| 2 | Offeror | An organization responding to a request for proposal | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 3 | NIH Organization | Federal government agency that conducts and supports biomedical and behavioral research to create fundamental knowledge of living systems and reduce the burden of illness and disability | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 4 | Advisory Council | Chartered NIH institute advisory committee that performs second-level peer review for grants, may perform second-level peer review for R&D contracts, makes funding and policy recommendations, and helps develop research agendas. Advisory Board is interchangeably used with Advisory Council. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |
| 5 | Scientific Review Group (SRG) | A group of primarily non-governmental experts qualified by training and experience in particular scientific or technical fields, or as authorities knowledgeable in the various disciplines and fields related to the scientific areas under review, to give expert advice on the scientific and technical merits of a grant application, R&D contract proposal, or research initiative. Conducts the first round review for a grant application or R&D contract proposal, and usually conducts the second round review for an R&D contract proposal. | NIH Manual Chapter 6315-1 (amended) |

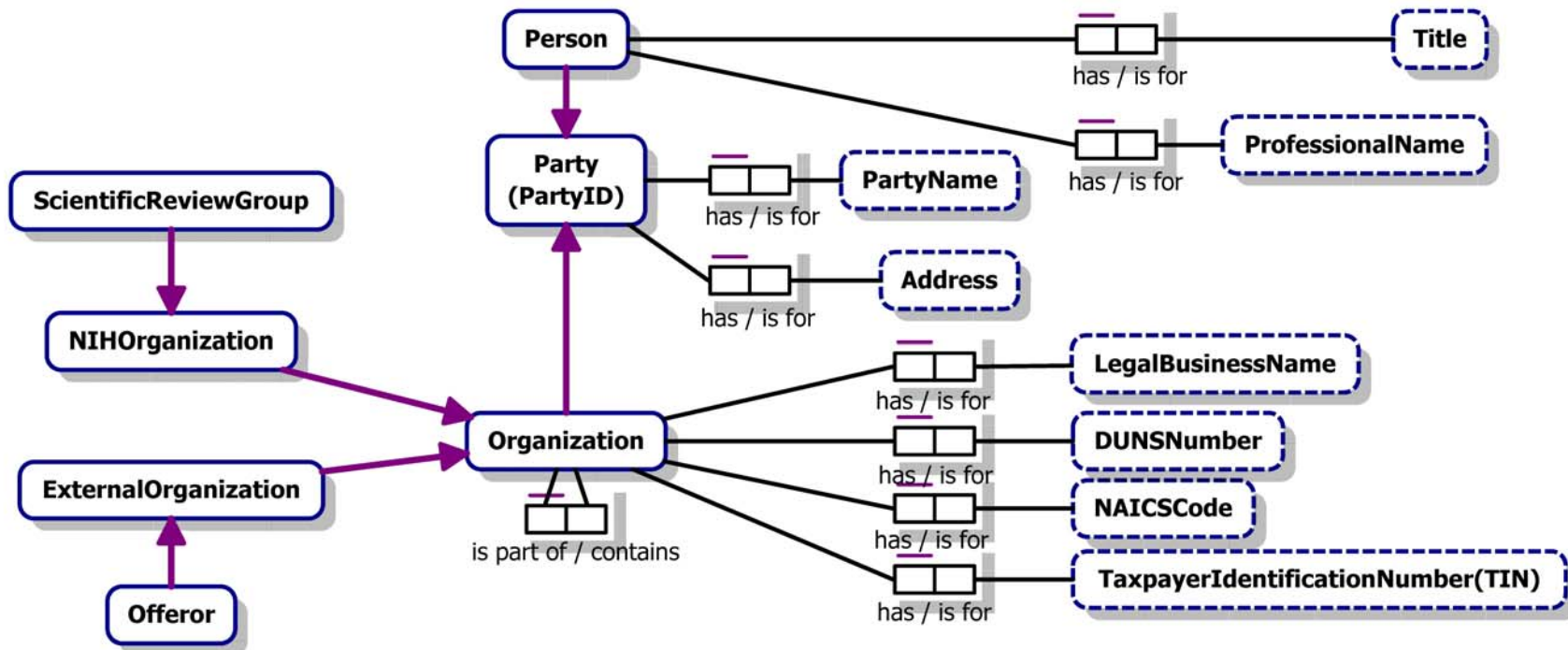
Table 4—Role Instances—CDM Entity Instances

| # | Name | Definition | Source |
|----|---|---|--|
| 1 | Approved Visitor | An individual not assigned as a permanent member of a committee that has been allowed to attend review meetings. | Proposed by The Office of the Architect |
| 2 | Chairperson | The presiding officer of an Advisory Council and Scientific Review Groups. Under certain conditions, an Acting Chairperson may be needed. | NIH Grants Conceptual Data Model NIHRFC0026 |
| 3 | Contracting Officer (CO) | Government employee with the authority to enter into, administer, and terminate contracts, including a representative acting within the limits of his or her authority. | Federal Acquisition Regulation, Volume 1 – Parts 1 - 51 – March 2005 (updated in September 2009) |
| 4 | Contract Specialist | Contracting staff that assists a Contracting Officer in negotiating and administering contracts. | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 5 | Contracting Officer Technical Representative (COTR) | The individual appointed to serve as the principal point of contact between the customer, the Offeror, and NIH. This individual provides technical direction to the Offeror. Other terms in use are Project Officer, Program Officer and/or Program Official | NITAAC ECS III Glossary (adapted) http://nitaac.nih.gov/popup.glossary.htm |
| 6 | Director | A member of NIH chosen to govern the activities of an Institute or Center | Proposed by The Office of the Architect |
| 7 | Deputy Director | A member of NIH chosen to assist in the governance activities of an Institute or Center | Proposed by The Office of the Architect |
| 8 | Member | An individual who belongs to a peer review group or an advisory council or advisory board. | NIH Grants Conceptual Data Model NIHRFC0026 |
| 9 | Other Review Staff | An individual included in the review process with duties not directly assignable to an established role. | Proposed by The Office of the Architect |
| 10 | Principal Investigator (PI) | Any individual judged by the applicant or Offeror organization to have the appropriate level of authority and responsibility to direct the project or program supported by the grant or R&D Contract. Each principal investigator is responsible and accountable to the grantee or contractor organization for the proper conduct of the project or program including the submission of all required reports. Qualified person who is designated by a grantee or contractor to direct a research project or program supported by NIH and who usually writes the grant application or R&D contract. PIs oversee scientific and technical aspects of a grant or contracts and the day-to-day management of the research. PIs do not have to be employees of a grantee or contractor organization, but these parties must have a written agreement specifying their relationship. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |

| # | Name | Definition | Source |
|----|---|--|--|
| 11 | Reviewer | <p>A person participating in the peer review process who reads a contract proposal thoroughly, writes and distributes a critique of it to the SRG for discussion purposes at the meeting.</p> <p>Reviewers can be of multiple kinds: One, Two, Three or N number. – alternatively they may be also known as primary, secondary (who serves as backup to the primary reviewer and may write a critique) and may include a reader (who serves as backup to the primary and secondary reviewers and does not necessarily prepare a critique) or discussers, mail reviewers and telephone reviewers.</p> | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |
| 12 | Scientific Program Official (Program Official) | <p>The NIH official responsible for the programmatic, scientific and/or technical aspects of a contract.</p> <p>In some ICs, the scientific program manager may also be known as Program Director, Project Officer, Program Officer, Medical Officer or Health Scientist Administrator (HSA).</p> | NIH Grants Conceptual Data Model NIHRFC0026 |
| 13 | Scientific Review Officer (SRO) or Scientific Review Director (SRD) | <p>Federal scientist who presides over a scientific review group and coordinates and reports the peer review of each grant application and R&D contract proposal assigned to it. SROs ensure that grant applications and contract proposals receive a competent, thorough and fair review by an SRG. The SRO is responsible for the completeness of the technical evaluation report, including votes on acceptability, scoring, and other recommendations to the COTR and CO.</p> | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |

3.1.3 Organization, Person and Role—ORM Model

Figure 1: Organization, Person and Role



3.1.4 Organization, Person and Role—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 5—Role and Organization—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|--|------------|--------------|--|
| 1 | Party is identified by party id <PartyID>. | Party is identified by party id 7890000001 . | | ID is unique | |
| 2 | Person with party id <PartyID> has title <Title>. | Person with party id 7890000000 has title Dr . | M:M | | Possible Values: Ms., Mrs., Mr., Dr. Ph.D., etc. |
| 3 | Person with party id <PartyID> has professional name <ProfessionalName>. | Person with party id 7890000000 has professional name Dr James L Smith MD . | M:1 | | |
| 4 | Party with party id <PartyID> has party name of <PartyName>. | Party with party id 7890000001 has party name University of Oklahoma . | M:1 | | |
| 5 | Party with party id <PartyID> has address of <Address>. | Party with party id 7890000001 has address of 660 Parrington Oval, Norman, OK 73019-0390 . | M:1 | | |
| 6 | Scientific Review Group with party id <PartyID> is a type of organization with party id <PartyID>. | | | | |
| 7 | External Organization with party id <PartyID> is a type of organization with party id <PartyID>. | | | | |
| 8 | Offeror with party id <PartyID> is a type of external organization with party id <PartyID>. | | | | |
| 9 | Organization with party id <PartyID> is a type of Party with party id <PartyID>. | | | | |
| 10 | Organization with party id <PartyID> is part of organization with party id <PartyID>. | Organization with party id 7833718944 is a part of Party with party id 5433741934 . | M:1 | | |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|---|------------|------------|---------|
| 11 | Organization with party id <PartyID> has legal business name of <LegalBusinessName>. | Organization with party id 7833718944 has legal business name of Harvard University . | M:1 | | |
| 12 | Organization with party id <PartyID> has DUNS number of <DUNSNumber>. | Organization with party id 7833718944 has DUNS number of 58883393 . | M:1 | | |
| 13 | Organization with party id <PartyID> has NAICS code of <NAICSCode>. | Organization with party id 7833718944 has NAICS code of 228833 . | M:1 | | |
| 14 | Organization with party id <PartyID> has tax payer ID of <TaxPayerID>. | Organization with party id 7833718944 has tax payer ID of 444885996 . | M:1 | | |

3.2 RESEARCH CONCEPT AND RESEARCH INITIATIVE

3.2.1 Introduction

NIH and ICs internally develop a **Research Concept** based on ideas generated to encourage creative and innovative approaches in research areas identified by the government, Director's priorities or other stakeholders. These accepted ideas are further developed into a Research Concept. In order to gather additional information to gauge the viability of a particular Research Concept, further actions may be taken. These actions may include discussions with the scientific community for viable options, reviewing and assessing new or future opportunities already being worked on in the commercial sector, or conducting searches on scientific literature. These developed concepts are further elaborated upon and presented as a **Research Initiative**.

During annual review cycles, an Advisory Council reviews a Research Concept based on certain characteristics – scientific merit, relative priority, budget or financial constraints or funding mechanism (grant or Research & Development Contract, etc.). A Research Concept must be approved by an Advisory Council before it is published as a Research Initiative. Special circumstances for this step (concept clearance) may dictate expedited steps that may be taken. Not every Research Concept becomes a Research Initiative; however, they provide an insight into NIH's research interests and may be additional topics for the investigator-initiated initiatives.

The R&D Contracts CDM contains the term “**Type of Federal Action**” to capture the intent and purpose of the services to be acquired (through contracts) or financial assistance in support of research (grants or cooperative agreements). Proactive indication of research early in the process will reduce the current challenges with downstream reporting and data quality issues. Once the determination is made that services are to be acquired, then the term “**Requirement Type**” is used to specify whether the contract is an R&D Contract, or a Contract in support of research or non-R&D contracts. By specifying a Research Initiative identifier and tracking “Type of Federal Action” and “Requirement Type”, a linkage is provided back to the originating Research Initiative.

3.2.2 Research Concept and Research Initiative —Data Entities and Attributes

Table 6 shows the data entities that have been defined as part of the R&D Contracts CDM as related to the Research Concept and Research Initiative. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard.)
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard.)
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

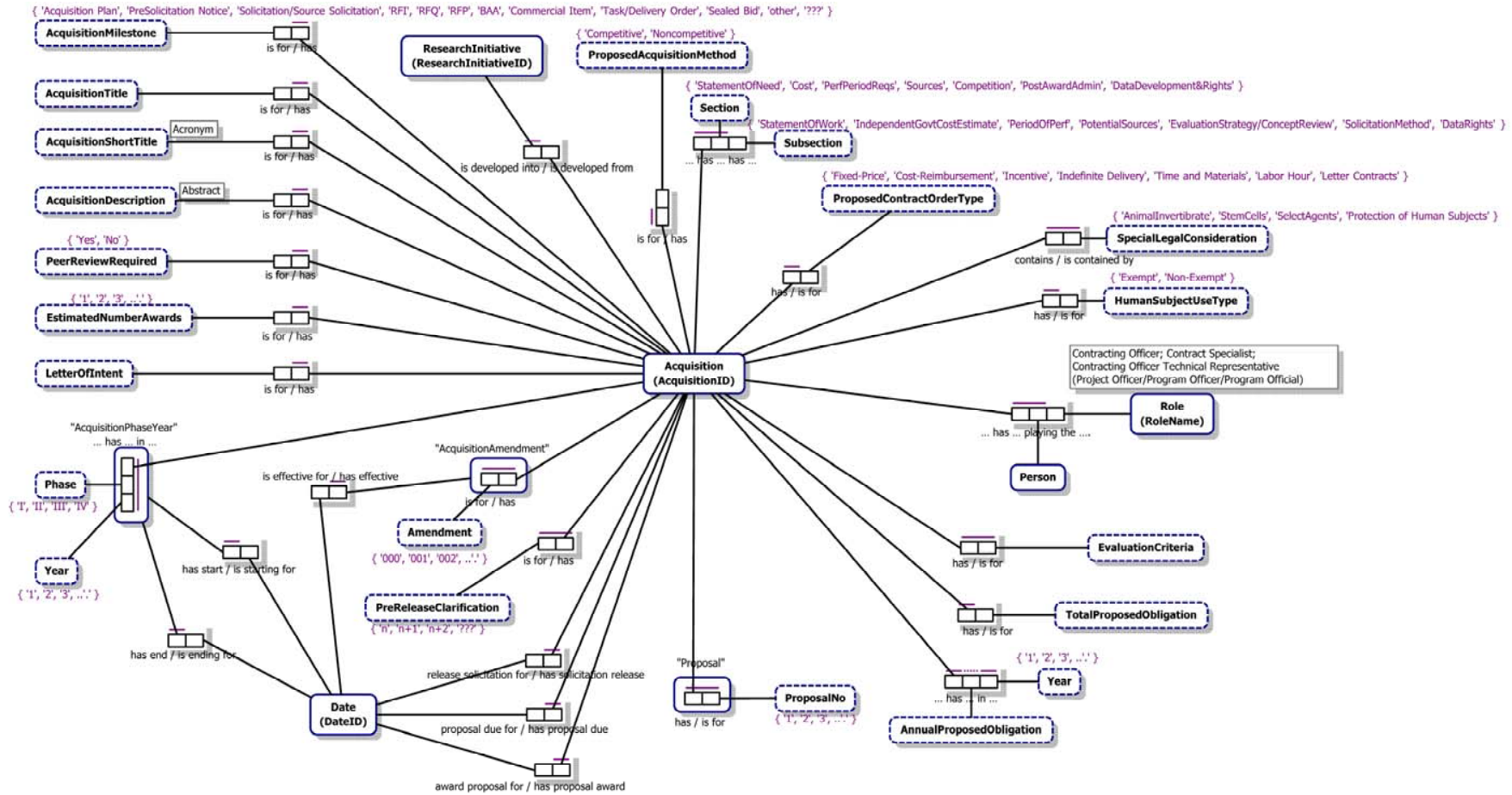
Table 6—Research Concept & Research Initiative—CDM Entities and Attributes

| # | Name | Definition | Source |
|---|----------------------------|---|--|
| 1 | Advisory Council | Chartered NIH institute advisory committee that performs second-level peer review for grants, may perform second-level peer review for R&D contracts, makes funding and policy recommendations, and helps develop research agendas. Advisory Board is interchangeably used with Advisory Council. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |
| 2 | NIH Organization | Federal government agency that may conduct, support and/or fund biomedical and behavioral research to create fundamental knowledge of living systems and reduce the burden of illness and disability | NIAID Glossary of Funding and Policy Terms and Acronyms (adapted) |
| 3 | Person | Any individual of interest to the NIH for whom the NIH maintains information. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 4 | Research Concept | Represents the earliest planning stage of a research idea based on an identified scientific need. This may have limited supporting documentation. <u>Note</u> : Institute program officers develop concepts and present them to the IC's Advisory Council for concept clearance. Only the concepts approved by Council are published as research initiatives, depending on their priority and the availability of funds. | Proposed by The Office of the Architect |
| 5 | <i>Research Concept ID</i> | <i>A unique identifier for the research concept.</i> | <i>Proposed by The Office of the Architect</i> |
| 6 | <i>Concept Statement</i> | <i>A brief statement that presents a main research idea or points in a concise form</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|----------------------------------|---|--|
| 7 | Research Initiative | Constitutes the formal artifacts of research concepts that announce and stimulate research in high priority or high opportunity areas of science. This also specifies the approach and initial approval for performing the science. | Proposed by The Office of the Architect |
| 8 | <i>Research Initiative ID</i> | <i>A unique identifier for the research initiative.</i> | <i>Proposed by The Office of the Architect</i> |
| 9 | <i>Research Initiative Title</i> | <i>A descriptive heading given to a research initiative</i> | <i>Proposed by The Office of the Architect</i> |
| 10 | <i>Requirement Type</i> | <i>A category of requirements that details the specific procurement path such as R&D contracts, support services (non-R&D), construction, etc</i> | <i>Proposed by The Office of the Architect</i> |
| 11 | <i>Type of Federal Action</i> | <i>An action performed to determine how the research initiative would be supported. This may be a designation to acquire services for research or provide assistance as in grants.</i> | <i>Proposed by The Office of the Architect</i> |
| 12 | Role | A named object assigned or delegated to a person that is given permissions and responsibilities to some resource or set of resources. Roles are defined by Organizations. A Role can be defined as part of another role. A Role can be delegated to a person by a person. | Proposed by The Office of the Architect |
| 13 | <i>Role Name</i> | <i>A short description specifying the role.</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026</i> |

3.2.3 Research Concept and Research Initiative —ORM Model

Figure 2—Research Concept and Research Initiative



3.2.4 Research Concept and Research Initiative —Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 7—Research Concept and Procurement—CDM Relationships and Rules

| | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|---|---|------------|--------------|---------|
| 1 | Research concept is identified by research concept id <ResearchConceptID>. | Research concept is identified by research concept id 0123456789 . | | ID is unique | |
| 2 | Research concept with research concept id <ResearchConceptID > has concept statement of <ConceptStatement>. | Research concept with research concept id 0123456789 has concept statement of Every birth has risks ... | M:1 | | |
| 3 | Research initiative is identified by research initiative id <ResearchInitiativeID>. | Research initiative is identified by research initiative id 1234567890 . | | ID is unique | |
| 4 | Research concept with research concept id <ResearchConceptID> is developed into research initiative with research initiative id <ResearchInitiativeID>. | Research concept with research concept id 0123456789 is developed into research initiative with research initiative id 1234567890 . | M:1 | | |
| 5 | Research initiative with research initiative id <ResearchInitiativeID> has research initiative title of <ResearchInitiativeTitle>. | Research initiative with research initiative id 1234567890 has research initiative title of Premature Birth ... | M:1 | | |
| 6 | Research initiative with research initiative id <ResearchInitiativeID> is recommended by advisory council with party id <PartyID>. | Research initiative with research initiative id 1234567890 is recommended by advisory council with party id 2345678901 . | M:1 | | |

| | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|---|--|------------|------------|--|
| 7 | Research initiative with research initiative id <ResearchInitiativeID> has type of federal action of <TypeOfFederalAction>. | Research initiative with research initiative id 1234567890 has type of federal action of contract . | M:1 | | Allowed Values: Contract, Grant, Cooperative Agreement Note: The other possible values; Loan, loan guarantee, loan insurance – are not viable as results of a Research Initiative |
| 8 | Research initiative with research initiative id <ResearchInitiativeID> has type of requirement of <RequirementType>. | Research initiative with research initiative id 1234567890 has type of requirement of R&D Contract . | M:1 | | Allowed values: R&D Contracts, R&D Support Services, Support Services (non R&D), Supplies/Equipment, Construction, A&E services, Design-Build, Other |
| 9 | Research initiative with research initiative id <ResearchInitiativeID> is approved by person with party id <PartyID> playing role with role name of <RoleName>. | Research initiative with research initiative id 1234567890 is approved by person with party id 3456789012 playing role with role name of Director . | M:1 | | |

3.3 ACQUISITION

3.3.1 Introduction

Once the Research Concept has been refined and approved by an Advisory Council, the “Research Initiative” (as it is now known) is published as Request For Applications (RFAs), Program Announcements (PAs), or Request for Proposals (RFPs).

The R&D Contracts CDM proposes the use of an umbrella term “**Acquisition**” that denotes the activities that must be performed and the information that must be collected pertaining to the procurement of products and/or services for research. The object may include all items and information such as, Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc. For example, the term “Acquisition” includes separate and distinct R&D Contract phases for solicitation, evaluation, negotiation, award, administration and closeout of the Contract.

