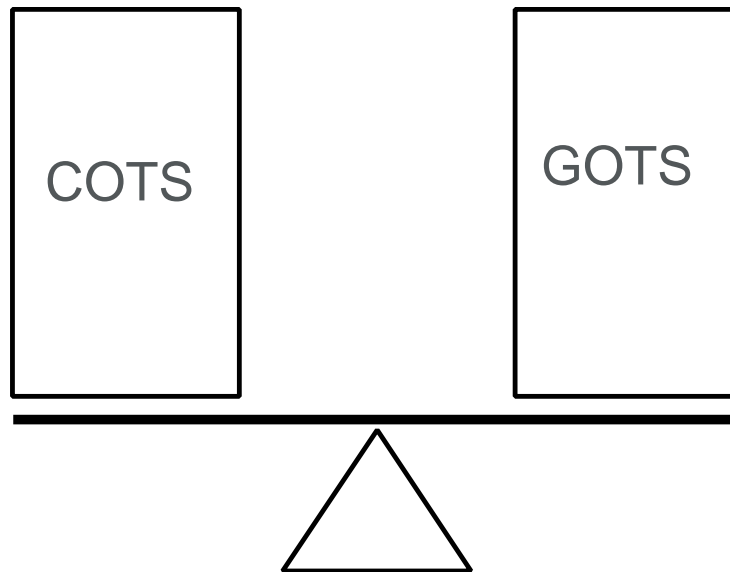# Toward Best Practices in Contracting for M&S

Presentation to the 12th Annual Systems Engineering Conference

Dennis Shea

Julie Nelson

29 October, 2009

Work in progress

COTS

GOTS

Business Models

CNA
ANALYSIS & SOLUTIONS

Plans for Acquisition and Requirements Reform

"**DoD will expand and improve training programs in critical risk areas such as** program execution, source selection, risk management, pricing **and *contracting*.**" DoD will also increase resident training, *expand simulations*, and continue to leverage e-learning technologies to improve its ability to deliver learning assets at the employee's point of need."

Memo for Assistant to the President for National Security Affairs

Robert M. Gates (SecDef)

April 6, 2009

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How we got here

M&S Reuse Business Model recommendation

    -- To strengthen reuse DoD should:

- Improve M&S-related contracting practices
  - Understand implications of procurement statues, regulations, policies etc on contracting for M&S-related products
  - Protect government "rights" to reuse, modify, share, M&S resources)
  - Develop RFPs with reuse in mind
  - Monitor M&S development process (avoid proprietary markings)
- Incorporate best practices in training for contract officers and PMs and other Gov't M&S decision-makers
  - Match intended uses of M&S products and services with contracted deliverables including data rights

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Objective

- Improve DoD M&S by publishing best practices for M&S-related contracting from a government perspective
  - Address full scope of contracting activities
  - Procurement of
    - M&S products (including databases) and services (including configuration management) and support tools
    - Larger project (weapon system, training service) where M&S is but an element
- Provide a roadmap to existing best practices and fill in gaps
  - Use front line experiences of acquisition force to assess what's working well and what's not
  - Use analysis to recommend changes to existing regulations, policies, and guidance to overcome challenges and promote efficiencies in contracting (benefit both government and industry)

Background: Identified 8 activities in acquiring M&S

1. Determine M&S capabilities required to successfully execute the acquisition, planning, training, testing etc. task(s)
   - Identify well-defined M&S capability attributes to ensure that capability delivered meets user needs at an affordable cost
2. Use Discovery to determine if existing M&S resources satisfy required capabilities and are available for reuse
3. Source Selection Planning
   - Identify gaps in needed M&S capabilities
   - Determine how best to satisfy requirements (new development, existing commercial, or improved GOTS)
   - Assess potential for reuse and role, if any, for proprietary products
   - Develop source selection criteria (including maturity of firm's M&S capabilities)
   - Decide on level of data rights required and compliance with DoD policy on open architectures, HLA, VV&A, etc

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Activities in acquiring M&S (continued 3-5)