Once the Type of Federal Action is determined to be an R&D Contract, an Acquisition Team begins to develop an Acquisition Plan (AP), which is the initial step of the overarching concept of **Acquisition**. The Acquisition Team is composed of the Project Officer, Budget and Contract staff, and others as necessary. An Acquisition Plan typically includes detailed planning for the new procurement following the Research Initiative approval and clearance, including communications, the type of solicitation, schedules and milestone dates for the acquisition (dates for release of solicitation, award date, etc.), the statement of work, clearances if required, and instructions for the solicitation respondents.

The Contracting Officer also conducts market research (as a part of acquisition planning) to ensure that vendor capabilities exist in the marketplace. The Project Officer will provide an estimate of the cost (Independent Government Cost Estimate (IGCE)) of the acquisition as a part of the AP. The IGCE is used to determine the reasonableness of an Offeror's proposed costs. The Contracting Officer along with the Project Officer establishes the evaluation criteria that will be used to evaluate the Offeror's proposal. The Acquisition Team works together to determine the contract type as they develop the AP. The contract type determines how the solicitation will be structured and affects the way the contract will be administered.

3.3.2 Acquisition—Data Entities and Attributes

Table 8 shows the data entities that have been defined as part of the R&D Contracts CDM. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard).
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard).
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

Table 8—Acquisition—CDM Entities and Key Attributes

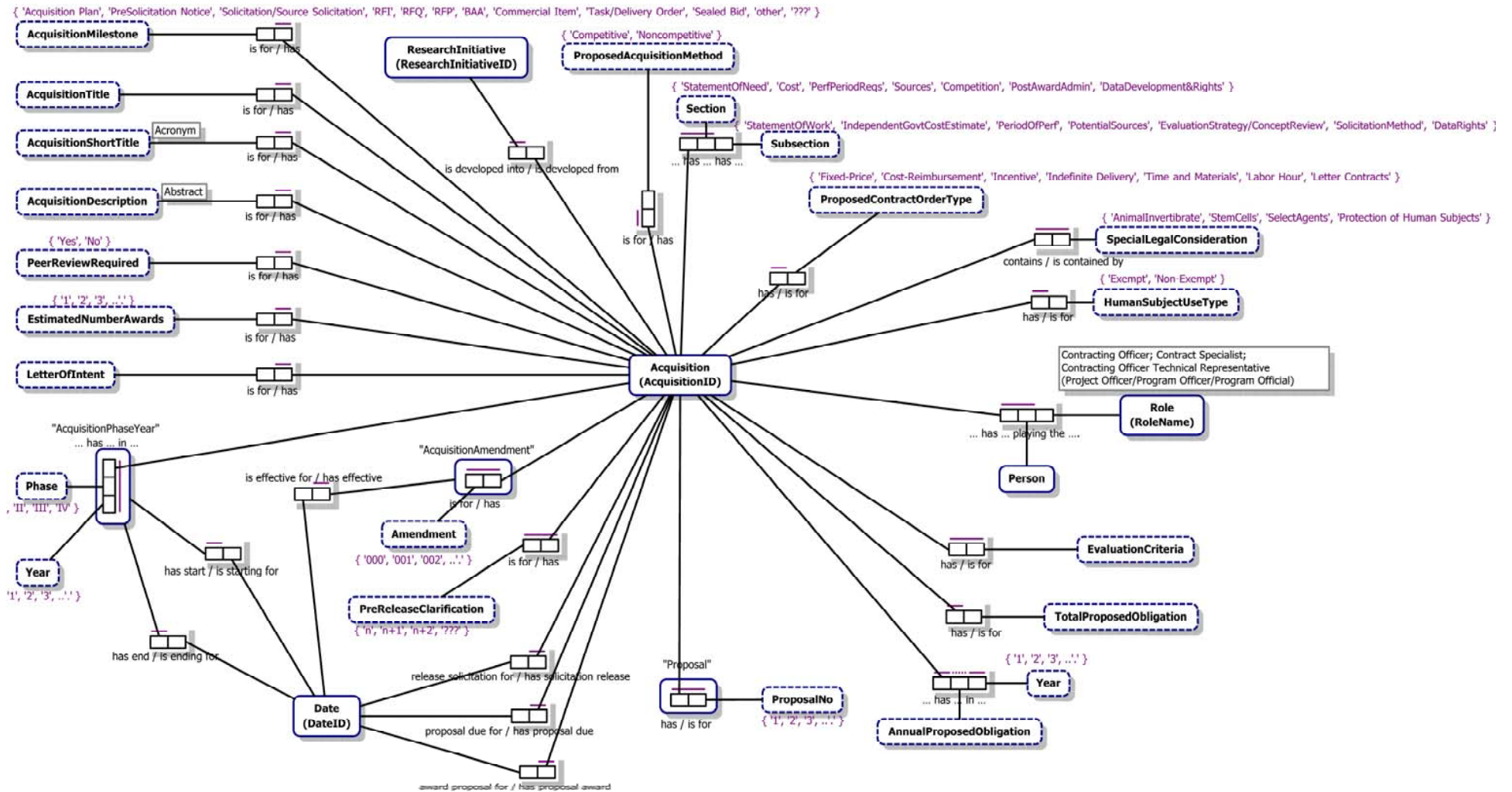
| # | Name | Definition | Source |
|----|-----------------------------------|--|--|
| 1 | Acquisition | An umbrella term that denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc. | Proposed by The Office of the Architect |
| 2 | <i>Acquisition ID</i> | <i>An unique identifier for the high level 'Acquisition' object</i> | <i>Proposed by The Office of the Architect</i> |
| 3 | <i>Acquisition Title</i> | <i>A descriptive name given to a acquisition</i> | <i>Proposed by The Office of the Architect</i> |
| 4 | <i>Acquisition Short Title</i> | <i>A short version (typically an acronym) given to the acquisition</i> | <i>Proposed by The Office of the Architect</i> |
| 5 | <i>Acquisition Description</i> | <i>A concise summary statement of what the expected proposal intends to accomplish for the services required.</i> | <i>Proposed by The Office of the Architect</i> |
| 6 | <i>Acquisition Milestone</i> | <i>The condition or state of a proposal progressing in business process</i> | <i>Proposed by The Office of the Architect</i> |
| 7 | <i>Annual Proposed Obligation</i> | <i>The amount of funding that is set aside to acquire products or services within a fiscal year</i> | <i>Proposed by The Office of the Architect</i> |
| 8 | <i>Estimated Number Awards</i> | <i>The number of awards the RFP might generate to accomplish the scientific goals</i> | <i>Proposed by The Office of the Architect</i> |
| 9 | <i>Evaluation Criteria</i> | <i>A basis for assessing the scientific merit of research proposals received or yet to be received.</i> | <i>Proposed by The Office of the Architect</i> |
| 10 | <i>Letter of Intent</i> | <i>A Letter that may be required from an Offeror before acceptance of contract proposals</i> | <i>NIAID Glossary of Funding and Policy Terms and Acronyms (adapted)</i> |
| 11 | <i>Peer Review Required</i> | <i>A way to indicate that proposal that are received are required to be evaluated by scientific peers. Typically the response would be "yes" or "no"</i> | <i>Proposed by The Office of the Architect</i> |
| 12 | <i>Pre Release Clarification</i> | <i>A further explanation of the terms, scope or information contained in the contract</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|-------------------------------------|---|---|
| 13 | <i>Proposed Acquisition Method</i> | <i>A procedure to obtain the property or services by the agency. These are noted by competitive or non-competitive methods.</i> | <i>Proposed by The Office of the Architect</i> |
| 14 | <i>Proposed Contract Order Type</i> | <i>The recommended method to obtain the identified property or services. These are Fixed-Price, Cost-Reimbursement, Incentive, Indefinite Delivery, Time and Materials, Labor Hour and Letter Contracts.</i> | <i>Federal Acquisition Regulation, Volume 1 – Parts 1 - 51 – March 2005 (updated in September 2009)</i> |
| 15 | <i>Human Subjects Use Type</i> | <i>A category that must be specified when human subjects are used in a research project. The allowable responses are Exempt or Non-Exempt.</i> | <i>Proposed by The Office of the Architect</i> |
| 16 | <i>Section</i> | <i>A distinct portion of a written document</i> | <i>Proposed by The Office of the Architect</i> |
| 17 | <i>Subsection</i> | <i>A smaller part(s) into which a section may be divided</i> | <i>Proposed by The Office of the Architect</i> |
| 18 | <i>Special Legal Consideration</i> | <i>Unique instructions and regulations that must be followed to accommodate the requirements for the use of human subjects, stem cell lines, animals, or select agents in a research.</i> | <i>Proposed by The Office of the Architect</i> |
| 19 | <i>Total Proposed Obligation</i> | <i>The full amount of funding that is set aside to acquire products or services over a period of time.</i> | <i>Proposed by The Office of the Architect</i> |
| 20 | Acquisition Amendment | <i>A composite/associative entity that allows the changes to an acquisition.</i> | <i>Proposed by The Office of the Architect</i> |
| 21 | <i>Amendment</i> | <i>A written modification/revision to the RFP.</i> | <i>Proposed by The Office of the Architect</i> |
| 22 | Acquisition Phase Year | <i>A composite/associative entity that allows an acquisition to be divided into phases with beginning and end dates that can span multiple years.</i> | <i>Proposed by The Office of the Architect</i> |
| 23 | <i>Phase</i> | <i>A segment of a research project with a distinct beginning and end. Values are I, II, III, IV.</i> | <i>Proposed by The Office of the Architect</i> |
| 24 | <i>Year</i> | <i>A specific sequential period of time (twelve months), used for some activity. Values are 1, 2, 3...</i> | <i>Proposed by The Office of the Architect</i> |
| 25 | Date | <i>A particular period of time at which something happened or existed, or is expected to happen.</i> | <i>Proposed by The Office of the Architect</i> |
| 26 | <i>Date ID</i> | <i>An unique identifier for the date</i> | <i>Proposed by The Office of the Architect</i> |
| 27 | Person | <i>Any individual of interest to the NIH for whom the NIH maintains information.</i> | <i>NIH Enterprise Conceptual Data Model NRFC0025/STD0012</i> |
| 29 | Proposal | <i>Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed.</i> | <i>NIAID Glossary http://www.niaid.nih.gov/ncn/glossary/default5.htm#proposal (adapted)</i> |
| 30 | <i>Proposal No</i> | <i>A 'sequential number' for a proposal that is received against a particular 'acquisition'.</i> | <i>Proposed by The Office of the Architect</i> |
| 31 | Research Initiative | <i>Constitutes the formal artifacts of research concepts that announce and stimulate research in high priority or high opportunity areas of science. This also specifies the approach and initial approval for performing the science.</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|-------------------------------|---|--|
| 32 | <i>Research Initiative ID</i> | <i>A unique identifier for the research initiative.</i> | <i>Proposed by The Office of the Architect</i> |
| 33 | Role | A named object assigned or delegated to a person that is given permissions and responsibilities to some resource or set of resources. Roles are defined by Organizations. A Role can be defined as part of another role. A Role can be delegated to a person by a person. | Proposed by The Office of the Architect |
| 34 | <i>Role Name</i> | <i>A short description specifying the role.</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026</i> |

3.3.3 Acquisition—ORM Model

Figure 3—Acquisition



3.3.4 Acquisition—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 9—Acquisition—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|---|---|------------|--------------|--|
| 1 | Acquisition is identified by acquisition id <AcquisitionID>. | Acquisition is identified by acquisition id 7890123456 . | | ID is unique | |
| 2 | Research initiative with research initiative id <ResearchInitiativeID> is developed into acquisition <AcquisitionID>. | Research initiative with research initiative id 1234567890 is developed into acquisition 7890123456 . | M:1 | | |
| 3 | Acquisition with acquisition id <AcquisitionID> has acquisition status of <AcquisitionStatus>. | Acquisition with acquisition id 7890123456 has acquisition status of Plan . | M:1 | | Possible Values: 'Plan, PreSolicitation Notice, Solicitation/Source Solicitation, RFI, RFQ, RFP, BAA, Commercial Item, Task/Delivery Order, Sealed Bi, Other |
| 4 | Acquisition with acquisition id <AcquisitionID> has acquisition description of <AcquisitionDescription>. | Acquisition with acquisition id 7890123456 has acquisition description of Premature birth... | M:1 | | Also known as Abstract |
| 5 | Acquisition with acquisition id <AcquisitionID> has acquisition title of <AcquisitionTitle>. | Acquisition with acquisition id 7890123456 has acquisition title of Premature birth... | M:1 | | |
| 6 | Acquisition with acquisition id <AcquisitionID> has acquisition short title of <AcquisitionShortTitle>. | Acquisition with acquisition id 7890123456 has acquisition short title of PBDSC . | M:1 | | Also known as Acronym |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|--|------------|--------------|----------------------------|
| 7 | Acquisition with acquisition id <AcquisitionID> has peer review required value of <PeerReviewRequired>. | Acquisition with acquisition id 7890123456 has peer review required value of Yes . | M:1 | | Allowed Values: Yes, No |
| 8 | Acquisition with acquisition id <AcquisitionID> has estimated number of awards of <EstimatedNumberAwards>. | Acquisition with acquisition id 7890123456 has estimated number of awards of 3 . | M:1 | | |
| 9 | Acquisition phase year is identified by acquisition id <AcquisitionID>, phase <Phase> and year <Year>. | Acquisition phase year is identified by acquisition id 7890123456 , phase I and year 1 . | M:M | | |
| 10 | Date is identified by date id <DateID>. | Date is identified by date id October 17, 1951 . | | ID is unique | |
| 11 | Acquisition phase year having acquisition with acquisition id <AcquisitionID>, phase <Phase>, and year <Year> has start date <DateID>. | Acquisition phase year having acquisition with acquisition id 7890123456 , phase I , and year 1 has start date January 1, 2009 . | M:1 | | |
| 12 | Acquisition phase year having acquisition id <AcquisitionID>, phase <Phase> and year <Year> has end date <DateID>. | Acquisition phase year is identified by acquisition id 7890123456 , phase I , and year 1 has end date December 31, 2009 . | M:1 | | |
| 13 | Acquisition with acquisition id <AcquisitionID> has pre-release clarification number of <PreReleaseClarification>. | Acquisition with acquisition id 7890123456 has pre-release clarification number of 3 . | M:M | | 1, 2, 3 ... |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|--|------------|------------|---|
| 14 | Acquisition amendment is identified by acquisition id <AcquisitionID> and amendment with amendment number <AmendmentNumber>. | Acquisition amendment is identified by acquisition id 7890123456 and amendment with amendment number 000 . | M:M | | 000, 001, 002, ... |
| 15 | Acquisition amendment having acquisition id <AcquisitionID> and amendment with amendment number <AmendmentNumber> has effective date <DateID>. | Acquisition amendment is identified by acquisition id 7890123456 and amendment with amendment number 000 has effective date March 5, 2009 . | M:1 | | |
| 16 | Acquisition with acquisition id <AcquisitionID> has solicitation release on date <DateID>. | Acquisition with acquisition id 7890123456 has solicitation release on date January 1, 2008 . | M:1 | | |
| 17 | Acquisition with acquisition id <AcquisitionID> has proposal due on date <DateID>. | Acquisition with acquisition id 7890123456 has proposal due on date May 1, 2008 . | M:1 | | |
| 18 | Acquisition with acquisition id <AcquisitionID> has proposal award on date <DateID>. | Acquisition with acquisition id 7890123456 has proposal award on date December 1, 2008 . | M:1 | | |
| 19 | Acquisition with acquisition id <AcquisitionID> has proposed acquisition method of <ProposedAcquisitionMethod>. | Acquisition with acquisition id 7890123456 has proposed acquisition method of Competitive . | M:1 | | Allowed Values: Competitive, Noncompetitive |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|---|------------|------------|--|
| 20 | Acquisition with acquisition id <AcquisitionID> has section <SectionName> with subsection <SubsectionName>. | Acquisition with acquisition id 7890123456 has section Statement of Need with subsection Statement of Work . | M:1 | | Section includes: Statement Of Need, Cost, Perf Period Reqs, Source, Competition, Post Award Admin, Data Development & Rights Subsection includes: Statement Of Work, Independent Govt Cost Estimate, Period Of Perf, Potential Sources, Evaluation Strategy/Concept Review, Solicitation Method, Data Rights |
| 21 | Acquisition with acquisition id <AcquisitionID> has proposed contract order type of <ProposedContractOrderType>. | Acquisition with acquisition id 7890123456 has proposed contract order type of Firm Fixed Price . | M:1 | | Possible Values: Firm fixed price, Other fixed price, Cost plus fixed fee, Other Cost Reimbursement, Time and materials, Indefinite Delivery, Multi-Year, Option Year, Other |
| 22 | Acquisition with acquisition id <AcquisitionID> has letter of intent of <LetterOfIntent>. | Acquisition with acquisition id 7890123456 has letter of intent of To whom it may concern | M:1 | | |
| 23 | Acquisition with acquisition id <AcquisitionID> has special legal consideration of <SpecialLegalConsideration>. | Acquisition with acquisition id 7890123456 has special legal consideration of Stem Cells . | M:M | | Possible Values: Animal Invertebrate, Stem Cells, Select Agents, Human Subject Use |
| 24 | Acquisition with acquisition id <AcquisitionID> has human subject use type of <HumanSubjectUseRequestType>. | Acquisition with acquisition id 7890123456 has human subject use type of Exempt . | M:1 | | Possible Values: Exempt and Non-exempt |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|---|------------|------------|---|
| 25 | Acquisition with acquisition id <AcquisitionID> has evaluation criteria of <Evaluation Criteria>. | Acquisition with acquisition id 7890123456 has evaluation criteria of The contractor should have... | M:M | | |
| 26 | Acquisition with acquisition id <AcquisitionID> has total proposed obligation of <TotalProposedObligation>. | Acquisition with acquisition id 7890123456 has total proposed obligation of \$12.6M. | M:1 | | |
| 27 | Acquisition with acquisition id <AcquisitionID> has annual proposed obligation of <AnnualProposedObligation> in year <YearNumber>. | Acquisition with acquisition id 7890123456 has annual proposed obligation of \$2.6M in year 2. | M:1 | | |
| 28 | Acquisition with acquisition id <AcquisitionID> has person with party id <PartyID> playing role with role name of <RoleName>. | Acquisition with acquisition id 7890123456 has person with party id 7890000000 playing role with role name of Contracting Officer. | M:1 | | Allowed Roles: Contracting Officer; Contract Specialist; Contracting Officer Technical Representative (Project Officer/Program Officer / Program Official) |

3.4 PROPOSAL

3.4.1 Introduction

Once the Request for Proposal (RFP) solicitation package is complete, it is advertised in FedBizOpps (www.fbo.gov) and requires that an **Offeror** submit electronic and/or written proposals. RFPs typically contain the necessary information to prepare the proposal: due dates, a description of the work to be performed, required reports and a delivery schedule for the required products or services.

NIH may conduct pre-proposal conferences which provide information to prospective **Offerors** regarding the contract project and permit questions to be asked and clarifications to be made. Based on the information provided, the Contracting Officer may release a solicitation amendment.

A **Proposal** submitted by an **Offeror** is evaluated according to the rules and criteria described in the RFP. The proposals are peer reviewed for technical merit by a **Scientific Review Group** (described further in Section 3.5). The Contracting Officer evaluates costs, past performance, extent of participation of small business concerns (as applicable). A Contracting Officer establishes a competitive range for all the most highly rated proposals. The Contracting Officer solely makes the determination as to which **Offerors** will receive awards. At the award, the Contracting Officer selects the Contracting Officer Technical Representative. The Contracting Officer also resolves any pre-award protests by unsuccessful **Offerors**.

The **Acquisition** should set out the technical/cost monitoring procedures. The Contracting Officer ensures that technical and cost deliverables and status reports are provided on a periodic basis until the contract is terminated. As a **Contract** nears its end, the Contracting Officer may issue a notification of expiration to the vendor. A Contracting Officer verifies that a Contract has been completed according to the terms of agreement, takes ownership of the property (products created) acquired through the **Contract**, and verifies that all applicable inventions have been reported. The Contracting Officer also determines the amount paid to date and if any additional allowable costs will need to be paid and settles any outstanding debts. The Contracting Officer retains and stores the contract file and its contents until the legal retention period, after which it may be destroyed.