3. Source Selection Planning (continued)
   - Assess interoperability and data interchange requirements and standards needed to satisfy requirements
   - Perform market survey to gauge qualifications of commercial vendors and government labs to develop needed M&S
4. Develop solicitation for M&S capabilities
   - Use results from source selection planning to develop RFP
5. Proposal Evaluation and Contract Award
   - Assess "best value" for government
   - Small business concerns
   - Type of contract
   - Special contract terms and conditions
   - Negotiate license terms and data rights
   - Negotiate deliverables

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Activities in acquiring M&S (continued 6-8)

6. Contract administration post award
   - Logbook of vendor's alternative funding sources for software employed to determine data rights
   - Resolving M&S to lowest component level (data rights)
   - Markings on software and database products
   - Government's responsibilities in protecting proprietary data

7. Acceptance of contract deliverables
   - Source Code, User Guide, Analyst Guide, VV&A
   - Quality and timeliness to support current (future?) users

8. Contracting for life-cycle maintenance of the M&S resource
   - Including multi-user licenses and other technical data rights
   - Including configuration management
   - Central funding for broadly used tools vs Program or PEO-unique needs

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Today's discussion: Selecting M&S with reuse in mind (Activities 3-5)

- **General context:** DoD IT acquisitions, particularly M&S software (in context of a business model)
- **Policy:** Use commercial products whenever appropriate

  and

  Assess the long-term technical data needs

- **Issues to resolve:**
  – **Factors determining default rights ownership**
  – **Ambiguous guidance on appropriate scope of rights**
  – **Contracting context: licensing v. ownership of data rights**

- **Contract language examples**
  – **Problematic language**
  – **Consistent language**

DoD FY08 IT obligations for products & services

(millions)	percent	GSA Product or Service Code
$10,938	57%	D -- IT services, including telecommunications services
$6,305	33%	70 -- General purpose information technology equipment
$783	4%	J -- Maintenance, repair & rebuilding of equipment
$379	2%	R -- Professional, admin, and mgmt support services
$378	2%	Other IT items
$260	1%	Other IT services
$19,043	**100%**	**Total**

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Policy: Emphasize "commercial software"

United States Code: 10 U.S.C. 2377(a)

- The head of an agency shall ensure that procurement officials in that agency, to the maximum extent practicable, acquire **commercial items or nondevelopmental items** other than commercial items to meet the needs of the agency

Appropriations Legislation: FY09 NDAA

- The Secretary of Defense shall ensure that contracting officials identify and evaluate, at all stages of the acquisition process (including concept refinement, concept decision, and technology development), opportunities for the use of **commercial computer software and other non-developmental software**.

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Policy on "commercial software" (continued)

DoD Directive 5000.01 – "Most preferred" option for acquisition:

- E1.1.18.1. The procurement or modification of **commercially available products**, services, and technologies, from domestic or international sources, or the development of dual-use technologies.

DoD Instruction 5000.02

- 6. DoD ENTERPRISE SOFTWARE INITIATIVE. When the use of commercial IT is considered viable, **maximum use** of and coordination with the DoD Enterprise Software Initiative shall be made.

Importance of "data rights" in IT acquisitions

GAO (2006) finding:

- "The **lack of technical data rights** has limited the services' flexibility to make changes to sustainment plans that are aimed at achieving cost savings and meeting legislative requirements regarding depot maintenance capabilities."

Legislative Response – FY07 NDAA:

- The Secretary of Defense shall require program managers for major weapon systems and subsystems of major weapon systems to **assess the long-term technical data needs** of such systems and subsystems and establish corresponding acquisition strategies that provide for technical data rights needed to sustain such systems and subsystems over their life cycle.

Factors determining default data rights ownership

- Relevant set of regulations: FAR v. DFARS
- Nature of product or service to be acquired: commercial v. non-commercial
- Nature of contracting process: commercial v. non-commercial
- Nature of contracting vehicle (contract, IDIQ, BPA, FSS, grant, SBIR, OTA, "special work", etc)
- Specific terms of agreement

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IT contract funding obligations – FY08

(millions)	Item or service	Commercial procedures Used	Commercial procedures *not* used	Grand total
$4,883	Commercially available item	77%	23%	100%
$932	Other commercial item	50%	50%	100%
$961	Non-developmental item	1%	99%	100%
$789	Non-Commercial item	5%	95%	100%
$7,575	Commercial service	58%	42%	100%
$3,904	Non-commercial service	3%	97%	100%
$19,043	Grand total	46%	54%	100%

DFARS guidance on acquiring data rights

Some regulations *limit* the scope of rights to be acquired:

DFARS 227.7102-1(a): Commercial technical data

– DoD shall acquire **only** the technical data customarily provided to the public with a commercial item or process

DFARS 227.7103-1(a): Noncommercial technical data

– DoD policy is to acquire **only** the technical data, and the rights in that data, necessary to satisfy agency needs.

DFARS 227.7202 and 227.7203 specify similar terms for software acquisitions

USD(AT&L) guidance on "Other Transactions"

Other guidance specifies a maximal acquisition of data rights under certain type of agreements

- C2.3.3.3.2. Allocation of Rights. The agreement must explicitly address the government's rights to use, modify, reproduce, release, and disclose the relevant technical data and computer software. The government should receive rights in **all technical data and computer software that is developed under the agreement**, regardless of whether it is delivered, and should receive rights in **all delivered technical data and computer software**, regardless of whether it was developed under the agreement.

Current Practices

- What works?

- What can be improved?

- Sources of information:
  - Recent RFPs – downloaded from INPUT (FedBizOps)
  - Recent contracts
  - Stakeholder interviews
  - Regulations, guidance and research

Sample INPUT RFP header

LIVE VIRTUAL CONSTRUCTIVE INTEGRATED ARCHITECTURE AND INFRASTRUCTURE PROGRAM (LVC IA)

Opportunity ID : 51733   **Mark as:** (■ ✓ ✓ ✓ ✓ ✓ ⊗)   Not Marked

Opportunity Summary

Department:	ARMY
Agency:	ASST SEC FOR ACQUISITION, LOGISTICS AND TECHNOLOGY
Office:	PEO SIMULATION, TRAINING AND INSTRUMENTATION
Status:	Pre-RFP
Solicitation Release Date:	10/2009 (INPUT Estimate)
Award Date:	04/2010 (INPUT Estimate)
Solicitation #:	PEOSTRIKOCLVCIA
Value($K):	65,100
Competition Type:	GWAC / MAC / MAIDIQ
Primary Requirement:	System Design and Architecture
Duration:	2 year(s) base plus 4 x 1 year(s) option(s)
Contract Type:	Indefinite Delivery Indefinite Quantity
Primary NAICS Code:	
Place of Performance:	Orlando, FL
Opportunity Website:	Click to Visit Website
Updated :	09/09/2009

Procurement Timeline

Registration	12/01/2008
Conference	12/03/2008

Related Details

Key Contacts

Milton Washington ✉		407-381-8854
Contracting Officer		
PEO SIMULATION, TRAINING AND INSTRUMENTATION		
Donald Stewart ✉		407-384-5333
Administrative Point of Contact		
PEO SIMULATION, TRAINING AND INSTRUMENTATION		
Dave Bukovey ✉		407-208-3398
Program Manager		
PEO SIMULATION, TRAINING AND INSTRUMENTATION		

More »   10 Total

RFP and contract examples

- TRADOC Support: *(*Contract No: GS-00F-0014N)
- Modeling And Simulation and Analytically Based Warfare Analyses (Solicitation N00024-09-R-3145)
- Marine Corps Studies System (Solicitation M00264-06-D-0006)
- NMCI Transition Plan
- System Development and Demonstration (SDD) Phase for the Broad Area Maritime Surveillance (BAMS) Unmanned Aircraft System (UAS) Program (Solicitation 00019-07-R-0001)
- Engineering Technical And Support Services For Naval Warfare Center And Other NAVSEA Field Sites (Solicitation N00178-04-R-4000)
- F-16 Mission Training Center (MTC) Program (Solicitation FA8621-07-R-6291)
- BLCSE TECHNICAL SUPPORT EFFORT – Solicitation W912SU-07-R-0002

Insights

Problematic language

Very broad data rights claims by the government:

Contract Example: 17.0. Proprietary Rights. All proprietary rights to all materials produced by Contractor personnel shall become the sole property of the US Government.