3.4.2 Proposal—Data Entities and Attributes

Table 10 shows the data entities that have been defined as part of the R&D Contracts CDM. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard).
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard).
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

Table 10—Proposal—CDM Entities and Key Attributes

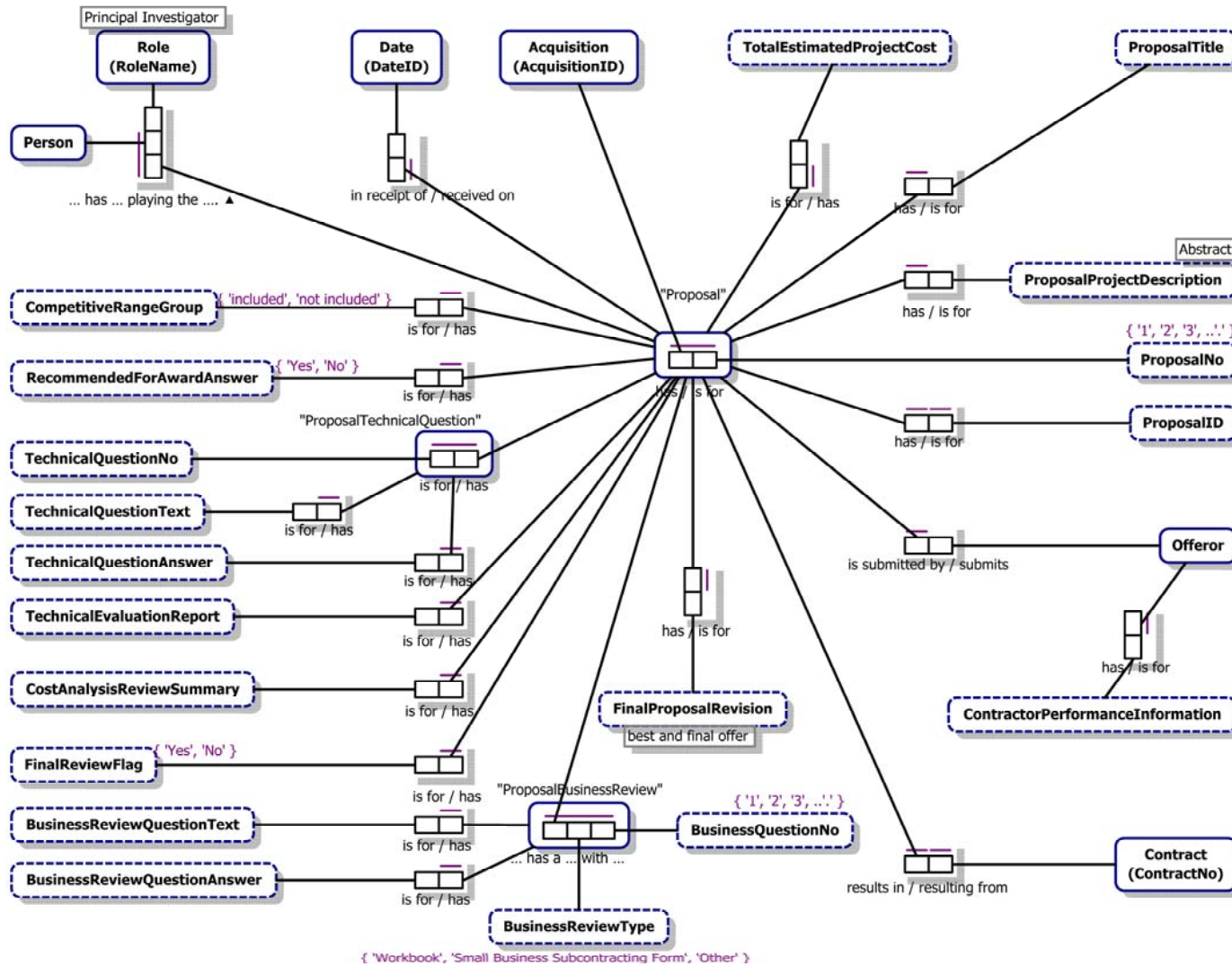
| # | Name | Definition | Source |
|----|---|--|---|
| 1 | Acquisition | An umbrella term that denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc. | Proposed by The Office of the Architect |
| 2 | <i>Acquisition ID</i> | <i>An unique identifier for the high level 'Acquisition' object</i> | <i>Proposed by The Office of the Architect</i> |
| 3 | Contract | An award instrument establishing a binding legal procurement relationship between NIH and a recipient obligating the latter to furnish a product or service defined in detail by NIH and binding the Institute to pay for it | NIH Research Portfolio Online Reporting Tool (RePORT) http://report.nih.gov/glossary.aspx?filter=C |
| 4 | <i>Contract No.</i> | <i>An unique identifier for a contract</i> | <i>Proposed by The Office of the Architect</i> |
| 5 | Date | A particular period of time at which something happened or existed, or is expected to happen. | Proposed by The Office of the Architect |
| 6 | <i>Date ID</i> | <i>An unique identifier for the date</i> | <i>Proposed by The Office of the Architect</i> |
| 7 | Offeror | An organization responding to a request for proposals | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 8 | <i>Contractor Performance Information</i> | Reports on past performance of the Offeror on previous contracts as contained in the Past Performance Information Retrieval System (PPIRS). | <i>Proposed by The Office of the Architect</i> |
| 9 | Person | Any individual of interest to the NIH for whom the NIH maintains information. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 10 | Proposal | Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed. | NIAID Glossary (adapted) http://www.niaid.nih.gov/ncn/glossary/default5.htm#proposal |

| # | Name | Definition | Source |
|----|--|--|---|
| 11 | <i>Proposal ID</i> | <i>An unique identifier of the proposal</i> | <i>Proposed by The Office of the Architect</i> |
| 12 | <i>Proposal No</i> | <i>A 'sequential number' for a proposal that is received against a particular 'acquisition'.</i> | <i>Proposed by The Office of the Architect</i> |
| 13 | <i>Proposal Title</i> | <i>A label or heading that describes the proposal</i> | <i>Proposed by The Office of the Architect</i> |
| 14 | <i>Competitive Range Group</i> | <i>Range of qualified offers for a competitive procurement. A Contracting Officer determines a competitive range based on the ratings of each proposal against all technical and cost evaluation criteria. The competitive range comprises all the most highly rated proposals.</i> | <i>NIAID Glossary http://www.niaid.nih.gov/ncn/glossary/default2.htm#c</i> |
| 15 | <i>Cost Analysis Review Summary</i> | <i>A summary of the analysis performed by a Contracting Officer to determine whether an Offeror's proposed costs are fair and reasonable.</i> | <i>Proposed by The Office of the Architect</i> |
| 16 | <i>Final Proposal Revision</i> | <i>The final changes requested by the Contracting Officer from each Offeror who is still in the competitive range at the conclusion of discussions. Each remaining Offeror is given an opportunity to submit a final proposal revision in writing, which is the documentation that the Government uses to make an award (as applicable) without obtaining further revisions.</i> | <i>Proposed by The Office of the Architect</i> |
| 17 | <i>Final Review Flag</i> | <i>Indicates whether this is the last review the proposal will undergo.</i> | <i>Proposed by The Office of the Architect</i> |
| 18 | <i>Proposal Project Description</i> | <i>A written description of what the proposed research intends to accomplish. This is also known as Project Summary/Abstract</i> | <i>Proposed by The Office of the Architect</i> |
| 19 | <i>Recommended for Award Answer</i> | <i>An indicator for a contract proposal judged by the majority of SRG to be eligible for inclusion in the competitive range or award</i> | <i>Proposed by The Office of the Architect</i> |
| 20 | <i>Technical Evaluation Report</i> | <i>A summary of the analysis performed to determine whether an Offeror's technical approach meets the specified objectives.</i> | <i>Proposed by The Office of the Architect</i> |
| 21 | <i>Total Estimated Project Cost</i> | <i>The proposed expenditures that are necessary to accomplish the objectives of the research requirements</i> | <i>Proposed by The Office of the Architect</i> |
| 22 | Proposal Business Review | <i>An inquiry made by Contracting Officer regarding details of the proposal's execution</i> | <i>Proposed by The Office of the Architect</i> |
| 23 | <i>Business Review Type.</i> | <i>An indication of which business review is being performed. The values are Workbook, Small Business Subcontracting Form, Other...</i> | <i>Proposed by The Office of the Architect</i> |
| 24 | <i>Business Review Question No.</i> | <i>A sequential number of a business question</i> | <i>Proposed by The Office of the Architect</i> |
| 25 | <i>Business Review Question Text.</i> | <i>An inquiry from the peer review group that becomes input in the set of business questions that the Contracting Officer may ask of the Offeror.</i> | <i>Proposed by The Office of the Architect</i> |
| 26 | <i>Business Review Question Answer</i> | <i>The reply received from the Offeror in response to the specific business and cost questions asked</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|------------------------------------|---|--|
| 27 | Proposal Technical Question | A composite/associative entity that indicates a technical inquiry made by Contracting Officer regarding details of the proposal's execution | Proposed by The Office of the Architect |
| 28 | <i>Technical Question No.</i> | <i>A sequential number of a technical question</i> | <i>Proposed by The Office of the Architect</i> |
| 29 | <i>Technical Question Text</i> | <i>An inquiry from the peer review group that becomes input in the set of technical questions that the Contracting Officer may ask of the Offeror.</i> | <i>Proposed by The Office of the Architect</i> |
| 31 | <i>Technical Question Answer</i> | <i>The reply received from the Offeror in response to the specific technical questions asked</i> | <i>Proposed by The Office of the Architect</i> |
| 32 | Role | A named object assigned or delegated to a person that is given permissions and responsibilities to some resource or set of resources. Roles are defined by Organizations. A Role can be defined as part of another role. A Role can be delegated to a person by a person. | Proposed by The Office of the Architect |
| 33 | <i>Role Name</i> | <i>A short description specifying the role.</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026</i> |

3.4.3 Proposal—ORM Model

Figure 4—Proposal



3.4.4 Proposal—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 11—Proposal—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|---|---|------------|--------------|---|
| 1 | Proposal is identified by proposal id <ProposalID>. | Proposal is identified by proposal id 8901234567 . | | ID is unique | |
| 2 | Proposal with proposal id <ProposalID> is proposal number <ProposalNumber> for acquisition with acquisition id <AcquisitionID>. | Proposal with proposal id 8901234567 is proposal number 3 for acquisition with acquisition id 7890123456 . | 1:1 | | |
| 3 | Proposal with proposal id <ProposalID> was received on date of <DateID>. | Proposal with proposal id 8901234567 was received on date of April 30, 2008 . | M:1 | | |
| 4 | Proposal with proposal id <ProposalID> has person with party id <PartyID> playing role with role name of <RoleName>. | Proposal with proposal id 8901234567 has person with party id 8900000000 playing role with role name of Principal Investigator . | M:1 | | |
| 5 | Proposal with proposal id <ProposalID> has proposal title of <ProposalTitle>. | Proposal with proposal id 8901234567 has proposal title of Premature Birth Proposal... | M:1 | | |
| 6 | Proposal with proposal id <ProposalID> has proposal project description of <ProposalProjectDescription>. | Proposal with proposal id 8901234567 has proposal project description of Low birth weight... | M:1 | | Abstract |
| 7 | Proposal with proposal id <ProposalID> has total estimated project cost of <TotalEstimatedProjectCost>. | Proposal with proposal id 8901234567 has total estimated project cost of \$10.2 million . | M:1 | | |
| 8 | Proposal with proposal id <ProposalID> has competitive range group of <CompetitiveRangeGroup>. | Proposal with proposal id 8901234567 has competitive range group of Included . | M:1 | | Possible Values: Included, Not Included |
| 9 | Proposal with proposal id <ProposalID> has recommended for award answer of <RecommendedForAwardAnswer>. | Proposal with proposal id 8901234567 has recommended for award answer of Yes . | M:1 | | Allowed Values: Yes, No |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|--|------------|------------|--|
| 10 | Technical question number <TechnicalQuestionNumber> for proposal with proposal id <ProposalID> identifies a proposal technical question. | Technical question number 2 for proposal with proposal id 8901234567 identifies a proposal technical question. | M:M | | |
| 11 | Technical question number <TechnicalQuestionNumber> for proposal with proposal id <ProposalID> has technical question text of <TechnicalQuestionText>. | Technical question number 2 for proposal with proposal id 8901234567 has technical question text of What is the technical.... | M:1 | | |
| 12 | Technical question number <TechnicalQuestionNumber> for proposal with proposal id <ProposalID> has technical question answer of<TechnicalQuestionAnswer>. | Technical question number 2 for proposal with proposal id 8901234567 has technical question answer of The technical reason for.... | M:1 | | |
| 13 | Business question number <BusinessQuestionNumber> for business review type of <BusinessReviewType> on proposal with proposal id <ProposalID> identifies a proposal business review. | Business question number 2 for business review type of Workbook on proposal with proposal id 8901234567 identifies a proposal business review. | M:M | | BRT = Workbook, Small business sub-contracting form, other BQN = 1 , 2, 3, ... |
| 14 | Business question number <BusinessQuestionNumber> for business review type of <BusinessReviewType> on proposal with proposal id <ProposalID> has business review question text <BusinessReviewQuestionText>. | Business question number 2 for business review type of Workbook on proposal with proposal id 8901234567 has business review question text What is the business... | M:1 | | |
| 15 | Business question number <BusinessQuestionNumber> for business review type of <BusinessReviewType> on proposal with proposal id <ProposalID> has business review question answer <BusinessReviewQuestionAnswer>. | Business question number 2 for business review type of Workbook on proposal with proposal id 8901234567 has business review question answer The business reason for... | M:1 | | |
| 16 | Proposal with proposal id <ProposalID> has final proposal revision of <FinalProposalRevision>. | Proposal with proposal id 8901234567 has final proposal revision of Lung cancer.... | M:1 | | Best and final offer |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|---|--|------------|------------|-------------------------|
| 17 | Proposal with proposal id <ProposalID> has cost analysis review summary of <CostAnalysisReviewSummary>. | Proposal with proposal id 8901234567 has cost analysis review summary of Costs are competitive.... | M:1 | | |
| 18 | Proposal with proposal id <ProposalID> has technical evaluation report of <TechnicalEvaluationReport>. | Proposal with proposal id 8901234567 has technical evaluation report The PI is qualified.... | M:1 | | |
| 19 | Proposal with proposal id <ProposalID> has final review flag value of <FinalReviewFlag>. | Proposal with proposal id 8901234567 has final review flag value of Yes. | M:1 | | Allowed Values: Yes, No |
| 20 | Proposal with proposal id of <ProposalID> is submitted by Offeror with party id of <PartyID>. | Proposal with proposal id of 456112 is submitted by Offeror with party id of 9857718966. | | | |
| 21 | Offeror with party id <PartyID> has contractor performance information of <ContractorPerformanceInformation>. | Offeror with party id 9857718966 has contractor performance information of Work was of high.... | M:1 | | |

3.5 PEER REVIEW

3.5.1 Introduction

All proposals for R&D contracts received by the funding organization are reviewed for technical merit by the Scientific Review Group (SRG), which are organized around a scientific area and conduct a peer review of the contract proposals in that field. An SRG can also be made up of a Special Emphasis Panel (SEP) that is formed for an individual meeting.

A peer review by a group (made up of at least 75% non-Government experts) assesses the scientific and technical merit of R&D Contract proposals with respect to the technical evaluation criteria as specified in the solicitation. This is to ensure fair, objective and uniform peer reviews of biomedical and behavioral research and research & development (R&D) contract technical proposals that are submitted.

The Peer Review Group is composed of scientific experts and is managed by the IC Scientific Review Officer or Director (SRO or SRD). The Contracting Officer ensures that the contract proposals are reviewed in accordance with the technical evaluation criteria stated in the solicitation. The Contracting Officer and the Institute Review Office ensure that no conflicts of interest exist with the submitted proposals and the peer reviewers. The Contracting Officer along with the SRO may hold pre-review meetings to train or explain the acquisition process and roles responsibilities to the SRG members. The SRO also ensures that administrative review of the contract proposals is conducted and identifies any issues, if any. The SRO identifies the areas of expertise and the corresponding reviewers required for the review and ensure that the potential reviewers are screened for **Conflict of Interest**. If a Conflict of Interest exists, it may warrant that the reviewer is excluded from the review or receives a **Conflict of Interest Waiver** (if eligible) which is approved by the Deputy Director of Extramural Research. During the peer review, each reviewer independently reviews and evaluates all technical proposals and determines strengths and weaknesses according to the **Technical Evaluation Criteria** in the solicitation. After discussions, reviewers independently score each proposal according to all technical evaluations based on the corresponding weights in the solicitations. The reviewers also make a determination as to whether each contract proposal is acceptable or unacceptable.

3.5.2 Peer Review—Data Entities and Attributes

Table 12 shows the data entities that have been defined as part of the R&D Contracts CDM as related to the Peer Review. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard).
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard).
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

Table 12—Peer Review—CDM Entities and Attributes

| # | Name | Definition | Source |
|----|--|--|---|
| 1 | Acquisition | An umbrella term that denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc. | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 2 | <i>Evaluation Criteria</i> | <i>A basis for assessing the scientific merit of research proposals received or yet to be received.</i> | <i>Proposed by The Office of the Architect</i> |
| 3 | Conflict of Interest Waiver | A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more proposals. It permits that reviewer to review only those proposals for which he/she has no conflicts of interest. | Proposed by The Office of the Architect |
| 4 | Date | A particular period of time at which something happened or existed, or is expected to happen. | Proposed by The Office of the Architect |
| 5 | <i>Date ID</i> | <i>An unique identifier for the date</i> | <i>Proposed by The Office of the Architect</i> |
| 6 | Offeror | An organization responding to a request for proposals | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 7 | Person | Any individual of interest to the NIH for whom the NIH maintains information. | NIH Enterprise Conceptual Data Model NRFC0025/STD0012 |
| 8 | Person Conflict SRG Review Proposal | A composite/associative entity that identifies the person who may have a conflict of interest during the review of proposals in the SRG meeting | Proposed by The Office of the Architect |
| 9 | <i>Conflict of Interest Type</i> | <i>A type of conflict of interest that people have with a grant application or an R&D Contract proposal. NIH provides regulations to ensure employees, scientific review group members and advisory council members or others having the ability to influence funding decisions have no personal or professional interest in the outcomes</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026 (modified)</i> |
| 10 | <i>Conflict of Interest Flag</i> | <i>An indicator to signify that a conflict of interest exists and the action that was taken to mitigate it</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|--|--|--|
| 11 | Proposal | Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed. | NIAID Glossary http://www.niaid.nih.gov/ncn/glossary/default5.htm#proposal (adapted) |
| 12 | <i>Proposal ID</i> | <i>An unique identifier of the proposal</i> | <i>Proposed by The Office of the Architect</i> |
| 13 | <i>Proposal No</i> | <i>A 'sequential number' for a proposal that is received against a particular 'acquisition'.</i> | <i>Proposed by The Office of the Architect</i> |
| 14 | Role | A named object assigned or delegated to a person that is given permissions and responsibilities to some resource or set of resources. Roles are defined by Organizations. A Role can be defined as part of another role. A Role can be delegated to a person by a person. | Proposed by The Office of the Architect |
| 15 | <i>Role Name</i> | <i>A short description specifying the role.</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026</i> |
| 16 | Scientific Review Group (SRG) | A group of primarily nongovernmental experts qualified by training and experience in particular scientific or technical fields, or as authorities knowledgeable in the various disciplines and fields related to the scientific areas under review, to give expert advice on the scientific and technical merits of a grant application, R&D contract proposal, or research initiative. Conducts the first round review for a grant application or R&D contract proposal, and usually conducts the second round review for an R&D contract proposal. | NIH Manual Chapter 6315-1 (adapted) |
| 17 | Scientific Review Group Meeting | A composite/associative entity that identifies a scientific review group meeting where a group of scientists review grant applications, R&D contract proposals or research initiatives. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) |
| 18 | SRG Review Proposal | A composite/associate entity that identifies a scientific review group meeting where the approved scientists review an R&D contract proposal | Proposed by The Office of the Architect |
| 19 | <i>Group Criteria Score</i> | <i>The sum total of reviewer scores received for each criterion of a received proposal during peer review</i> | <i>Proposed by The Office of the Architect</i> |
| 20 | <i>Member Criteria Score</i> | <i>An individual rating given by reviewer for each evaluation criteria based on the scientific merit of a received proposal during the peer review of proposals</i> | <i>Proposed by The Office of the Architect</i> |
| 21 | <i>Rating</i> | <i>A basis for assessing the criteria of scientific merit of a proposal</i> | <i>Proposed by The Office of the Architect</i> |
| 22 | <i>Total Group Criteria Score</i> | <i>A weighted sum of reviewer scores for all the criteria for the received proposal during peer review</i> | <i>Proposed by The Office of the Architect</i> |