RFP Example: As such, no analysis or data provided under this contract shall constitute or be construed as company proprietary or owned by the contractor. Upon termination of the contract, all related hardware, software, data and materials shall become property of the United States Government and shall not be disclosed except upon written authority by the Task Order Manager (TOM).

Problematic language: inconsistent clauses

Contract example:

H-13 Software and data rights

> H-13.I. The Government shall be provided with unlimited rights to all data and automated models developed in support of this contract in accordance with the policy expressed in DFARS 227.71, and the requirements of DFARS Clause 252.227-7015, **Technical Data - Commercial Items**, and DFARS Clause 252.227- 7013, Rights to Technical Data - Noncommercial Items. Proprietary models must not be used for any task order under this contract without the specific, written approval by the COR, prior to start of any work.

Problems:

- The commercial items clause ('7015) cited above does ***not*** specify *unlimited* data rights for the government.

- All of the clauses cited explicitly ***exclude*** computer software (contrary to the implication of the section title).

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Problematic language (continued)

Contract example:

H-14.2. DFAR22.227-7013 (June 1995) Rights in technical data and computer software shall apply to those monthly reports and other documents that are not characterized as "Special Works."

Problems:

- Clause DFAR22.227-7013 does not exist.
- Clause DFARS 252.227-7013 does not apply to computer software.

Problematic language: Transition planning

1. DEFINITIONS.

a. **Contractor Proprietary Software** means computer software that is owned by Contractor and used solely by Contractor in providing ZZZZ Services, and includes Related Software Documentation…

f. **Licensed Software and Other Intellectual Property** means Contractor Proprietary Software and Other Intellectual Property for which the Government has negotiated and paid for a license to use.

k. **Other Intellectual Property** means intellectual property, other than proprietary software, relating to the design and operation of the ZZZZ that is owned by Contractor.

2.4 MARKING OF CONTRACTOR INTELLECTUAL PROPERTY AND PROPRIETARY INFORMATION.

Contractor shall conspicuously and legibly mark, and **the Government shall not remove**, the below legend on hard or soft copies of documents and other tangible embodiments of Contractor Proprietary Software and Other Intellectual Property to which such access or license is granted to Government.

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Problematic language – transition planning (continued)

3.6 TRANSITION OF CONTRACTOR PROPRIETARY SOFTWARE AND OTHER INTELLECTUAL PROPERTY.

(a) **Government Option to License Contractor Proprietary Software and Other Intellectual Property:** Government or its Successor Contractor(s) may desire rights to Use the Contractor Proprietary Software and Other Intellectual Property to perform the ZZZZ Services after this Contract expires or is terminated. **The Government may elect to acquire from Contractor a specifically negotiated license to use all, or a part of, Contractor's Proprietary Software and Other Intellectual Property upon the terms and conditions set forth herein**.

(d) **License; Reservation of Rights.** If Government elects to a acquire license to use the Licensed Software and Other Intellectual Property, the Government and Contractor shall enter into a mutually acceptable license agreement pursuant to which, upon payment of the mutually agreed upon license fee (the "License Fee"), said license shall become effective. **Contractor reserves all rights not expressly granted in the license. Nothing in this Contract conveys, or shall be construed to convey, any right of ownership of Contractor Proprietary Software and Other Intellectual Property to Government or to its Successor Contractor(s).**

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Consistent language – scope of rights

RFP Example: **Technical Data Package/Rights** -

- **Provide the appropriate SOW tasking** in Annex F **for delivery of the technical data and rights sufficient to accomplish the objectives in SOO** paragraph 3.1.3.4 and, in this paragraph, demonstrate the extent to which the objectives can be met.

- **Provide a description of the level of data and rights** separately with regard to (a) meeting Title 10 U.S.C., Chapter 146, Section 2464, CORE logistics capabilities (CLIN 0101); (b) a competitively selected PBL support environment (CLIN 0102); and (c) the source data and data rights for a mission control system to enable use and modification for other UASs (CLIN 0103).

- For each, the Offeror **shall propose their approach for providing technical data** from both the prime and subcontractors, with sufficient rights and licenses provided to the Government. Specifically identify the data and the rights that will be provided, clearly identifying the additional data and rights to be provided that are above what will be provided as part of the effort under CLINs 0002 and 0202. Also, if any, identify data and rights that are required to meet the objectives but will not be provided.

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Consistent language – classifying deliverables

RFP Example: **Intellectual Property Deliverable Restrictions**.

For each task order to be issued under the contract, the Contractor shall identify, prior to award of the affected task order(s) to the best of its ability, noncommercial and commercial technical data and computer software that it intends to deliver with restrictions on the Government's right to use, release or disclose such identified technical data and/or computer software.

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Consistent language – Cost of data rights

RFP Example: 7.2.2.9 Software Parametric Data.

…Software costs shall be included in the Basis of Estimate (RFP Section J Attachment 18), including, license costs for COTS items, and costs for providing Government unlimited rights for software developed by the offeror and its suppliers.

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Lessons learned thus far:

- Request appropriate level of data rights (don't ask for the universe!)
- Use contract language that recognizes the contractor's copyright ownership
- Discuss data rights issues at the beginning of the contract
- Plan for a smooth transition at the end of a contract (avoid a hostage crisis)
- Consider a repository (virtual) to hold data rights

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Ongoing activities

- Extend analysis of RFPs and contracts to requirements, contractor qualifications, deliverables, …

- Interview PMs, M&S leads, Gov model mgrs, COR

- Survey industry for recommended best practices

- Suggest clarifying and simplifying language for acquisition guidance

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Backup slides

What distinguishes a "Best Practice" for M&S Contracting?

- Complies with established policy, regulations, statutes
- Avoids post-award protests
- Achieves PM's objectives
  - Program cost/schedule/performance
- M&S completes on time/schedule
- Leads to successful use of M&S
- Balances government and industry interests
- Supports broader DoD M&S aims
  - Reuse, agile, adaptable, open, interoperable

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Contracting context: works of federal *employees*

The U. S. Code does not extend protection to works of the federal government:

- **17 USC § 105:** Copyright protection under this section is not available for any work of the United States Government…

    – A "work of the United States Government" is a work prepared by an **officer** or **employee** of the United States Government as part of that person's official duties.

Thus we must look elsewhere to identify the data rights retained by federal **contractors.**

Contracting context: works of federal *contractors*

17 USC § 105: …but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise.

In other words, the ownership of technical data rests with the contractor unless explicitly transferred.

However, DFARS does not necessarily require this assignment:
227.7103-4 License rights for non-commercial technical data.

- (a) *Grant of license*. The Government obtains rights in technical data, including a copyright **license**, under an irrevocable license granted or obtained for the Government by the contractor. **The contractor or licensor retains all rights in the data not granted to the Government.** For technical data that pertain to items, components, or processes, the scope of the license is generally determined by the source of funds used to develop the item, component, or process. When the technical data do not pertain to items, components, or processes, the scope of the license is determined by the source of funds used to create the data.

Problematic language

Overly broad data rights claims by the government:

Contract Example: 17.0. Proprietary Rights. All proprietary rights to all materials produced by Contractor personnel shall become the sole property of the US Government.

RFP Example: As such, no analysis or data provided under this contract shall constitute or be construed as company proprietary or owned by the contractor. Upon termination of the contract, all related hardware, software, data and materials shall become property of the United States Government and shall not be disclosed except upon written authority by the Task Order Manager (TOM).

Consistent language – classifying deliverables

RFP Example: **Intellectual Property Deliverable Restrictions**.

For each task order to be issued under the contract, the Contractor shall identify, prior to award of the affected task order(s) to the best of its ability, noncommercial and commercial technical data and computer software that it intends to deliver with restrictions on the Government's right to use, release or disclose such identified technical data and/or computer software.