3.5.4 Peer Review—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 13—Peer Review—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|---|---|------------|------------|---|
| 1 | Proposal with proposal id <ProposalID> receives a total group criteria score <TotalGroupCriteriaScore> by the scientific review group with party id <PartyID> at the meeting on date of <DateID>. | Proposal with proposal id 8901234567 receives a total group criteria score 78.49 by the scientific review group with party id 8900000001 at the meeting on date of September 8, 2008 . | M:1 | | This is the total combined, weighted score for a proposal. |
| 2 | Proposal with proposal id <ProposalID> receives a rating of <Rating> by the scientific review group with party id <PartyID> at the meeting on date of <DateID>. | Proposal with proposal id 8901234567 receives a rating of Acceptable by the scientific review group with party id 8900000001 at the meeting on date of September 8, 2008 . | M:1 | | Possible Values: Acceptable, Not acceptable |
| 3 | Proposal with proposal id <ProposalID> receives a member criteria score of <MemberCriteriaScore> by the person with party id of <PartyID> on the meeting on date of <DateID> for the scientific review group with party id <PartyID>. | Proposal with proposal id 8901234567 receives a member criteria score of 82.45 by the person with party id of 0213499592 on the meeting date of September 8, 2008 for the scientific review group with party id 8900000001 . | M:1 | | In order to score, person must be in attendance at SRG Meeting with Role of "Member" or "Chairperson" provided that there are no conflicts. |
| 4 | Role <RoleName> is played by person with party id <PartyID> at meeting on date of <DateID> of the scientific review group with party id <PartyID>. | Role Chairperson is played by person with party id 8900000003 at meeting on date of September 8, 2008 of the scientific review group with party id 8900000001 . | M:1 | | |
| 5 | Person <PartyID> playing role <RoleName> certifies minutes of meeting on date of <DateID> for the scientific review group with party id <PartyID>. | Person 8900000003 playing role Chairperson certifies minutes of meeting on date of September 8, 2008 for the scientific review group with party id 8900000001 . | M:1 | | Chairperson, Scientific Review Officer |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|---|---|------------|------------|---------|
| 6 | Person with party id <PartyID> has a conflict of interest with proposal with proposal id <ProposalID> at the scientific review group with party id of <PartyID> meeting on date of <DateID>. | Person with party id 1120947764 has a conflict of interest with proposal with proposal id 456112 at the scientific review group with party id 8900000001 meeting on date of September 8, 2008 . | M:M | | |
| 7 | Person with party id <PartyID> has a conflict of interest with person with party id <PartyID> for proposal with proposal id <ProposalID> at the scientific review group with party id <PartyID> meeting on date of <DateID>. | Person with party id 1120947764 has a conflict of interest with person with party id 1120657321 for proposal with proposal id 456112 at the scientific review group with party id 8900000001 meeting on date of September 8, 2008 . | M:1 | | |
| 8 | Person with party id <PartyID> has a conflict of interest with Offeror with party id <PartyID> for proposal with proposal id <ProposalID> at the scientific review group with party id <PartyID> meeting on date of <DateID>. | Person with party id 1120947764 has a conflict of interest with Offeror with party id 2345589671 for proposal with proposal id 456112 at the scientific review group with party id 8900000001 meeting on date of September 8, 2008 . | M:1 | | |
| 9 | Person with party id <PartyID> has a conflict of interest with conflict of interest type of <ConflictOfInterestType> with proposal with proposal id <ProposalID> at the scientific review group with party id of <PartyID> meeting on date of <DateID>. | Person with party id 1120947764 has a conflict of interest with conflict of interest type of Institutional with proposal with proposal id 456112 at the scientific review group with party id of 8900000001 meeting on date of September 8, 2008 . | M:1 | | |
| 10 | Person with party id <PartyID> has a conflict of interest with conflict of interest flag of <ConflictOfInterestFlag> with proposal with proposal id <ProposalID> at the scientific review group with party id of <PartyID> meeting on date of <DateID>. | Person with party id 1120947764 has a conflict of interest with conflict of interest flag of Real with proposal with proposal id 456112 at the scientific review group with party id of 8900000001 meeting on date of September 8, 2008 . | M:1 | | |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|---|---|------------|------------|---|
| 11 | Person with party id <PartyID> requests conflict of interest waiver for proposal with proposal id <ProposalID> for the scientific review group with party id of <PartyID> at meeting on date of <DateID>. | Person with party id 1120947764 requests conflict of interest waiver for proposal with proposal id 456112 for the scientific review group with party id of 8900000001 at meeting on date of September 8, 2008 . | M:M | | When there is a conflict with a proposal the member must excuse himself from the meeting for that time period. |
| 12 | Person with party id <PartyID> conflict of interest waiver request approved by Person with party id <PartyID> playing role with role name of <RoleName> for proposal with proposal id <ProposalID> for the scientific review group with party id of <PartyID> at meeting on date of <DateID>. | Person with party id 1120947764 conflict of interest waiver request approved by Person with party id 1102348895 playing role with role name of Deputy Director for proposal with proposal id 456112 for the scientific review group with party id of 8900000001 at meeting on date of September 8, 2008 . | M:1 | | When there is a conflict with a proposal the member must excuse himself from the meeting for that time period. Note: The approval must be granted by the person playing the role of Deputy Director of OER. Only one person can approve. |
| 13 | Proposal with proposal id of <ProposalID> is recommended for award by scientific review group with party id of <PartyID>. | Proposal with proposal id of 456112 is recommended for award by scientific review group with party id of 8900000001 . | M:1 | | |

3.6 CONTRACT

3.6.1 Introduction

The Contracting Officer establishes technical and cost monitoring procedures in the solicitation and contract. The Contracting Officer ensures that deliverables, including status reports, are provided as set forth in the **Contract** through completion. At **Contract** completion, the Contracting Officer will issue a Notification of Expiration to the contractor. The Contracting Officer verifies that the terms of the **Contract** have been successfully fulfilled. In addition, the Contracting Officer, as applicable, assumes ownership of property and products acquired during the contract, and verifies that all applicable inventions have been reported, among other things. The Contracting Officer also determines the amount paid to date and if any additional allowable costs will be need to be paid and settles any outstanding debts. The Contracting Officer ensures that the contract and all contract file documentation are retained and stored until the legal retention period is reached, after which it may be destroyed.

3.6.2 Contract—Data Entities and Attributes

Table 14 shows the data entities that have been defined as part of the R&D Contracts CDM. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard).
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard).
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

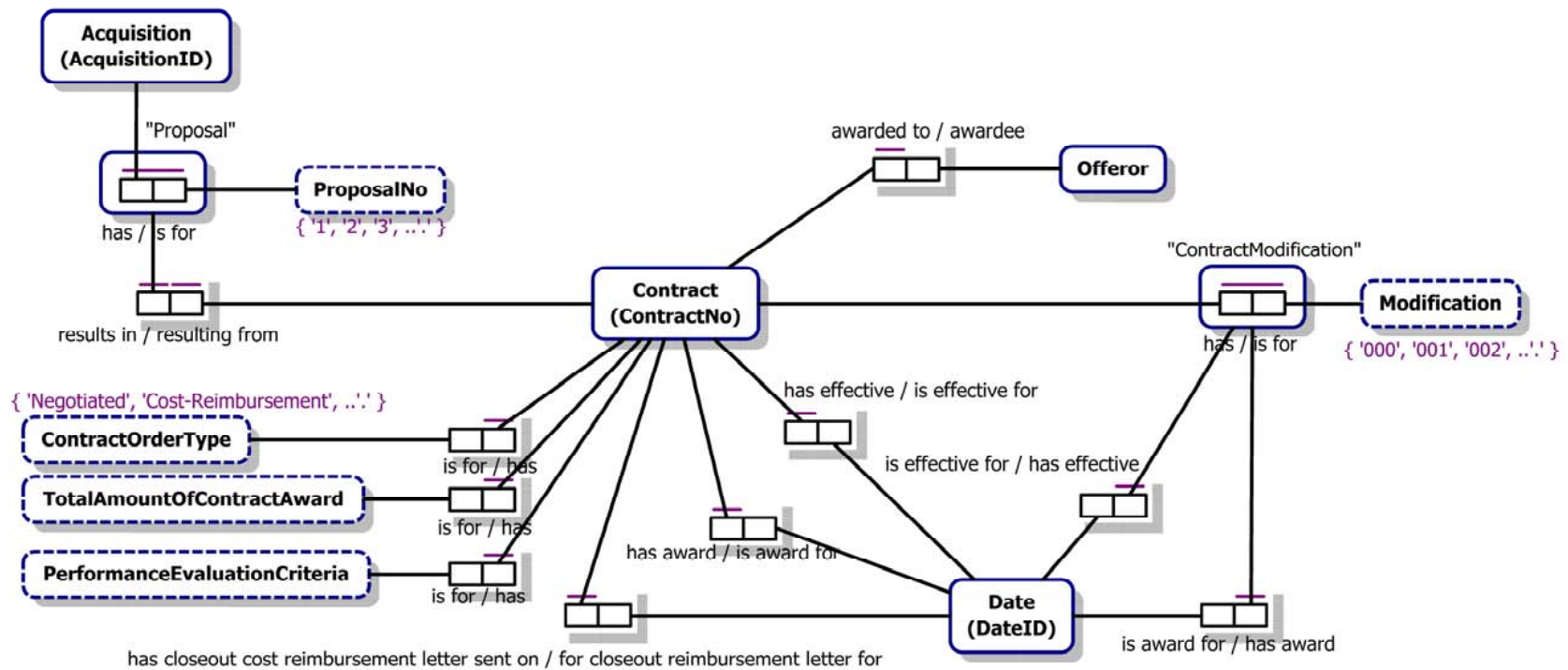
Table 14—Contract—CDM Entities and Key Attributes

| # | Name | Definition | Source |
|----|--|--|---|
| 1 | Contract | An award instrument establishing a binding legal procurement relationship between NIH and a recipient obligating the latter to furnish a product or service defined in detail by NIH and binding the Institute to pay for it | NIH Research Portfolio Online Reporting Tool (RePORT) http://report.nih.gov/glossary.aspx?filter=C |
| 2 | <i>Contract No.</i> | <i>An unique identifier for a contract</i> | <i>Proposed by The Office of the Architect</i> |
| 3 | <i>Contract Order Type</i> | <i>A designation that describes the terms used to establish the contract.</i> | <i>Proposed by The Office of the Architect</i> |
| 4 | <i>Performance Evaluation Criteria</i> | <i>The measures that will be used to determine the successful progress/completion of the contract</i> | <i>Proposed by The Office of the Architect</i> |
| 5 | <i>Total Amount of Contract Award</i> | <i>The aggregate dollar figure to be paid to the contractor upon successful completion of the contract.</i> | <i>Proposed by The Office of the Architect</i> |
| 6 | Contract Modification | An composite / associative entity that specifies the changes made to a contract terms after the contract has been awarded | OER Glossary of NIH Terms http://grants.nih.gov/Grants/glossary.htm (adapted) |
| 7 | <i>Modification</i> | <i>An administrative or change order revision to the contract terms.</i> | <i>Proposed by The Office of the Architect</i> |
| 8 | Date | A particular period of time at which something happened or existed, or is expected to happen. | <i>Proposed by The Office of the Architect</i> |
| 9 | <i>Date ID</i> | <i>An unique identifier for the date</i> | <i>Proposed by The Office of the Architect</i> |
| 10 | NIH Organization | Federal government agency that conducts and supports biomedical and behavioral research to create fundamental knowledge of living systems and reduce the burden of illness and disability | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 11 | Offeror | An organization responding to a request for proposals | NIAID Glossary of Funding and Policy Terms and Acronyms |
| 12 | Proposal | Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed. | NIAID Glossary http://www.niaid.nih.gov/ncn/glossary/default5.htm#proposal (<i>adapted</i>) |

| # | Name | Definition | Source |
|----|--------------------|--|--|
| 13 | <i>Proposal No</i> | <i>A 'sequential number' for a proposal that is received against a particular 'acquisition'.</i> | <i>Proposed by The Office of the Architect</i> |

3.6.3 Contract—ORM Model

Figure 6—Contract



3.6.4 Contract—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 15—Contract—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|--|--|------------|------------|---|
| 1 | Proposal with proposal id of <ProposalID> results in contract with contract number <ContractNo>. | Proposal with proposal id of 456112 results in contract with contract number 1568966 . | 1:1 | | |
| 2 | Contract with contract number <ContractNo> has contract order type of <ContractOrderType>. | Contract with contract number 1568966 has contract order type of Negotiated . | M:1 | | Derived fact type: from Acquisition. |
| 3 | Contract with contract number <ContractNo> has total amount of contract award of <TotalAmountOfContractAward>. | Contract with contract number 1568966 has total amount of contract award of \$200,000 . | M:1 | | |
| 4 | Contract with contract number <ContractNo> has performance evaluation criteria of <PerformanceEvaluationCriteria>. | Contract with contract number 1568966 has performance evaluation criteria of Satisfactory progress on all | M:1 | | |
| 5 | Contract with contract number <ContractNo> results from proposal with proposal id <ProposalID>. | Contract with contract is 1568966 results from proposal with proposal id 7134569 . | 1:1 | | |
| 6 | Contract with contract number <ContractNo> is awarded to Offeror with party id <PartyID>. | Contract with contract is 1568966 is awarded to Offeror with party id 3458971284 . | M:1 | | Derived fact type: from Proposal. |
| 7 | Contract with contract number <ContractNo> is issued by NIH Organization with party id <PartyID>. | Contract with contract number 1568966 is issued by NIH organization with party id 2878579931 . | M:1 | | Potential default derivation rule: From the organization of the research initiative approving director or a fact type about the acquisition |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|----|--|---|------------|------------|---|
| 8 | Contract with contract number <ContractNo> is administered by NIH Organization with party id <PartyID>. | Contract with contract number 1568966 is administered by NIH organization with party id 2878579931 . | M:1 | | Potential default derivation rule: From the organization of the research initiative approving director or a fact type about the acquisition |
| 9 | Contract with contract number <ContractNo> has modification of <Modification>. | Contract with contract number 1568966 has modification of 001 . | M:M | | |
| 10 | Modification <Modification> of contract with contract number <ContractNo> with has effective date with date id <DateID>. | Modification 001 of contract with contract number 1568966 has effective date with date id 11/6/2009 . | M:1 | | |
| 11 | Modification <Modification> of contract with contract number <ContractNo> has award date with date id <DateID>. | Modification 001 of contract with contract number 1568966 has award date with date id 10/31/2009 . | M:1 | | |
| 12 | Contract with contract number <ContractNo> has effective date with date id <DateID>. | Contract with contract number 1568966 has effective date with date id 7/7/2009 . | M:1 | | |
| 13 | Contract with contract number <ContractNo> has award date with date id <DateID>. | Contract with contract number 1568966 has award date with date id 6/30/2009 . | M:1 | | |
| 14 | Contract with contract number <ContractNo> has closeout cost reimbursement letter sent on date with date id <DateID>. | Contract with contract number 1568966 has closeout cost reimbursement letter sent on date with date id 8/6/2010 . | M:1 | | |

3.7 OVERARCHING CONCEPTS

3.7.1 Introduction

These overarching concepts apply to those information assets that are intended to be shared across the NIH organization. Business needs require flexibility and agility to meet demanding business requirements. These concepts are intended to provide high-level representations for commonly used data objects and guide the information systems developers in the current and future state environments.

The two concepts noted here are **Correspondence** and **Grouping**:

Grouping:

A number of ongoing and emerging business needs warrant an approach for flexible management of related entities in the business areas of R&D Contracts, Grants etc. The targeted business needs have identified to date such as linking **Acquisitions, Proposals** and/or **Contracts** supporting a single or related research effort; defining rules for managing related **Acquisitions, Proposals** and/or **Contracts**; and the ability to manage all the correspondence involved in an R&D Contract. These needs are addressed in the model through **Grouping** and its rules.

Correspondence:

The R&D CDM assumes all necessary **Correspondence** as related to a particular object will continue to be collected and maintained as per policy. The **Correspondence** in this model depicts the various types of communications that may exist with the associated data object and provides the business facts that support the policy.

3.7.2 Overarching Concepts—Data Entities and Attributes

Table 16 shows the data entities that have been defined as part of the R&D Contracts CDM. These entities represent the core business data that needs to be collected and managed throughout the NIH. For each of the entities, the following information is provided:

- *Entity Name*: The name used to refer to the entity. (**Bolded** within this standard).
- *Attribute Name*: The name used to refer to an attribute. (*Italicized* within this standard).
- *Definition*: A description of the entity in plain English, consistent with the understood common usage within NIH.
- *Source*: The point of origin for the definitions identified within this standard.

Table 16—Overarching Concepts—CDM Entities and Key Attributes

| # | Name | Definition | Source |
|----|-----------------------------|--|--|
| 1 | Correspondence | Any ad hoc communications exchanged between a sender and receiver. These occur between the applicant or Offeror and NIH throughout the life of the procurement or acquisition. | Proposed by The Office of the Architect |
| 2 | <i>Correspondence ID</i> | <i>A unique identifier for the correspondence</i> | <i>Proposed by The Office of the Architect</i> |
| 3 | <i>Correspondence Title</i> | <i>A title provided to the correspondence</i> | <i>Proposed by The Office of the Architect</i> |
| 4 | <i>Correspondence Type</i> | <i>A designation to identify the category of communications such as email, letters, memos, etc.</i> | <i>Proposed by The Office of the Architect</i> |
| 5 | Object Name | A existence of a discrete unit of data | Proposed by The Office of the Architect |
| 6 | <i>Object Name ID</i> | An unique identifier given to the object name | <i>Proposed by The Office of the Architect</i> |
| 7 | <i>Object Instance</i> | <i>A real world example of an object that is cited to prove or validate a point.</i> | <i>Proposed by The Office of the Architect</i> |
| 8 | Grouping | An aggregation of objects that are managed together; possibly because they are related in the science. This reflects the emerging needs of NIH to support collaborative science and examples include one-to-many and clustered contracts supporting a single research projects. This flexible grouping allows for complex mechanisms including collections of proposals and R&D Contracts. | NIH Grants Conceptual Data Model NIHRFC0026 (adapted) |
| 9 | <i>Grouping ID</i> | An unique identifier given to each grouping | <i>Proposed by The Office of the Architect</i> |
| 10 | <i>Grouping Rule</i> | The business rules that must be in place to create the group | <i>Proposed by The Office of the Architect</i> |
| 11 | Grouping Type | The characteristics or structure of various groupings that can be created and managed together | Proposed by The Office of the Architect |
| 12 | <i>Grouping Type ID</i> | <i>An unique identifier given to the grouping types</i> | <i>Proposed by The Office of the Architect</i> |
| 13 | <i>Grouping Type Rule</i> | <i>The business rules that must be in place to create the different types of grouping.</i> | <i>Proposed by The Office of the Architect</i> |

| # | Name | Definition | Source |
|----|---------------------------------|---|--|
| 14 | Grouping Object Instance | A composite/associative entity that identifies the grouping for a specific object | Proposed by The Office of the Architect |
| 15 | <i>Grouping Role</i> | <i>The role that the grouping will play</i> | <i>Proposed by The Office of the Architect</i> |

3.7.3 Overarching Concepts—ORM Models

Figure 7—Overarching Concepts – Correspondence

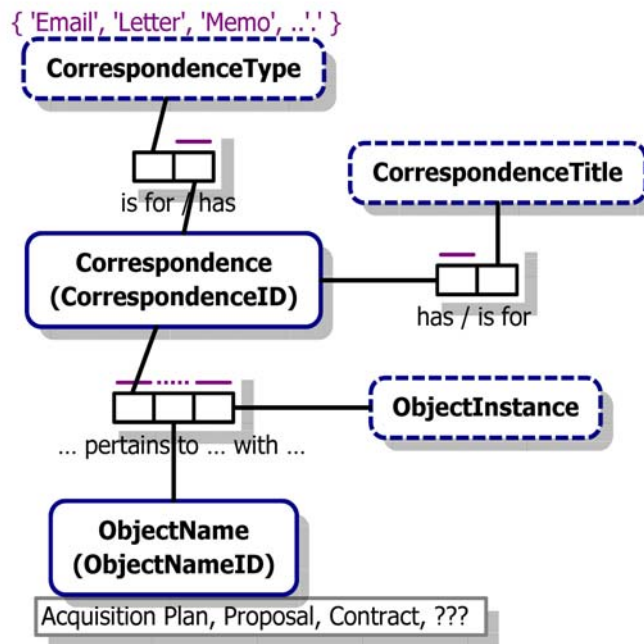
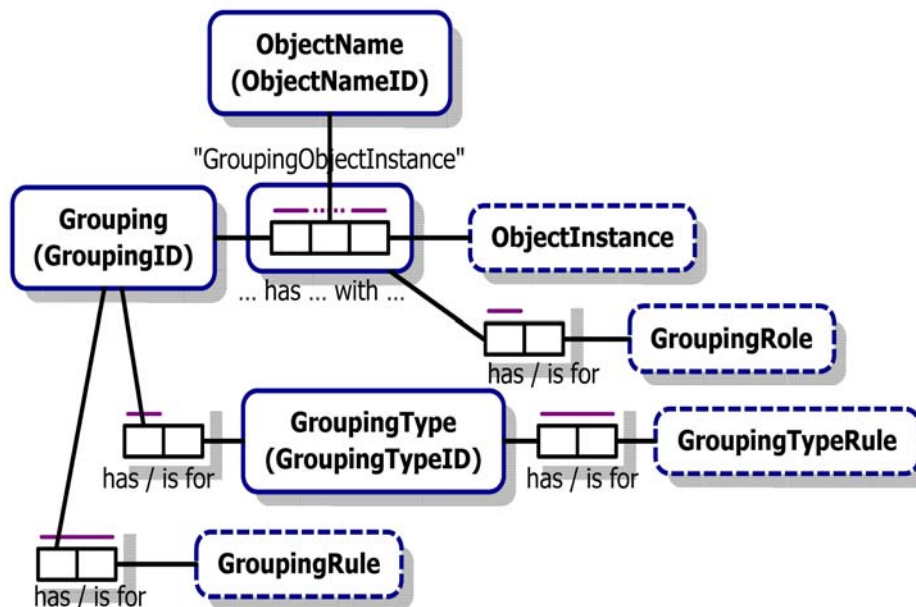


Figure 8—Overarching Concepts – Grouping



3.7.4 Overarching Concepts—Relationships and Rules

In addition to the key entities defined as part of the R&D Contracts CDM, there are relationships between entities that can be expressed as statements of business rules. Instances allow for a better understanding of the rule that is being expressed. Where applicable, population constraints are provided, which are called out as comments where applicable. Additional assumptions and comments may also be provided about the relationship.

Table 17—Overarching Concepts—CDM Relationships and Rules

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|--|--|------------|--|--|
| | Correspondence | | | | |
| 1 | Correspondence is identified by correspondence id <CorrespondenceID>. | Correspondence is identified by correspondence id 4567890123 . | | ID is unique | |
| 2 | Correspondence with correspondence id <CorrespondenceID> has correspondence type of <CorrespondenceType>. | Correspondence with correspondence id 4567890123 has correspondence type of Email . | M:1 | | Types of correspondence: Email, Letter, Memo, Other |
| 3 | Correspondence with correspondence id <CorrespondenceID> has correspondence title of <CorrespondenceTitle>. | Correspondence with correspondence id 4567890123 has correspondence title of Solicitation Question . | M:1 | | |
| 4 | Object Name is identified by object name id <ObjectNameID>. | Object name is identified by object name id 5678901234 . | | ID is unique | Is it object name id or object id? |
| 5 | Correspondence with correspondence id <CorrespondenceID> pertains to object name id <ObjectNameID> with object instance of <ObjectInstance>. | Correspondence with correspondence id 4567890123 pertains to object name id 5678901234 with object instance of 6789012345 . | M:1 | We will use “Object” in this model and not fight for using a more appropriate term like “Thing”. | “Object” has ID that can reference a type of thing (like “contract”) in a 1:1 relationship. Then in the “contract” table, a contract ID specifies a single instance of a contract. |
| | Grouping | | | | |
| 6 | Grouping with grouping id <GroupingID> has object name with object name id <ObjectNameID> with object instance of <ObjectInstance>. | Grouping with grouping id 453625 has object name with object name id Acquisition Plan with object instance of 7890123456 . | M:1 | | |

| # | Relationship/Rule | Example | Constraint | Assumption | Comment |
|---|--|---|------------|------------|---------|
| 8 | Grouping with grouping id <GroupingID> for object name with object name id <ObjectNameID> with object instance of <ObjectInstance> has grouping role of <GroupingRole> | Grouping with grouping id 453625 with object name with object name id Acquisition Plan with object instance of 7890123456 has grouping role of Lead . | M:1 | | |
| 7 | Grouping with grouping id <GroupingID> has grouping type with <GroupingTypeID>. | Grouping with grouping id 453625 has grouping type with 4132 . | M:1 | | |
| 8 | Grouping with grouping id <GroupingID> has grouping type rule of <GroupingTypeRule>. | Grouping with grouping id 453625 has grouping type rule of Cluster... | M:M | | |
| 9 | Grouping type with <GroupingTypeID> has grouping rule of <GroupingRule>. | Grouping type with 453625 has grouping rule of Notify when... | M:M | | |

4 References

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- Terry Halpin (2006). “Object Role Modeling.” <http://ww.orm.net> (28 Sept. 2006).
- For more information on the NLM notation and interpreting NLM models see <http://www.sharpinformatics.com>.

5 Contact

To contact the NIHRFC Editor, send an e-mail message to EnterpriseArchitecture@mail.nih.gov.

6 Security Considerations

This NIHRFC raises no security issues.

7 Changes

| Version | Date | Change | Authority | Author of Change |
|---------|----------|-----------------------|------------|--|
| 0.1 | 01/25/10 | Original Draft | NIHRFC0001 | Justin Gaspard, Eric Mechenbier, Taruna Reddy, John Sharp |
| 0.2 | 05/24/10 | Incorporated Comments | NIHRFC0001 | Justin Gaspard, Eric Mechenbier, Taruna Reddy, John Sharp |
| 1.0 | 07/27/10 | Approved by the ARB | ARB | Kiley Ohlson |

| Version | Date | Change | Authority | Author of Change |
|---------|----------|---|--|---|
| 0.2 | May 2010 | <p>Significant Changes to the document are:</p> <ul style="list-style-type: none"> • The major object “Acquisition Plan” was changed to “Acquisition.” The term ‘Acquisition Plan’ is now a step in the ‘Acquisition Milestone’ attribute. • The justification for not defining ‘R&D Contract’ was attributed to the research done by the R&D Contracts Working Group. • Terms that were defined in the Grants CDM NIHRFC and the Enterprise Architecture NIHRFC that are used here have been ‘modified’ to apply to both Grants and R&D Contracts. • The term ‘Contract Officer’ was replaced by the term ‘Contracting Officer’ throughout the document. • All responsibility for work with Offerors was attributed to the Contracting Officer. • Only one ‘description’ attribute was retained for Acquisition. • The Organization ‘Technical Evaluation Panel’ was removed from the model and the Organization ‘Scientific Review Group’ is used. A ‘Technical Evaluation Panel’ is used for Non-R&D Contracts. • Many definitions were updated per review comments. | Helen Schmitz, Acting Chief IT Architect | Eric Mechenbier, Taruna Reddy, John Sharp |

8 Summary of Changes

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|---|--|--|--------------------------------------|--------------------|
| Figure 6: ORM Model (Peer Review) | The model doesn't seem to be consistent as far as the "Role" entity is concerned. Should the Role entity be associated/linked to the Person entity in every instance? | <p>The use of "Role" in the R&D Contract CDM is consistent with the usage in previous CDMs. The R&D Contract CDM does not elaborate on both of these fact types but it does make reference to other approved CDMs where appropriate.</p> <p>There is one usage portrayed in the R&D CDM. The first is an 'Object' has a 'Person' playing a 'Role.' The 'Object' is any major object in the model. The other usage is that an 'Organization' assigns a 'Role' to a 'Person.' This usage is in other CDMs.</p> | No change to document | No change to Model |
| Table 13—Peer Review—CDM Entities and Attributes | <p>The definitions for the following entities/attributes use "grant" in the definition vice "contract":</p> <p>9. Conflict of Interest Type</p> <p>17. Scientific Review Group Meeting</p> | The terminology used in these definitions will be generalized to be more appropriate for both Grants and R&D Contracts. Additionally, we will scan for and extend other occurrences to include contracts in addition to grants. | Make appropriate changes to Document | No change to Model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|-------------------------|--|---|--------------------------------------|--------------------|
| General Comments | <p>Good job! I especially liked the narratives at the beginning of each section. Since this is a new subject matter for me, being more accustomed to the Grants & Cooperative Agreements business process, these narratives helped me understand the business context for the Contracts data and process-- particularly how they impact the scientific research work. I also appreciate the tie-in to existing entity definitions in the Grants CDM.</p> <p>Thanks!</p> <p>Elizabeth Martin, Business & Data Analyst, NIMH IRTMB</p> | Thank you for your support and appreciation | No change to document | No change to Model |
| Page 31 typo | <p>There is a typo on Page 31, first sentence in Section 4.3.1. Current version reads: Once the a Research Concept has been refined and approved by an Advisory Council, the "Research Initiative" (as it is now known) is published as Request For Announcements (RFAs)</p> | This typo will be corrected in the next release; thank you for pointing this out. | Make appropriate changes to Document | No change to Model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|--|---|--|--|--------------------|
| | The RFA is a Request for Applications, not Announcements. | | | |
| Definition of R&D Contracts | Section 2 contains a note that states that the R&D CWG is working on identifying and developing the most appropriate definition for an R&D contract for NIH. Please note that a definition already exists in NIH Manual Chapter 6315-1 and I strongly suggest that no other definition be developed as it would be very confusing to have more than one definition to describe R&D. "Contracts" are defined in HHSAR, so this should be sufficient. | The R&D Contracts Working Group has identified the multiple descriptions of R&D Contracts in various documents and applications. | Make appropriate changes to Document The R&D Contracts Working Group has analyzed and captured the multiple descriptions of R&D Contracts used in documents and applications Look at Robin' email for the correct answer | No change to Model |
| Exec. Summary - Third Bullet - Acquisition Plan | The definition for Acquisition Plan should be revise to read: "is used to manage data from the time a Research Initiative is approved until Award is executed. | This definition will be incorporated into the next release of the document. Thank You. | Make appropriate changes to Document | No change to Model |
| Typo | Section 2, National Institute of Health should read National Institutes of Health | This typo will be corrected in the next revision. Thanks. | Make appropriate changes to Document | No change to Model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|--------------------|---|---|--|--------------------|
| Section 3.2 | Section 3.2 states that grants management subject matter experts were a part of the group that helped to create the R&D Contracts Business Model (Current State). I am not sure that any grants management experts were present in the discussions held on this topic by either the super-SMEs or the SMEs. | We will modify the document accordingly | Make appropriate changes to Document based on Angela's response that confirms the comment. | No change to Model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|--|--|---|--|---------------------------|
| <p>Section 4.5.1, Peer Review, Introduction</p> | <p>1. First paragraph: The first sentence should delete the words "also knows as study section" as this is a grant related term and does not apply to contracts.</p> <p>2. Second Paragraph: Please revise the first sentence to read: "A peer review by a group made up of at least 75% non-Government experts, called "peer reviewers," assesses the scientific and technical merit of R & D contract proposals with respect to the technical evaluation criteria as specified in the solicitation." Delete the last sentence of this paragraph.</p> <p>3. Third paragraph: Revise the term "Contract Officer" to "Contracting Officer." The second sentence should be revised to read: The Contracting Officer ensures that the contract proposals are reviewed in accordance with the technical evaluation criteria stated in the solicitation." The third</p> | <p>1. The document will be modified accordingly</p> <p>2. The document will be modified accordingly</p> <p>3. We will modify the document accordingly</p> | <p>1. Make appropriate changes to the document</p> <p>2. Make appropriate changes to Document</p> <p>3. Make appropriate changes to the document</p> | <p>No change to Model</p> |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|-------|--|------------------------|---------------------|------------------|
| | <p>sentence should be revised to read "The contracting officer and the Institute review office ensure that no conflicts of interest exist with the submitted proposals and the peer reviewers." The last sentence should be revised to read: "The reviewers also make a determination as to whether each contract proposal is acceptable or unacceptable."</p> | | | |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|--|--|---|---|---|
| <p>Section 4.6, Contract, 4.6.1, Introduction</p> | <p>1. As stated earlier, wherever the term "Contract Officer" is mentioned, it should be revised to "Contracting Officer."</p> <p>2. The first sentence is not correct. The technical and cost monitoring procedures are set forth in the solicitation and contract, not after contract award.</p> <p>3. The second sentence should be revised to read: "The Contracting Officer ensures that deliverables, including status reports, are provided as set forth in the contract through contract completion." The third sentence should be revised to read: "At contract completion, the Contracting Officer will issue a Notification of Expiration to the contractor." The fourth sentence should be revised to read: "The Contracting Officer verifies that the terms of the Contract have been successfully fulfilled." In addition, the Contracting Officer, as</p> | <p>1. The document will be modified accordingly</p> <p>2. The document will be modified accordingly</p> <p>3. The document will be modified accordingly</p> | <p>Make appropriate changes to Document</p> | <p>1. Change the term" Contract Officer" to "Contracting Officer"</p> <p>2. No changes to the model</p> <p>3. No changes to the model</p> |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|---|---|--|---|---------------------------|
| | <p>applicable, assumes ownership of property and products acquired during the contract, and verifies that all applicable inventions have been reported, among other things." The last sentence should be revised to read: "The Contracting Officer ensures that the contract and all contract file documentation are retained and stored until the legal retention period is reached, after which it may be destroyed."</p> | | | |
| Section 4.6.2, Contract - Data Entities and Attributes | <p>The attribution name, "Modification" is only partially correct. A Modification may be a change order, but it may also be something else, such as an administrative change, or a revision to a contract article.</p> | <p>The document will be modified accordingly</p> | <p>Make appropriate changes to Document - see below</p> <p>Modification (attribute) - An administrative or change order written revision to the contract terms.</p> | <p>No change to Model</p> |
| Section 4.7.2, Table 17 | <p>The definition for the Name "Correspondence" should be revised to delete the term "applicant" as this is a grant related term that does not apply to contracts. "Correspondence" should also include written and electronic (including fax, telephone,</p> | <p>The term Correspondence is a general concept intended to be used across NIH</p> | <p>No change to document</p> | <p>No change to Model</p> |

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| | etc.) communications, and it should extend through the contract administration and closeout phase. | | | |
| Incorrect usage of cooperative agreements | Section 2.4: The last sentence incorrectly refers to cooperative agreements with an example of Inter-Agency Agreements. These two terms are not related. Cooperative agreements refer to the grants mechanism and not to contracts. Interagency agreements are defined in FAR17.501 as: "a procedure by which an agency needing supplies or services (the requesting agency) obtains them from another agency (the servicing agency)." There are considered to be acquisitions, rather than grants and therefore they should not be used as an example of cooperative agreements. I don't believe that cooperative agreements should be mentioned here; instead, | Thank you for clarification, we will modify the document accordingly | Make appropriate changes to Document The current model also does not address the data objects and rules related to Inter-Agency agreements. | No change to Model |

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| | just refer to Interagency agreements. | | | |

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| Table 11 | <p>1. Item 2: I am not aware of an Acquisition Plan ID, except the RFP number.</p> <p>2. Item 8: The Name should be Changed to "Contractor Performance Information." The definition should be revised to read: Reports on past performance of the offeror on previous contracts as contained in the Past Performance Information Retrieval System (PPIRS) at www.ppirs.gov</p> <p>3. Item 11 and 12: I am not aware of any Proposal IDs or Proposal Nos. associated with proposals.</p> <p>4. Item 14: The contracting officer also considers cost in the establishment of the competitive range.</p> <p>5. Item 16: The Final Proposal Revision is to be requested by the Contracting Officer from each offeror still in the complete range at the conclusion of</p> | <p>We will discuss these items when we meet. We will contact you to setup a time. Thank you.</p> <p>1. This is a sequentially generated unique identifier</p> <p>2. We will modify the document accordingly</p> <p>3. These are sequential identification numbers generated</p> <p>4. We will modify the document accordingly</p> <p>5. We will modify the document accordingly</p> <p>6. This is a request we heard from SMEs during our discussion for future enhancements to applications</p> <p>7. We will modify the document accordingly</p> <p>8. It is not our intention to imply that the peer reviewers ask questions of the offeror. We understand that the Contracting Officer is responsible for doing this</p> <p>9. We will modify the document accordingly</p> | <p>1. No change to the model</p> <p>2. Make the change from "Customer Satisfaction Assessing Official Comment" to Contractor Performance Information</p> <p>3. No Change to the document</p> <p>4. Add cost evaluation criteria to the document</p> <p>5. Make appropriate changes to the document</p> <p>6. No Change to the document</p> <p>7. Make change to the document</p> <p>8. Review the document to clarify the definition (to remove the implication)</p> <p>9. Make change to the document</p> | <p>1. No change to the model</p> <p>2. Make the change from "Customer Satisfaction Assessing Official Comment" to Contractor Performance Information"</p> <p>3, 4, 5, 6. No changes to the model</p> <p>7. Make change from Technical Review Summary to Technical Evaluation Report</p> <p>8. No change to the model</p> <p>9. Make change to the model</p> |

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| | <p>discussions.</p> <p>6. Item 17: I am not aware of this item. Suggest deletion.</p> <p>7. Item 20: The Name should be changed to Technical Evaluation Report.</p> <p>8. Item 29, Peer Review: The definition is not correct. The reviewer group does not ask questions of the offeror; however they do form the basis of the questions that the contracting officer will ask of the offeror.</p> <p>9. Item 29, Peer Review Technical Question Answer - Name should be changed to Technical Question Answer.</p> | | | |

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| <p>Item 4.4.1</p> | <p>1. Note that for this and other sections the term "Contract Officer" should be "Contracting Officer."</p> <p>2. Suggest that the first paragraph be revised to read: "...it is advertised in FedBizOpps (www.fbo.gov) and requires that an offeror submit electronic and/or written proposals.</p> <p>3. The second paragraph regarding pre-proposal conferences should delete the education of the evaluation team, as that is not their purpose state that preproposal conferences. Instead the pre-proposal conference provides information to prospective offerors regarding the contract project and permits questions to be asked and clarifications to be made. Based on the information provided, the Contracting Officer may release a solicitation amendment.</p> <p>4. Third paragraph: The proposals are evaluated in accordance with the evaluation criteria</p> | <p>We will update the document to clarify these points. We would like to discuss proposed changes to the fourth paragraph with you.</p> <p>1. We will modify document accordingly</p> <p>2. We will modify document accordingly</p> <p>3. We will modify document accordingly</p> <p>4. We will modify document accordingly.</p> | <p>Make appropriate changes to document</p> | <p>Make appropriate changes to model</p> |

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| | <p>described in the RFP. Please revise this. The proposals are peer reviewed for technical merit by a Scientific Review Group. The contracting officer evaluates costs, past performance, extent of participation of small business concerns (as applicable). A competitive range of all the most highly rated proposals is established by the contracting officer. The contracting officer solely makes the determination as to which offerors will receive awards.</p> <p>Fourth Paragraph: The Acquisition Plan should set out the technical/cost monitoring procedures. At the award, the Contracting Officer selects the COTR.</p> | | | |

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| <p>Acquisition Plan Introduction, Section 4.3.1</p> | <p>1. This Section narrative in 4.3.1 should be revised to eliminate any references to grants (i.e., RFAs and PAs). In addition it assigns responsibility to the Contracting Officer to prepare the Acquisition Plan (AP). The AP is prepared through the use of a team (Acquisition Team), including the Project Officer, Budget and contract staff, and others as necessary.</p> <p>2. The second paragraph is incorrect, the term "Acquisition Plan" does not encompass all the items mentioned in the example. It does not "capture key data related to a R&D Contract" This sentence should be deleted. All actions beyond the plan, draft presolicitation notice, and draft RFP should not be included in the AP, as those actions are captured later in the process, i.e., solicitation, evaluation, negotiation, award, administration and closeout of the contract are all separate</p> | <p>This is complex and deserving of discussion in our meeting.</p> <p>1- Thank you for your suggestion, we will modify the document accordingly 2- The intent of this section is to describe umbrella term that encompasses all these examples 3- Thank you for your suggestion, we will modify the document accordingly</p> | <p>Make appropriate changes to document for all three</p> | <p>Make appropriate changes to model for item #2</p> |

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| | <p>and distinct phases in the acquisition process.</p> <p>3. The third paragraph should be revised as follows: "The Contracting Officer also conducts market research (as a part of acquisition planning to ensure that vendor capabilities exist in the marketplace. The Project Officer will provide an estimate of the cost (independent Government cost estimate or IGCE) of the acquisition as a part of the AP. The IGCE is used to determine the reasonableness of an Offeror's proposed costs. The Contracting Officer along with the Project Officer establishes the evaluation criteria that will be used to evaluate the offeror's proposal. The Acquisition Team works together to determine the contract type as they develop the AP. The contract type determines how the solicitation will be structured and affects the way the contract will be administered.</p> | | | |

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| <p>Figure 3 - Research Concept and Research Initiative</p> | <p>I am not sure what this represents. It is unclear why Acquisition Plan sits off to one side, for example, and "Type of Federal Action and Requirement Type are separated. Since there are no arrows, it is unclear where each block flows to/from. I suggest that the SMEs be consulted to redo this figure</p> | <p>The finer points of ORM notation will be addressed when we meet with you.</p> <p>During discussion with SME, OITA provided the background on how to read and understand data models</p> | <p>No change to document</p> | <p>No change to Model</p> |

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| <p>Table 7</p> | <p>1. Definition of Advisory Council: This comment applies to Table 7 and elsewhere in the document where Advisory Councils are discussed. Advisory Councils are the exception, rather than the rule when it comes to secondary peer review. Initial peer reviews are conducted by a group of experts in the field along with government reviewers, as applicable (ratio must be 75% non-government at a minimum). Secondary peer review, when it occurs, is encouraged to be accomplished by the same group that originally reviewed the proposals (per HHSAR 315.307). The process is not the same as it is in the Grants community. I suggest that this definition be reworded as above, and wherever else in the document where Advisory Councils or Advisory Boards are mentioned, the same advice applies.</p> <p>2. Definition of NIH</p> | <p>1. Modify the document in Table 7 for Advisory Council and in Table 11 for Technical Evaluation Panel</p> <p>2. Modify the document in Table 7</p> <p>3. This section defines rules before it is determined that the research will be funded through an R&D Contract so the terms are appropriate.</p> | <p>1. Chartered NIH institute advisory committee that performs second-level peer review for grants, may perform second-level peer review for R&D contracts, makes funding and policy recommendations, and helps develop research agendas.</p> <p>NIH Grants Conceptual Data Model NIHRFC0026 (amended)</p> <p>remove: (31) Technical Evaluation Panel (TEP) Panel of peer reviewers with scientific or technical expertise who conduct initial peer review and usually conduct the second review for R&D Contracts of the scientific and technical merit of R&D contract proposals.</p> <p>For SRG add: Conducts the first round reviews for Grants and R&D Contracts and usually does the second round of reviews for RD Contracts. [Table 13]</p> <p>2. Federal government agency that may conduct, support and/or fund biomedical and behavioral research to create fundamental knowledge of living systems and reduce the burden of illness and disability</p> <p>NIAID Glossary of Funding and Policy Terms and Acronyms (amended)</p> | <p>1-3. Replace the TEP with SRG on the model. Include fact type in Peer Review?</p> |

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| | <p>Organization: The title is somewhat ambiguous, since "NIH Organization" could refer to HR, Finance, or almost any other organization within NIH. The definition discusses "supports" ... research. R&D Contracts, in fact, contracts in general, do not support research; rather they "fund" ... research.</p> <p>3. Definition of Research Initiative: It is not clear why this document which is for R&D Contracts, contains any grant related terms such as application, program announcement, grants.gov, RFA and PA.</p> | | <p>3. No change to document</p> | |

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| <p>Section 4.1.3, Figure 2</p> | <p>Suggest deleting "Technical Evaluation Panel" as this is the same as the Scientific Review Group.</p> | <p>We will discuss when we meet.</p> <p>During discussions with SMEs, it was ascertained that TEP is used for non-R&D Contracts, while for R&D Contracts, the term can be used interchangeably with Scientific Review Group.</p> | <p>Conducts the first round reviews for Grants and R&D Contracts and usually does the second round of reviews for RD Contracts.</p> | <p>No change to Model</p> |