GOTS vs COTS Business Models

Positive	**Negative**

GOTS

- Designed to meet specific requirements

- Information Assurance (IA) built in

- Fewer barriers to reuse (Unlimited rights)

- Potential cost/schedule overruns

- Potential loss of innovation

COTS

- Potential for reduced cost/schedule

- Potential for multiple alternatives

- Leverage improvements from broader marketplace

- Leverage experiences fm wider user base

- May not fully meet program requirements

- Greater integration risks with multiple vendors

- No visibility inside product

- Vendor stability

- Dependence on license agreements

- DoD unable to dictate product improvements

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DFARS license rights for technical data & software

- **DFARS 227.7103-9(a)(1):** The clause at 252.227-7013, Rights in Technical Data--Noncommercial Items, requires a contractor to grant or obtain for the Government *__license rights__* which permit the Government to reproduce data, distribute copies of the data, publicly perform or display the data or, through the right to modify data, prepare derivative works.

- **DFARS 227.7203-9(a)(1):** The clause at 252.227-7014, Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, requires a contractor to grant, or obtain for the Government *__license rights__* which permit the Government to reproduce the software or documentation, distribute copies, perform or display the software or documentation and, through the right to modify data, prepare derivative works.

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Data rights under FAR

27.403 Data rights—General.

- All contracts that require data to be produced, furnished, acquired, or used in meeting contract performance requirements, must contain terms that delineate the respective rights and obligations of the Government and the contractor regarding the use, reproduction, and disclosure of that data.

27.404-3 Copyrighted works

- (a)(1) Generally, the contractor must obtain permission of the contracting officer prior to asserting rights in any copyrighted work containing data first produced in the performance of a contract. However, contractors are normally authorized, without prior approval of the contracting officer, to assert copyright in technical or scientific articles based on or containing such data that is published in academic, technical or professional journals, symposia proceedings and similar works

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Data rights under FAR 52.227-14

(2) The Contractor shall have the right to—

- (i) Assert copyright in data first produced in the performance of this contract to the extent provided in paragraph (c)(1) of this clause;
- (ii) Use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Contractor in the performance of this contract, unless provided otherwise in paragraph (d) of this clause;

(c)(1) Copyright— (1) Data first produced in the performance of this contract.

- (i) Unless provided otherwise in paragraph (d) of this clause, the Contractor may, without prior approval of the Contracting Officer, assert copyright in scientific and technical articles based on or containing data first produced in the performance of this contract and published in academic, technical or professional journals, symposia proceedings, or similar works. The prior, express written permission of the Contracting Officer is required to assert copyright in all other data first produced in the performance of this

(d) *Release, publication, and use of data.*

The Contractor shall have the right to use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Contractor in the performance of this contract, except—

- (1) As prohibited by Federal law or regulation (*e.g.*, export control or national security laws or regulations);
- (2) As expressly set forth in this contract; or
- (3) If the Contractor receives or is given access to data necessary for the performance of this contract that contain restrictive markings, the Contractor shall treat the data in accordance with such markings unless specifically authorized otherwise in writing by the Contracting

Data rights for project involving OneSAF

- 3.3.1 Within scope of TICC and BEST activities (paragraph 3.1.1 above) the contractor shall modify, integrate and/or install simulation-independent HLA Middleware software packages, Gateways, Adaptors or Interfaces, permitting existing BLCSE simulations to interact with 3CE and/or Lead System Integrator (LSI) federates. Middleware, Gateways, Adaptors and Interfaces not provided as GFE **will be developed and delivered with complete documentation, operating instructions, and with complete government proprietary rights.** OOS-based or developed, or other GFE available, Middleware, Gateways, Adaptors and Interfaces will be utilized unless prior written agreement is received from COTR that no OOS or other GFE Middleware, Gateways, Adaptors and Interfaces are available or suitable to the integration task.

Data rights for project involving NSS, STORM

RFP Example: As such, no analysis or data provided under this contract shall constitute or be construed as company proprietary or owned by the contractor. Upon termination of the contract, all related hardware, software, data and materials shall become property of the United States Government and shall not be disclosed except upon written authority by the Task Order Manager (TOM).

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