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| <p>Table 4 - Organizational Entities</p> | <p>1. Definition of Scientific Review Group: Suggest using the definition of SRG in NIH Manual Chapter 6315-1, as follows: "A group of primarily nongovernmental experts qualified by training and experience in particular scientific or technical fields, or as authorities knowledgeable in the various disciplines and fields related to the scientific areas under review, to give expert advice on the scientific and technical merits or contract proposals, or the concept of contract projects when serving as a Program Advisory Group."</p> <p>2. It is noted that the term "Technical Evaluation Panel" is synonymous with "Scientific Review Group" and is no longer used. Suggest deletion.</p> <p>3. The term "Contract Officer" should be revised to "Contracting Officer" The source should be the FAR.</p> | <p>1.The SRG definition has been modified to apply to both Grants and R&D Contracts.</p> <p>2.We would like to discuss this when we meet. During discussions with SMEs, it was ascertained that TEP is used for non-R&D Contracts, while for R&D Contracts, the term can be used interchangeably with Scientific Review Group.</p> <p>3.This change will be made throughout the document.</p> <p>4. This definition was modified so as to be applicable for contracting in addition to grants.</p> <p>5. This definition was modified so as to be applicable for contracting in addition to grants.</p> | <p>1. SRG definition: A group of primarily nongovernmental experts qualified by training and experience in particular scientific or technical fields, or as authorities knowledgeable in the various disciplines and fields related to the scientific areas under review who conduct initial peer review based upon the scientific and technical merit of Grant Applications and R&D Contract proposals. When needed, these groups usually conduct the second review for R&D Contract proposals.</p> <p>2. Delete TEP - Comment in the text that the SRG is used exclusively in this model because the model deals with R&D Contracts and the TEP does not appear because is used for regular Contracts.</p> <p>3. Change throughout the document</p> <p>4. Any individual judged by the recipient organization to have the appropriate level of authority and responsibility to direct the research effort. The designated individual is responsible and accountable to the overseeing NIH organization for the proper conduct of the research effort including the submission of all required reports and for all scientific and technical aspects of the research including day to day management. The designated individual does not</p> | <p>1-2. Replace Technical Review Panel with the Scientific Review Group in the model. [Include this fact with the Review portion of the model.]</p> <p>3. Change the Role in the model</p> <p>4-5. No change to the Model</p> |

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| | <p>4. The definition of the term "Principal Investigator" should be revised to delete such references to grants as "applicant" (change to offering) in first line, "grant" (change to "contract"), "grantee organization" (change to "organization"), "grantee" (change to "contractor"), etc. Delete the last sentence of the definition, as it totally relates to grants and not contracts.</p> <p>5. The definition of the term "SRO" should also be revised to delete the grant-related language, such as "grant application" (change to "offer" or "proposal"), "PI applicants" (change to "offerors"). The term "summary statements" does not apply to contracts. In addition, SROs do not act as intermediaries between PIs and reviewers, nor do they prepare summary statements. In fact only contracting officers can discuss issues with offerors. The reviewers</p> | | <p>have to be an employee of the recipient organization but these parties must have a written agreement specifying their relationship. An alternate term may be 'Project Director.'</p> <p>5. Federal scientist who presides over a scientific review group and coordinates and reports the peer review of each grant application and R&D contract proposal assigned to it. SROs ensure that grant applications and contract proposals receive a competent, thorough and fair review by an SRG. The SRO is responsible for the completeness of the technical evaluation report, including votes on acceptability, scoring, and other recommendations to the COTR and CO.</p> | |

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| | <p>and the SRO never have any discussions with offerors. Suggest that this sentence be changed to "SROs ensure that contract proposals receive a competent, thorough and fair review by an SRG. The SRO is responsible for the completeness of the technical evaluation report, including votes on acceptability, scoring of proposals, and other recommendations to the COTR and CO."</p> | | | |

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| <p>Table 9</p> | <p>1. Item 2: I am not aware of an Acquisition Plan ID, outside of the title.</p> <p>2. Item 4: I am not aware of an Acquisition Plan Short Title. Suggest Deletion.</p> <p>3. Items 5 and 6: There is only one description, and then the SOW.</p> <p>4. Item 8: Suggest that the name be revised to Acquisition Milestone.</p> <p>5. Item 9: Suggest that the definition be revised to "fiscal year" rather than "calendar year."</p> <p>6. Item 16: It is suggested that the definition only contain the contract types listed in FAR 16, i.e., Fixed-Price, Cost-Reimbursement, Incentive, Indefinite Delivery, Time and Materials, Labor Hour and Letter Contracts.</p> <p>7. Item 17: I am not aware that the Acquisition Plan or anywhere else collects</p> | <p>An Acquisition Plan has a Section that is a 'Statement of Need' and it has a correlated Sub-Section that is a 'Statement of Work.' Other points will be discussed when we meet.</p> <p>1. Sequentially generated identifier 2. This is a request we heard from SMEs during our discussion for future enhancements to applications Acquisition Title = SubPopulations and Intermediate Outcome Measures In COPD Study Acquisition Short Title = SPIROMICS 3. There will be only one Description. The Statement of Work is found by: Section = Statement of Need Subsection = Statement of Work 4. We will adopt the change in the document (and model) 5. We will modify the docs accordingly 6. We will modify the document accordingly 7. Input came from SME 8. We will modify the document accordingly 9. This is a request we heard from SMEs during our discussion for future enhancements to applications 10. Research Initiatives exist before the funding approach is decided. This is a separate part of the model.</p> | <p>1. 2. No change to the document 3. Use only 'Acquisition Description' [abstract] and delete the other two descriptions. 4. Make the change to Acquisition Milestone 5. Make appropriate change to the document 6. Make appropriate change to the document 7. No change to the document 8. Make appropriate changes to the document 9. No change to the document 10 No change to the document</p> | <p>For most part no changes to the model, except:</p> <p>4. Make the change to Acquisition Milestone 5. Check if model uses calendar year. If yes, change to fiscal year 6. Check the model uses the listed contract types 7. - 10. No change to the model</p> |

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| | <p>the described "allowable responses."</p> <p>8. Item 23: The definition should be revised to read "a written modification/revision to the RFP.</p> <p>9. Item 31: The contracting community does not assign numbers to its proposals. Only the RFP number is identified.</p> <p>10. Item 32: See previous comment on Research Initiatives.</p> | | | |

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| <p>Section 3.4, last paragraph</p> | <p>The last sentence, last line should be revised to read "...both the grant and acquisition communities to support reporting."</p> | <p>That should have read "grant and procurement" but a term was omitted. We regret the error and will correct it.</p> | <p>Make appropriate changes to the document</p> | <p>no changes to model</p> |

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| Section 3.4 Definition of Proposal | <p>1. Our IC SME suggested that this definition be reworded to read as follows: Written offer by an individual or non-federal organization who is interested in entering into...</p> <p>2. The phrase 'who is interested in entering into' would replace the existing phrase 'to enter into'</p> | <p>Your edit will be put in place, thanks.</p> | <p>Make appropriate changes to the document</p> | <p>No change to Model</p> |
| Section 3.4 continued | <p>1. 4th bullet: I suggest deleting the "Note" as it is misleading.</p> <p>2. Our IC SME also is concerned about using the term 'Acquisition Plan' with this definition, since the HHS Acquisition Plan is a known term referencing the HHS Acquisition Plan which is procurement specific OR the NIH Annual Acquisition Plan. Our SME suggests that a different term be found for the CDM concept defined as An umbrella term that denotes the activities that must be performed and the information must be</p> | <p>Thank you, we will remove the note in the next release.</p> <p>The high-level term will now be 'Acquisition' The 'Acquisition Plan' will be one step in the 'Acquisition Milestone'</p> | <p>Make appropriate changes to the document</p> | <p>No change to Model</p> |

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| | collected pertaining to the procurement of products and/or services for research. | | | |
| Section 4.5.2, Peer Review - Data Entities and Attributes, Table 13 | <p>1. Item 3: The definition should be revised to read: A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more proposals. It permits that reviewer to review only those proposals for which he/she has no conflicts of interest."</p> <p>2. Item 8: The Name should be revised to read: "Personal Conflict of Interest/SRG Reviewer of Contract Proposal." The definition of the attribute name, "Conflict of Interest Type" needs to</p> | <p>We will modify the document accordingly</p> <p>We will modify document accordingly to make sure that definitions cover both grants and R&D contracts</p> | Make appropriate changes to the document | No change to Model |

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| | <p>be revise to delete references to grant applications, and instead reference contract proposals.</p> <p>3. Item 12: I am not aware of a "Proposal ID" other than the Proposal Number.</p> <p>4. Item 16: As mentioned previously, the definition of the SRG should be taken from NIH Manual Chapter 6315-1, as it is the standard for R&D Contract Proposal review and does not include any grant terms.</p> | | | |
| Section 3.4 | Third bullet: The last sentence should be reworded to state: "This may be a designation for the research initiative to acquire services by contract or provide assistance by grant." | Thank you, we will make this change. | Make appropriate change to the document | No change to Model |
| Cooperative Agreements | See my comment on Section 2.4 - it applies equally to Section 2.5. | Thank you for clarification, we will modify the document accordingly | Make appropriate change to the document | No change to Model |

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| <p>Appendix D</p> | <p>1. Item 4: I am not aware of the "Short Title" for the Acquisition Plan. Suggest deletion.</p> <p>2. Item 9: The amount of funding is not always tied to a calendar year. It may more likely be tied to a fiscal year.</p> <p>3. Item 17: The definition is not in accordance with the requirements in HHSAR for Human Subjects. The AP in the HHSAR only requires a discussion of "the potential for use of human subjects and whether their use is considered exempt or non-exempt."</p> <p>4. Item 23: The definition for the term should be revised to read: "A revision to the request for proposal."</p> <p>5. Item 24: While Phases are typically a year in length, they are sometimes more or less than a year. Suggest therefore to change the Name to Acquisition Plan Phase, and the</p> | <p>1. This is a request we heard from SMEs during our discussion for future enhancements to applications</p> <p>2. We will modify document accordingly</p> <p>3. Change ProtectionOfHumanSubjectsRequest Type to HumanSubjectUseType with values of Exempt, Non-Exempt. A category that must be specified when human subjects are used in a research project. The allowable responses are Exempt or Non-Exempt.</p> <p>4. We will modify the document accordingly</p> <p>5. The composite entity is named after all of its parts. The year is a variable and must be included.</p> <p>6. See changes made in 18 above</p> <p>7. The rules are stated in general and for a particular review there may be additional restrictions.</p> <p>8. See changes made in 30 below</p> <p>9. NOTE - Locate the source fact type back to the form. If unable to locate then delete fact type in document and model.</p> | <p>1. No change to the document</p> <p>2. We will modify document accordingly</p> <p>3. Change ProtectionOfHumanSubjectsRequest Type to HumanSubjectUseType with values of Exempt, Non-Exempt. A category that must be specified when human subjects are used in a research project. The allowable responses are Exempt or Non-Exempt.</p> <p>4. We will modify the document accordingly</p> <p>5. No change to the document</p> <p>6. No additional changes to the document</p> <p>7. No change to the document</p> <p>8. No additional changes to the document</p> <p>9.</p> <p>10. Change definition to - The aggregate dollar to be paid to the contractor at upon successful completion of the task</p> | <p>1-2. No change to Model</p> <p>3. Change ProtectionOfHumanSubjectsRequest Type to HumanSubjectUseType with values of Exempt, Non-Exempt.</p> <p>4-8. No change to the Model.</p> <p>9.</p> <p>10. No change to model</p> |

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| | <p>Definition to "A composite/associative entity that allows an acquisition plan to be divided into phases."</p> <p>6. Item 27: As stated elsewhere, Advisory Councils are the exception, rather than the rule when it comes to secondary peer review. Initial peer reviews are conducted by a group of experts in the field along with government reviewers, as applicable (ratio must be at least 75% non-government/25% government). Secondary peer review, when it occurs, is encouraged to be accomplished by the same group that initially reviewed the proposals (per HHSAR 315.307). The process is not the same as it is in the Grants community. I suggested that the definition be reworded as above.</p> <p>7. Item 28: I am not aware that "approved visitors" are allowed to attend review meetings in the contract environment.</p> | <p>10. Definition will be changed</p> | | |

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| | <p>8. Item 30: The definition should be revised to read: "A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more proposals. It permits that reviewer to review only those proposals for which he/she has no conflicts of interest."</p> <p>9. Item 34: I am not sure what the Name implies. If it is meant to be Technical Evaluation Criteria, then the definition should be revised to earlier definition of that name. If it is meant to be Performance Evaluation, then it should refer to www.ppirs.gov and state in the Definitions that it is relevant information, for future source selection purposes, regarding a contractor's actions under previously awarded contract, such as</p> | | | |

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| | <p>the contractor's record of conforming to contract requirements, etc. (see FAR 42.1501).</p> <p>10. Item 35: The definition contains the word "recipient" which is a grant related term. The definition should therefore be revised to: "The aggregate dollar figure to be paid to the contractor upon successful performance of the contract."</p> | | | |

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| Section 3.2 (continued) | Section 3.2, last bullet: Suggest adding the Health and Human Services Acquisition Regulation (HHSAR) to the list of regulations reviewed. | Thank you, we will update document accordingly. | Make appropriate change to the document | No change to Model |
| Appendix D | Item 36: The definition should be revised to read: "A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more proposals. It permits that reviewer to review only those proposals for which he/she has not conflicts of interest." | We will modify the document accordingly | <p>Make appropriate change to the document.</p> <p>A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more applications and/or proposals. It permits that reviewer to review only those proposals for which he/she has not conflicts of interest.</p> | No change to Model |
| | Item 40: The COTR is only designated after award. BEFORE award, the term is "Project Officer" who provides guidance, information and assistance to the contracting officer on all technical aspects of a proposed project. (HHSAR 302.101) Please revise. | The Roles specified are the available Roles and the model does not specify when a particular Role must be used. | No change to document | No change to Model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
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| | Item 41: It should be made clear that correspondence also covers written communications in electronic form, as well as oral communications, and occurs during contract administration and contract closeout. | We will modify the document accordingly | Make appropriate change to the document | No change to Model |
| | Item 64: The Name should be “Contractor Performance Information” in accordance with FAR 42. The definition should be revised to read: “Relevant information, for future source selection purposes, regarding a contractor’s record of conforming to contract requirements and to standards of good workmanship, as well as other aspects of performance.” | We will modify the document accordingly | Make appropriate change to the document | Make appropriate changes to model |
| | Item 74: The Name should be Taxpayer Identification Number (TIN). The definition should be revised to read: “The number required by the IRS to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security | We will modify the document accordingly | Make appropriate change to the document | Make appropriate changes to model |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|-------|---|---|---|--------------------|
| | Number or an Employer Identification Number.” | | | |
| | Item 81: The grant terms should be revised to contract terms. (I.e., grant, applicant organization, etc.) | The terminology used in these definitions will be generalized to be more appropriate for both Grants and R&D Contracts. Additionally, we will scan for and extend other occurrences to include contracts in addition to grants. | Insert previously revised definition. | No change to Model |
| | Item 83 and 84: I am not aware of the two different Names Proposal ID and Proposal No. I thought these were one term. | Insert what was written from before | No change to Document | No change to Model |
| | Item 89: The definition should be expanded as follows: At the conclusion of discussions, each offeror still in the competitive range shall be given an opportunity to submit a final proposal revision in writing, which shall be the documentation that the Government will use to make an award (as applicable) without obtaining further revisions.” | We will modify the document accordingly | Make appropriate change to the document | No change to Model |

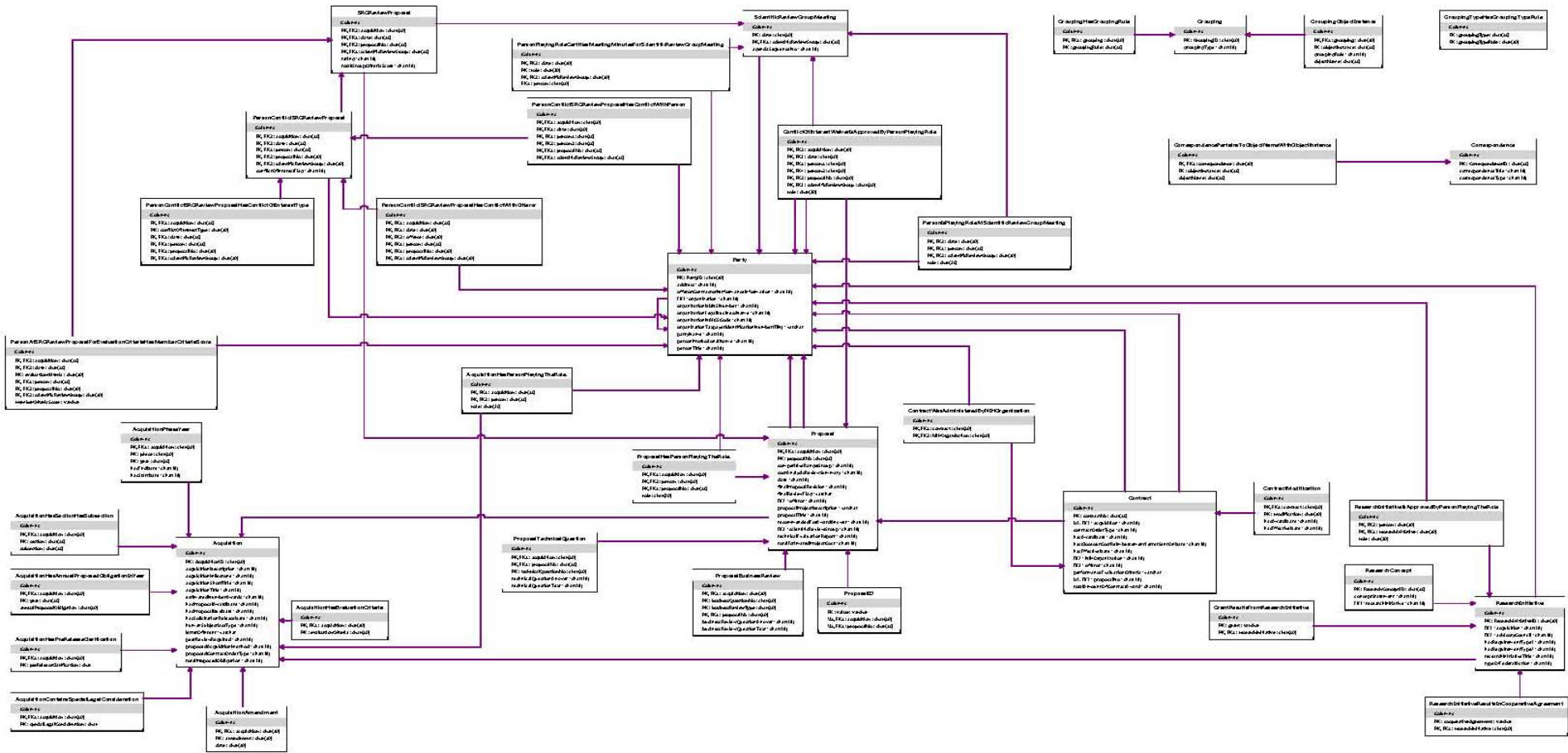
| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|-------|--|---|---|-------------------------|
| | Item 95: It should be made clear in the definition that only the contracting officer can make inquiries during discussion with the offeror. No other entity may communicate with the offeror prior to award. | We will modify the document accordingly | Make appropriate change to the document | No change to Model |
| | Item 100: See item 95 above. | We will modify the document accordingly | | |
| | Item 112: I am not aware of the term “reader” in the contract environment. Suggest deletion. | No change | No change to document ?? A person participating in the peer review process who reads a contract proposal thoroughly, writes and distributes a critique of it to the SRG for discussion purposes at the meeting. Reviewers can be of multiple kinds: One, Two, Three or N number. – alternatively they may be also known as primary, secondary (who serves as backup to the primary reviewer and may write a critique) and may include a reader (who serves as backup to the primary and secondary reviewers and does not necessarily prepare a critique) or discussers, mail reviewers and telephone reviewers. | No change to the Model. |
| | Item 116: Suggest deletion of the term “study sections” as this is a grant term. | Look at what we inserted from previous comments | | |

| Title | Comment Text | Our response in Portal | Changes to Document | Changes to Model |
|-------|--|---|--|-------------------------|
| | Item 117: Suggest revision of the definition to delete grants terms. | The terminology used in these definitions will be generalized to be more appropriate for both Grants and R&D Contracts. Additionally, we will scan for and extend other occurrences to include contracts in addition to grants. | A composite/associative entity that identifies a scientific review group meeting where a group of scientists review grant applications and/or R&D contract proposals. The meetings are conducted by NIH Staff, SROs who are usually doctoral-level scientists who have previously conducted research in the scientific disciplines of their scientific review group, and 10 to 20 extramural scientists who are able to evaluate the grant applications and/or R&D contract proposals assigned to their scientific review group. | No change to the Model. |
| | Item 123: Suggest revision of the definition to delete grants terms. | The terminology used in these definitions will be generalized to be more appropriate for both Grants and R&D Contracts. Additionally, we will scan for and extend other occurrences to include contracts in addition to grants. | Insert previously revised definition. | |

9 Authors' Address

Justin Gaspard, Eric Mechenbier, Taruna Reddy, John Sharp
National Institutes of Health
10401 Fernwood Road
MSC 4806
Bethesda, Maryland 20817
Phone: 505.243.1498
E-mail: sharp@sharpinformatics.com

Appendix B: Comprehensive R&D Contracts CDM – ERD Notation



Appendix C: NIH Information Architecture Overview

Enterprise Data Architecture is driven by the business strategy and alignment to NIH's mission. This level supports the high level IT planning efforts to ensure goals and objectives are met across the organization. The Enterprise Data Architecture identifies those key subject areas and entities that are shared across NIH including current and future state environment supporting data management.

The Federal Enterprise Architecture (FEA) Data Reference Model (DRM)³ defines a conceptual data model as follows:

A data model represents an abstract view of the real world; (ISO 11179-3) a higher-level data artifact that is often used to explore domain concepts with project stakeholders. Logical data models are often derived from conceptual data models. At this level, the data modeler attempts to identify the highest-level relationships among the different entities.

The R&D Contracts CDM is intended to provide a basis for the way NIH Information Technology (IT) solutions will structure data about R&D Contracts and the management processes related to these objects. The model captures the key business rules about the relationships between different types of data as related to R&D Contracts. The business rules can then be used by information system designers and developers to ensure that data are represented consistently across NIH information systems, data can be effectively shared, and information systems meet business needs. The R&D Contracts CDM provides an overarching framework to organize detailed R&D Contracts data architecture efforts and provides a common taxonomy for describing these data assets across the NIH.

This high-level representation allows NIH management and stakeholders to effectively understand the plan for a future-state data architecture that will enhance NIH's ability to share information across the enterprise and build more integrated, flexible information systems. As with all the data standards developed to date, this version of the R&D Contracts CDM represents an initial iteration and will be progressively refined through future updates as business processes and information systems evolve and as understanding of R&D Contract data requirements are further refined.

This model allows for the building of superior information systems that are more flexible to adapt to changing business needs including reporting. Current challenges in the interpretation of the definition of the term "R&D Contracts" and the flexible business rules have made it difficult for the current information systems to present the requisite information in a consistent and reliable manner. The R&D Contracts CDM tries to address a few of these challenges by providing clear and concise business rules that can be applied in designing and developing future information systems.

The R&D Contracts CDM also supports the communication and outreach program among the various stakeholders within NIH by having a consistent and common vocabulary. The R&D

³ The DRM version 2.0 can be found at http://www.whitehouse.gov/OMB/egov/documents/DRM_2_0_Final.pdf

Contracts CDM is a key artifact that can be used as a tool to map how the data are being used within an organization and understand the specific authoritative data sources.

For the technology staffs who implement information systems, the R&D Contracts CDM will provide the foundation to incorporate the key structural elements into the design of new or enhancement of the current information systems; and will provide a mechanism to map the detailed implementation activities to the R&D Contracts CDM. The R&D Contracts CDM also serves as basis for naming conventions in information systems by providing common language, definitions, rules, and relationships. As these current and future information systems are being developed, the lessons learned from their implementations will be incorporated into the R&D Contracts CDM to further refine the business rules and context.

Relevant Audience

The information in this CDM may be of relevance to the following stakeholders:

- *Business Owners of Data*—The data entities described in this standard should be consistent with commonly used NIH business language, and the definitions of the entities should be understandable to business users.
- *Data Architects*—Those responsible for providing R&D Contracts-specific data architecture leadership at the NIH enterprise level and the Institutes and Centers (ICs) levels should use the R&D Contracts CDM as a reference and map their work products and data models to the conceptual level data entities identified within this CDM.
- *IT Leaders and Planners*—CIOs within NIH Institutes and Centers and other senior IT leadership should use the R&D Contracts CDM as the common taxonomy for identifying NIH R&D Contracts data assets in their strategy and IT planning documents.
- *Solution Architects*—Architects responsible for the overall design of a new solution or enhancement of existing information systems related to R&D Contracts will be a key audience of the R&D Contracts CDM. Information systems developed at NIH will often instantiate the high-level conceptual entities and relationships identified in the R&D Contracts CDM in their logical and physical database designs. Solution architects will need to align their data entities to the entities in the R&D Contracts CDM.
- *Database Designers*—The R&D Contracts CDM will help feed current state and future state documentation that will provide database designers with an understanding of the sources of record for key R&D Contracts data elements within NIH and will provide a high level overview of how the data related to R&D Contracts is to be managed in their database relative to the overall structure of information across NIH.
- *IT Program and Project Managers*—The project managers of solution implementation efforts should be aware of the R&D Contracts CDM and other Enterprise Data Architecture artifacts and the alignment of their solutions with these artifacts. The Enterprise Performance Lifecycle (EPLC)⁴ and the NIH Capital Planning and Investment Control (CPIC)⁵ process will require mapping for R&D Contracts-specific information solution development efforts to the R&D Contracts CDM.

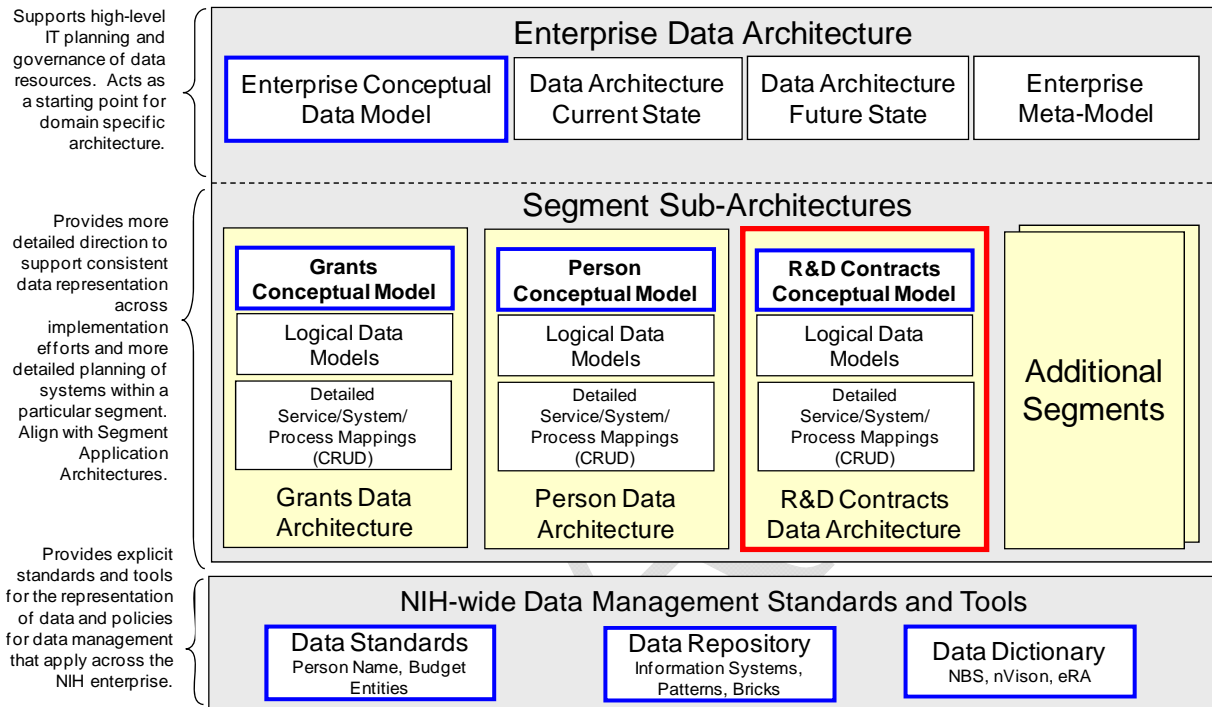
⁴ The NIH EPLC process guidelines can be found at: <http://sps.nihcio.nih.gov/sites/PMCoE/EPLC/EPLC...Artifacts>

⁵ The NIH CPIC process guidelines can be found at <http://enterprisearchitecture.nih.gov/YourPart/File/ComplianceProcess.htm>.

R&D Contracts Data Architecture Overview

The R&D Contracts CDM is another component of the segment sub-architecture framework that will be developed in order to better align NIH’s information systems with NIH’s mission – to further the science and medicine. Figure 10 shows the decomposition of data architecture and data standard components that may be used to manage NIH’s strategic data assets.

Figure 10 – Data Architecture Framework



Note: Items in blue are artifacts that have been developed by the Office of the IT Architect.

Enterprise Data Architecture is driven by the business strategy and alignment to NIH’s mission. This level supports the high level IT planning efforts to ensure goals and objectives are met across the organization. The Enterprise Data Architecture identifies those key subject areas and entities that are shared across NIH including current and future state environment supporting data management.

The Enterprise CDM (NRFC0025) provides the model of the core data entities and relationships that support NIH.

By contrast, a segment architecture provides the detailed information for the individual elements of the enterprise describing a core mission areas and the common/shared business processes and enterprise services, and are intended to deliver faster results. The Segment architecture is also driven by the business and delivers detailed and results-oriented artifacts specific to the core mission area. The Segment Sub-Architectures are more detailed. The CDMs within individual segments allow for detailed planning in a specific business area. Also included in the segment sub-architecture are the logical data models and data and process mappings, which will not be

addressed in this standard. The conceptual data model described in this document is part of the R&D Contracts segment sub-architecture.

Segment architectures are closely related to EA through three tenets: reuse, structure and alignment. Segment architecture **reuses** important assets across all the layers defined at the enterprise level including, data, business, information systems and technology. Segment architectures **inherit the framework** used by the EA, though it may be extended or specialized to meet the needs of the core mission area or common/shared service. Segment architecture **aligns** with all the goals and objectives, drivers and strategies defined at the enterprise level.

R&D Contracts CDM Content and Structure

The R&D Contracts CDM is comprised of: Entities, Relationships and Attributes. These components align with widely accepted nomenclature for the elements of a data model and are consistent with the approach to data description described in the Federal Enterprise Architecture (FEA) Data Reference Model (DRM). These are defined in Table 18 – R&D Contracts CDM Components

⁶.

Table 18 – R&D Contracts CDM Components

| Component | Description |
|--------------|---|
| Entity | An abstraction for a person, place, object, event or concept described (or characterized) by common Attributes. For example, “Procurement” and “Proposal” are Entities. An <i>instance</i> of an Entity represents one particular occurrence of the Entity, such as a specific person or a specific agency. |
| Relationship | Describes the association between two Entities. Relationships may also be described as business rules that specify the nature of the interaction between two Entities. |
| Attribute | A characteristic of an Entity whose value may be used to help distinguish one instance of an Entity from other instances of the same Entity. For example, an Attribute of a “Proposal” Entity may be “Proposal Identification Number.” |

The R&D Contracts CDM will be presented in multiple notations to accommodate the wide variety of stakeholders: Object Role Modeling (ORM)⁷ notation, sentences or fact types, and Entity-Relationship (ER) diagrams. The sentence structure is included as part of each focus area and is intended to make the CDM easier to readers without a technical background. All these sentences are normative in the order of precedence of the ORM, ERD and XML Schema Definition (XSD) models.

⁶ These definitions are based on those found in the DRM version 2.0, but have been modified to reflect NIH’s specific needs. The DRM version 2.0 can be found at http://www.whitehouse.gov/OMB/egov/documents/DRM_2_0_Final.pdf.

⁷ For more information on the ORM notation and interpreting ORM models see <http://www.orm.net/>.

Appendix D: Data Modeling Tutorial

What is data modeling and why is it used?

Data modeling is the process of exploring and representing data in a structured manner within a knowledge or subject area. Data models identify the data elements that the business uses and how they relate to one another. This is represented by entities (or kinds of things of significance) about which an organization wishes to know, collect and maintain information, the attributes (characteristics of the information) of that information, and the relationships among the entities. In addition to defining and organizing the data, data modeling imposes constraints or limitations (implicitly or explicitly) on how that data are placed within a structure.

Data models typically address only structured data and do not describe any unstructured data such as e-mail messages, graphics, pictures, etc.

Data models can be one or more of three kinds: conceptual, logical and physical data models:

- A *conceptual data model*, sometimes called domain models, typically are used to explore the domain concepts at a high level with stakeholders with the entities, attributes and the relationships among them.
- A *logical data model* describes the tables and columns.
- A *physical data model* describes the physical and internal mechanisms within database depicting the data columns of the tables and the relationships between the tables.

The conceptual data model is typically devoid of detailed implementation information such as database vendor, how the physical database will be built (i.e., relational, objected oriented or other dimensional information), etc. The entities and relationships can be depicted pictorially to allow stakeholders and users to easily view the information structure as shown in Figure 11. Data instances represent the real world occurrence of data as seen in Figure 12. This is one of the mechanisms to test the validity of the concepts and relationships within the data model.

Figure 11: Entity and Relationships

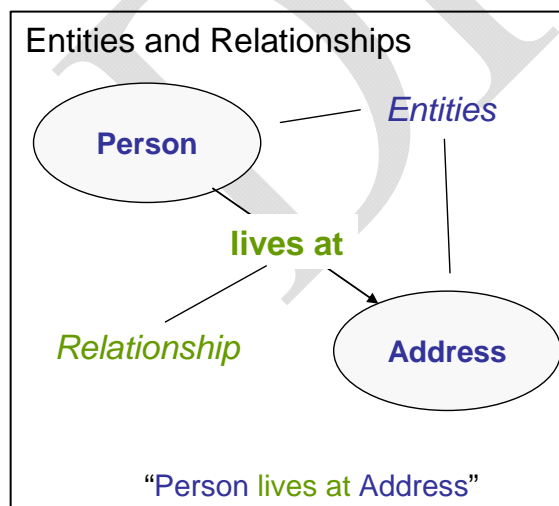
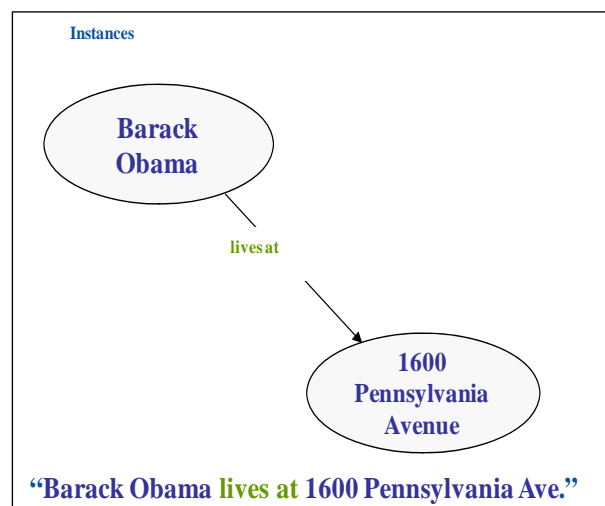
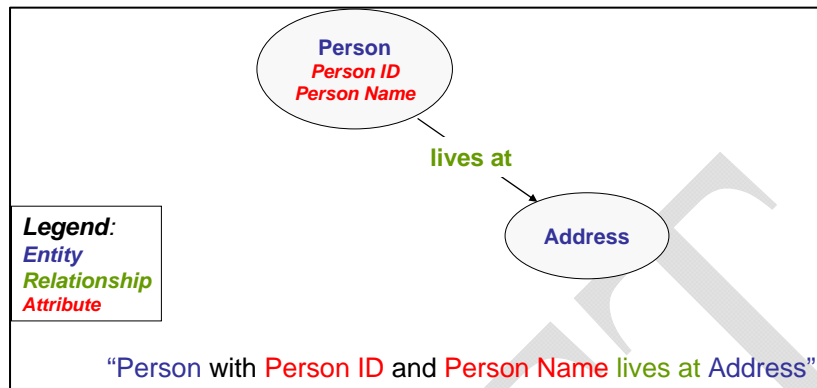


Figure 12: Instances of Data



In addition to the entities and relationships within the model, we also define characteristics of the entities known as attributes as shown in Figure 13:

Figure 13: Entity, Relationships and Attributes



From the conceptual data model, further decomposition of the model provides the detailed information (logical and physical information) and structures as to how the model will be physically built, along with the information systems that will use the models.

Models provide a formal, rigorous way of representing the world by providing an unambiguous input to the design and development of IT solutions, and another mechanism to communicate about data. Good and consistent models allow reliable data to be shared across information systems and also help facilitate the evolution of information systems changes.

Categories of Data Models

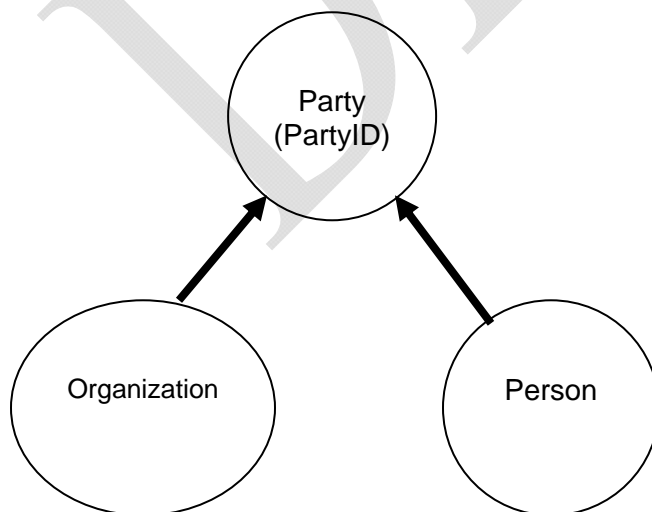
Table 19 shows the definitions and purpose of different types of data models that may be created as part of NIH's Enterprise Data Architecture or in support of specific solution implementations.

Table 19—Categories of Data Models

| | Description | Purpose |
|-----------------------|--|---|
| Conceptual Data Model | A CDM represents the overall logical structure of a database, which is independent of any software or data storage structure. A conceptual model often contains data objects not yet implemented in the physical databases. It gives a formal representation of the data needed to run an enterprise or a business activity. | Suitable as an enterprise level artifact to provide an overall set of key data entities to facilitate management of enterprise data resources and support effective information sharing. |
| Logical Data Model | A logical view of the conceptual data model. Data Architecture theories such as "normalization" are applied to transform the conceptual data model into the logical data model that moves the data modeling further towards the ultimate prescription for the data architecture to be implemented. Relationships get absorbed as "attributes" known as foreign keys or pointers within appropriate logical model entities. This may be explicit or implied in the logical data model. As long as the resulting physical data model includes the necessary foreign key columns and joins, the inclusion of foreign-keys in the logical data model is a matter of convenience. Logical Data Model does not have any specific restrictions and/or requirements imposed by the Database Management System (DBMS) to be used for creating the actual database. | Suitable for representing the detailed business rules governing the structure of data elements and their relationships. Provides a more detailed view of the data and is more suitable for specific systems designs of for the description of enterprise data standards. |
| Physical Data Model | The mapping of conceptual or logical database design data groupings into physical database areas, files, records, elements, fields, and keys while adhering to the physical constraints of the hardware, DBMS software, and communications network to provide physical data integrity while meeting the performance and security constraints of the services to be performed against the database. | Suitable for the design of specific implementations of a data model. Generally not suitable for enterprise standards or architecture specification |

Subtypes and Supertypes of Objects

The R&D Contracts CDM model has special notations for describing Subtypes and Supertypes. A supertype is a high level object that has widespread use across the model. In this model, subtypes are smaller sets of the supertype that share common attributes and they allow for the specification of more precise rules.

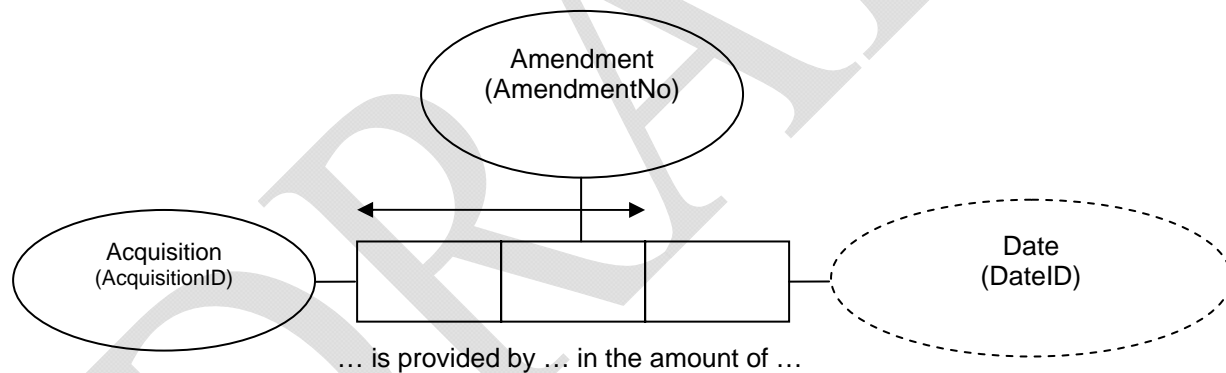
Figure 14—Party Supertype with Organization and Person Subtypes

In the example above, Party (the supertype) can be used to designate rules where either an instance of a Person or Organization (the subtypes) can be valid. An example in this model is where a proposal in response to an RFP is either a made by an individual person or an organization with appropriate expertise and capabilities to perform the requested medical research. Other rules only apply to groups of Organizations and the rules are written so that Subject Matter Experts can understand and validate the rule. An example of this is a Research Institution (subtype of Organization), which is designated as the contractor. This model has chosen to allow for continual expansion of the known group of Roles for Person by making the Role object a variable. For the purpose of this model, all sets of people (subsets of Person) have been defined using the Role object.

ORM Diagrams and Natural Language Modeling

Object Role Modeling (ORM) is a graphical modeling technique that precisely displays fact types and business rules. Natural Language Modeling (NLM)⁸ is completely sentence-based and provides subject matter experts with the ability to establish and validate fact types and business rules without becoming proficient in reading graphical models. Both of these focus on the establishment of fact types and rules that are sentence-based.

Figure 15—ORM Fact Type



The fact type reading for this ORM diagram is:

Acquisition with <AcquisitionID> has Amendment No <AmendmentNo> that is effective on Date <DateID>.

The arrow over the Acquisition and Amendment objects means that there is a one-to-many (1:M) relationship between the combined objects and the Date.

Natural Language Modeling allows these rules to be validated by only asking questions about the objects.

⁸ For more information on the NLM notation and interpreting NLM models see <http://www.sharpinformatics.com/>.

Given the populated fact type: “Acquisition with 43543231 has Amendment No 001 that is effective on Date 11/15/2009.” is true:

Q1.1. Can you have an Acquisition with 43545422 has Amendment No 001 that is effective on Date 11/15/2009.?—Yes

Q1.2. Can you have an Acquisition with 43543231 has Amendment No 002 that is effective on Date 11/15/2009.?—Yes

Q1.3. Can you have an Acquisition with 43543231 has Amendment No 001 that is effective on Date 12/15/2009.?—No

The results of this analysis can be expressed as a matrix:

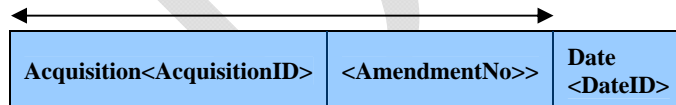
Acquisition with <AcquisitionID> has Amendment No <AmendmentNo> that is effective on Date <DateID>.

| | Acquisition <AcquisitionID> | <AmendmentNo> | Date <DateID> | |
|----------|--------------------------------|---------------|------------------|----------|
| Instance | 43543231 | 001 | 11/15/2009 | |
| | | | | Allowed? |
| Q1.1 | another | 001 | 11/15/2009 | Yes |
| Q1.2 | 43543231 | another | 11/15/2009 | Yes |
| Q1.3 | 43543231 | 001 | another | No |

A “yes” answer means that the entity is independent in the fact. A “no” answer means that the entity is dependent on one or more entities in the fact.

The Q1 matrix is the first step in the NLM procedure. Additional steps would result in finding that a Date is dependent upon both the Acquisition and Amendment No. The resulting Table would be:

Acquisition Amendment



| | | |
|----------------------------|---------------|------------------|
| Acquisition<AcquisitionID> | <AmendmentNo> | Date <DateID> |
|----------------------------|---------------|------------------|

Appendix E: Glossary of Entities and Attributes used in R&D Contracts CDM

| # | Name | Definition | Source | Where Used |
|---|----------------------------|---|--|------------------------|
| 1 | Party | Information about people, organizations and other actors in NIH processes, and their roles. | NIH Enterprise Conceptual Data Model NRFC0025/ST D0012 | Party and Organization |
| 2 | <i>Party ID</i> | <i>A unique identifier of a Party.</i> | <i>NIH Enterprise Conceptual Data Model NRFC0025/ST D0012</i> | Party and Organization |
| 3 | <i>Party Name</i> | <i>The name of party (organization or person)</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |
| 4 | <i>Address</i> | <i>The professional address of the party (organization or person)</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |
| 5 | Organization | A formal grouping of people and/or business units coordinated to perform a specific purpose or obtain a specified objective. | NIH Enterprise Conceptual Data Model NRFC0025/ST D0012 | Party and Organization |
| 6 | <i>Legal Business Name</i> | The label by which an organization is known officially | <i>NIH Enterprise Conceptual Data Model NRFC0025/ST D0012</i> | Party and Organization |
| 7 | <i>DUNS Number</i> | <i>The DUNS number is a unique nine-digit number assigned by Dun and Bradstreet Information Services. It is recognized as the universal standard for identifying and keeping track of more than 92 million businesses worldwide. This is also known as Data Universal Numbering System (DUNS)</i> | <i>NIH Research Portfolio Online Reporting Tool (RePORT) http://report.nih.gov/glossary.aspx?filter=P</i> | Party and Organization |
| 8 | <i>NAICS Code</i> | <i>A six digit code that defines and groups establishments into a set of industry categories according to their primary economic activities. It facilitates the collection, calculation, presentation and analysis of statistical data by industries, which are standardized between USA, Canada and Mexico. This is also known as the North American Industry Classification System (NAICS).</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |

| # | Name | Definition | Source | Where Used |
|----|---|--|---|--|
| 9 | <i>Taxpayer Identification Number (TIN)</i> | <i>The number required by the Internal Revenue Service (IRS) to be used by the Offeror in reporting income tax and other business activities. The TIN may be either an Employee Identification Number or a Social Security Number</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |
| 10 | Person | Any individual of interest to the NIH for whom the NIH maintains information. | NIH Enterprise Conceptual Data Model NRFC0025/ST D0012 | Party and Organization; Research Concept and Research Initiative; Acquisition; Proposal; Peer Review |
| 11 | <i>Professional Name</i> | <i>The specific word or term by which a person is known in an organization</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |
| 12 | <i>Title</i> | <i>The name given to an individual in an organization that signifies rank, office or function</i> | <i>Proposed by The Office of the Architect</i> | Party and Organization |
| 13 | Advisory Council | Chartered NIH institute advisory committee that performs second-level peer review for grants, may perform second-level peer review for R&D contracts, makes funding and policy recommendations, and helps develop research agendas. Advisory Board is interchangeably used with Advisory Council. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) | Research Concept and Research Initiative |
| 14 | NIH Organization | Federal government agency that may conduct, support and/or fund biomedical and behavioral research to create fundamental knowledge of living systems and reduce the burden of illness and disability | NIAID Glossary of Funding and Policy Terms and Acronyms (adapted) | Research Concept and Research Initiative; Contract |
| 15 | Research Concept | Represents the earliest planning stage of a research idea based on an identified scientific need. This may have limited supporting documentation. <u>Note:</u> Institute program officers develop concepts and present them to the IC's Advisory Council for concept clearance. Only the concepts approved by Council are published as research initiatives, depending on their priority and the availability of funds. | Proposed by The Office of the Architect | Research Concept and Research Initiative |
| 16 | <i>Research Concept ID</i> | <i>A unique identifier for the research concept.</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative |

| # | Name | Definition | Source | Where Used |
|----|----------------------------------|--|--|--|
| 17 | <i>Concept Statement</i> | <i>A brief statement that presents a main research idea or points in a concise form</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative |
| 18 | Research Initiative | Constitutes the formal artifacts of research concepts that announce and stimulate research in high priority or high opportunity areas of science. This also specifies the approach and initial approval for performing the science. | Proposed by The Office of the Architect | Research Concept and Research Initiative; Acquisition |
| 19 | <i>Research Initiative ID</i> | <i>A unique identifier for the research initiative.</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative; Acquisition |
| 20 | <i>Research Initiative Title</i> | <i>A descriptive heading given to a research initiative</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative |
| 21 | <i>Requirement Type</i> | <i>A category of requirements that details the specific procurement path such as R&D contracts, support services (non-R&D), construction, etc</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative |
| 22 | <i>Type of Federal Action</i> | <i>An action performed to determine how the research initiative would be supported. This may be a designation to acquire services for research or provide assistance as in grants.</i> | <i>Proposed by The Office of the Architect</i> | Research Concept and Research Initiative |
| 23 | Role | A named object assigned or delegated to a person that is given permissions and responsibilities to some resource or set of resources. Roles are defined by Organizations. A Role can be defined as part of another role. A Role can be delegated to a person by a person. | Proposed by The Office of the Architect | Research Concept and Research Initiative; Acquisition; Proposal; Peer Review |
| 24 | <i>Role Name</i> | <i>A short description specifying the role.</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026</i> | Research Concept and Research Initiative; Acquisition; Proposal; Peer Review |
| 25 | Acquisition | An umbrella term that denotes the activities that must be performed and the information must be collected pertaining to the procurement of products and/or services for research. Note: This may include items such as Acquisition Plan, Pre-solicitation Notice, Solicitation, Request For Information (RFI), Request For Proposal (RFP), etc. | Proposed by The Office of the Architect | Acquisition; Proposal; Peer Review |

| # | Name | Definition | Source | Where Used |
|----|-------------------------------------|--|---|--------------------------|
| 26 | <i>Acquisition ID</i> | <i>An unique identifier for the high level 'Acquisition' object</i> | <i>Proposed by The Office of the Architect</i> | Acquisition; Proposal |
| 27 | <i>Acquisition Title</i> | <i>A descriptive name given to a acquisition</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 28 | <i>Acquisition Short Title</i> | <i>A short version (typically an acronym) given to the acquisition</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 29 | <i>Acquisition Description</i> | <i>A concise summary statement of what the expected proposal intends to accomplish for the services required.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 30 | <i>Acquisition Milestone</i> | <i>The condition or state of a proposal progressing in business process</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 31 | <i>Annual Proposed Obligation</i> | <i>The amount of funding that is set aside to acquire products or services within a fiscal year</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 32 | <i>Estimated Number Awards</i> | <i>The number of awards the RFP might generate to accomplish the scientific goals</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 33 | <i>Evaluation Criteria</i> | <i>A basis for assessing the scientific merit of research proposals received or yet to be received.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition; Peer Review |
| 34 | <i>Letter of Intent</i> | <i>A Letter that may be required from an Offeror before acceptance of contract proposals</i> | <i>NIAID Glossary of Funding and Policy Terms and Acronyms (adapted)</i> | Acquisition |
| 35 | <i>Peer Review Required</i> | <i>A way to indicate that proposal that are received are required to be evaluated by scientific peers. Typically the response would be "yes" or "no"</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 36 | <i>Pre Release Clarification</i> | <i>A further explanation of the terms, scope or information contained in the contract</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 37 | <i>Proposed Acquisition Method</i> | <i>A procedure to obtain the property or services by the agency. These are noted by competitive or non-competitive methods.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 38 | <i>Proposed Contract Order Type</i> | <i>The recommended method to obtain the identified property or services. These are Fixed-Price, Cost-Reimbursement, Incentive, Indefinite Delivery, Time and Materials, Labor Hour and Letter Contracts.</i> | <i>Federal Acquisition Regulation, Volume 1 – Parts 1 - 51 – March 2005 (updated in September 2009)</i> | Acquisition |
| 39 | <i>Human Subjects Use Type</i> | <i>A category that must be specified when human subjects are used in a research project. The allowable responses are Exempt or Non-Exempt.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |

| # | Name | Definition | Source | Where Used |
|----|---|---|---|--|
| 40 | <i>Section</i> | <i>A distinct portion of a written document</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 41 | <i>Subsection</i> | <i>A smaller part(s) into which a section may be divided</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 42 | <i>Special Legal Consideration</i> | <i>Unique instructions and regulations that must be followed to accommodate the requirements for the use of human subjects, stem cell lines, animals, or select agents in a research.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 43 | <i>Total Proposed Obligation</i> | <i>The full amount of funding that is set aside to acquire products or services over a period of time.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 44 | Acquisition Amendment | <i>A composite/associative entity that allows the changes to an acquisition.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 45 | <i>Amendment</i> | <i>A written modification/revision to the RFP.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 46 | Acquisition Phase Year | <i>A composite/associative entity that allows an acquisition to be divided into phases with beginning and end dates that can span multiple years.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 47 | <i>Phase</i> | <i>A segment of a research project with a distinct beginning and end. Values are I, II, III, IV.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 48 | <i>Year</i> | <i>A specific sequential period of time (twelve months), used for some activity. Values are 1, 2, 3...</i> | <i>Proposed by The Office of the Architect</i> | Acquisition |
| 49 | Date | <i>A particular period of time at which something happened or existed, or is expected to happen.</i> | <i>Proposed by The Office of the Architect</i> | Acquisition; Proposal, Peer Review; Contract |
| 50 | <i>Date ID</i> | <i>An unique identifier for the date</i> | <i>Proposed by The Office of the Architect</i> | Acquisition; Proposal, Peer Review; Contract |
| 51 | Offeror | <i>An organization responding to a request for proposals</i> | NIAID Glossary of Funding and Policy Terms and Acronyms | Proposal |
| 52 | <i>Contractor Performance Information</i> | <i>Reports on past performance of the Offeror on previous contracts as contained in the Past Performance Information Retrieval System (PPIRS).</i> | <i>Proposed by The Office of the Architect</i> | Proposal; Peer Review; Contract |

| # | Name | Definition | Source | Where Used |
|----|-------------------------------------|--|---|---|
| 53 | Proposal | Written offer by an individual or non-federal organization who is interested in entering into a contract, usually in response to a solicitation. It consists of a technical and a business proposal, including a description of the project and its costs, and the methods, personnel, and facilities where the work is performed. | NIAID Glossary (adapted) http://www.niaid.nih.gov/ncn/glossary/default5.htm#proposal | Proposal; Acquisition; Peer Review; Contract |
| 54 | <i>Proposal ID</i> | <i>An unique identifier of the proposal</i> | <i>Proposed by The Office of the Architect</i> | Proposal; Acquisition; Peer Review; Contract |
| 55 | <i>Proposal No</i> | <i>A 'sequential number' for a proposal that is received against a particular 'acquisition'.</i> | <i>Proposed by The Office of the Architect</i> | Proposal; Acquisition; Peer Review; Contract |
| 56 | <i>Proposal Title</i> | <i>A label or heading that describes the proposal</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 57 | <i>Competitive Range Group</i> | <i>Range of qualified offers for a competitive procurement. A Contracting Officer determines a competitive range based on the ratings of each proposal against all technical and cost evaluation criteria. The competitive range comprises all the most highly rated proposals.</i> | <i>NIAID Glossary http://www.niaid.nih.gov/ncn/glossary/default2.htm#c</i> | Proposal |
| 58 | <i>Cost Analysis Review Summary</i> | <i>A summary of the analysis performed by a Contracting Officer to determine whether an Offeror's proposed costs are fair and reasonable.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 59 | <i>Final Proposal Revision</i> | <i>The final changes requested by the Contracting Officer from each Offeror who is still in the competitive range at the conclusion of discussions. Each remaining Offeror is given an opportunity to submit a final proposal revision in writing, which is the documentation that the Government uses to make an award (as applicable) without obtaining further revisions.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 60 | <i>Final Review Flag</i> | <i>Indicates whether this is the last review the proposal will undergo.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 61 | <i>Proposal Project Description</i> | <i>A written description of what the proposed research intends to accomplish. This is also known as Project Summary/Abstract</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 62 | <i>Recommended for Award Answer</i> | <i>An indicator for a contract proposal judged by the majority of SRG to be eligible for inclusion in the competitive range or award</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 63 | <i>Technical Evaluation Report</i> | <i>A summary of the analysis performed to determine whether an Offeror's technical approach meets the specified objectives.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |

| # | Name | Definition | Source | Where Used |
|----|--|--|--|-------------|
| 64 | <i>Total Estimated Project Cost</i> | <i>The proposed expenditures that are necessary to accomplish the objectives of the research requirements</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 65 | Proposal Business Review | An inquiry made by Contracting Officer regarding details of the proposal's execution | <i>Proposed by The Office of the Architect</i> | Proposal |
| 66 | <i>Business Review Type.</i> | <i>An indication of which business review is being performed. The values are Workbook, Small Business Subcontracting Form, Other...</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 67 | <i>Business Review Question No.</i> | <i>A sequential number of a business question</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 68 | <i>Business Review Question Text.</i> | <i>An inquiry from the peer review group that becomes input in the set of business questions that the Contracting Officer may ask of the Offeror.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 69 | <i>Business Review Question Answer</i> | <i>The reply received from the Offeror in response to the specific business and cost questions asked</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 70 | Proposal Technical Question | A composite/associative entity that indicates a technical inquiry made by Contracting Officer regarding details of the proposal's execution | Proposed by The Office of the Architect | Proposal |
| 71 | <i>Technical Question No.</i> | <i>A sequential number of a technical question</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 72 | <i>Technical Question Text</i> | <i>An inquiry from the peer review group that becomes input in the set of technical questions that the Contracting Officer may ask of the Offeror.</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 73 | <i>Technical Question Answer</i> | <i>The reply received from the Offeror in response to the specific technical questions asked</i> | <i>Proposed by The Office of the Architect</i> | Proposal |
| 74 | Conflict of Interest Waiver | A composite/associative entity that provides the formal written determination to permit a scientific reviewer to participate in a peer review despite conflicts of interest with one or more proposals. It permits that reviewer to review only those proposals for which he/she has no conflicts of interest. | Proposed by The Office of the Architect | Peer Review |
| 75 | Person Conflict SRG Review Proposal | A composite/associative entity that identifies the person who may have a conflict of interest during the review of proposals in the SRG meeting | Proposed by The Office of the Architect | Peer Review |

| # | Name | Definition | Source | Where Used |
|----|--|--|---|-------------|
| 76 | <i>Conflict of Interest Type</i> | <i>A type of conflict of interest that people have with a grant application or an R&D Contract proposal. NIH provides regulations to ensure employees, scientific review group members and advisory council members or others having the ability to influence funding decisions have no personal or professional interest in the outcomes</i> | <i>NIH Grants Conceptual Data Model NIHRFC0026 (modified)</i> | Peer Review |
| 77 | <i>Conflict of Interest Flag</i> | <i>An indicator to signify that a conflict of interest exists and the action that was taken to mitigate it</i> | <i>Proposed by The Office of the Architect</i> | Peer Review |
| 78 | Scientific Review Group (SRG) | A group of primarily nongovernmental experts qualified by training and experience in particular scientific or technical fields, or as authorities knowledgeable in the various disciplines and fields related to the scientific areas under review, to give expert advice on the scientific and technical merits of a grant application, R&D contract proposal, or research initiative. Conducts the first round review for a grant application or R&D contract proposal, and usually conducts the second round review for an R&D contract proposal. | NIH Manual Chapter 6315-1 (adapted) | Peer Review |
| 79 | Scientific Review Group Meeting | A composite/associative entity that identifies a scientific review group meeting where a group of scientists review grant applications, R&D contract proposals or research initiatives. | NIH Grants Conceptual Data Model NIHRFC0026 (modified) | Peer Review |
| 80 | SRG Review Proposal | A composite/associate entity that identifies a scientific review group meeting where the approved scientists review an R&D contract proposal | Proposed by The Office of the Architect | Peer Review |
| 81 | <i>Group Criteria Score</i> | <i>The sum total of reviewer scores received for each criterion of a received proposal during peer review</i> | <i>Proposed by The Office of the Architect</i> | Peer Review |
| 82 | <i>Member Criteria Score</i> | <i>An individual rating given by reviewer for each evaluation criteria based on the scientific merit of a received proposal during the peer review of proposals</i> | <i>Proposed by The Office of the Architect</i> | Peer Review |
| 83 | <i>Rating</i> | <i>A basis for assessing the criteria of scientific merit of a proposal</i> | <i>Proposed by The Office of the Architect</i> | Peer Review |
| 84 | <i>Total Group Criteria Score</i> | <i>A weighted sum of reviewer scores for all the criteria for the received proposal during peer review</i> | <i>Proposed by The Office of the Architect</i> | Peer Review |

| # | Name | Definition | Source | Where Used |
|----|--|--|--|-----------------------|
| 85 | Contract | An award instrument establishing a binding legal procurement relationship between NIH and a recipient obligating the latter to furnish a product or service defined in detail by NIH and binding the Institute to pay for it | NIH Research Portfolio Online Reporting Tool (RePORT) http://report.nih.gov/glossary.aspx?filter=C | Contract; Proposal |
| 86 | <i>Contract No.</i> | <i>An unique identifier for a contract</i> | <i>Proposed by The Office of the Architect</i> | Contract; Proposal |
| 87 | <i>Contract Order Type</i> | <i>A designation that describes the terms used to establish the contract.</i> | <i>Proposed by The Office of the Architect</i> | Contract |
| 88 | <i>Performance Evaluation Criteria</i> | <i>The measures that will be used to determine the successful progress/completion of the contract</i> | <i>Proposed by The Office of the Architect</i> | Contract |
| 89 | <i>Total Amount of Contract Award</i> | <i>The aggregate dollar figure to be paid to the contractor upon successful completion of the contract.</i> | <i>Proposed by The Office of the Architect</i> | Contract |
| 90 | Contract Modification | An composite / associative entity that specifies the changes made to a contract terms after the contract has been awarded | OER Glossary of NIH Terms http://grants.nih.gov/Grants/glossary.htm (adapted) | Contract |
| 91 | <i>Modification</i> | <i>An administrative or change order revision to the contract terms.</i> | <i>Proposed by The Office of the Architect</i> | Contract |
| 92 | Correspondence | Any ad hoc communications exchanged between a sender and receiver. These occur between the applicant or Offeror and NIH throughout the life of the procurement or acquisition. | Proposed by The Office of the Architect | Overarching Concepts |
| 93 | <i>Correspondence ID</i> | <i>A unique identifier for the correspondence</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 94 | <i>Correspondence Title</i> | <i>A title provided to the correspondence</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 95 | <i>Correspondence Type</i> | <i>A designation to identify the category of communications such as email, letters, memos, etc.</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 96 | Object Name | A existence of a discrete unit of data | Proposed by The Office of the Architect | Overarching Concepts |
| 97 | <i>Object Name ID</i> | An unique identifier given to the object name | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 98 | <i>Object Instance</i> | <i>A real world example of an object that is cited to prove or validate a point.</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |

| # | Name | Definition | Source | Where Used |
|-----|---------------------------------|--|---|----------------------|
| 99 | Grouping | An aggregation of objects that are managed together; possibly because they are related in the science. This reflects the emerging needs of NIH to support collaborative science and examples include one-to-many and clustered contracts supporting a single research projects. This flexible grouping allows for complex mechanisms including collections of proposals and R&D Contracts. | NIH Grants Conceptual Data Model NIHRFC0026 (adapted) | Overarching Concepts |
| 100 | <i>Grouping ID</i> | An unique identifier given to each grouping | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 101 | <i>Grouping Rule</i> | The business rules that must be in place to create the group | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 102 | Grouping Type | The characteristics or structure of various groupings that can be created and managed together | Proposed by The Office of the Architect | Overarching Concepts |
| 103 | <i>Grouping Type ID</i> | <i>An unique identifier given to the grouping types</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 104 | <i>Grouping Type Rule</i> | <i>The business rules that must be in place to create the different types of grouping.</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |
| 105 | Grouping Object Instance | A composite/associative entity that identifies the grouping for a specific object | Proposed by The Office of the Architect | Overarching Concepts |
| 106 | <i>Grouping Role</i> | <i>The role that the grouping will play</i> | <i>Proposed by The Office of the Architect</i> | Overarching Concepts |