Calhoun
Institutional Archive of the Naval Postgraduate School

Calhoun: The NPS Institutional Archive

2009-04-01

Aligning Acquisition Practice with Net-centricity Policy

Lloyd Brodsky

http://hdl.handle.net/10945/33381

EXCERPT FROM THE
PROCEEDINGS

OF THE

SIXTH ANNUAL ACQUISITION
RESEARCH SYMPOSIUM

**ALIGNING ACQUISITION PRACTICE WITH
NET-CENTRICITY POLICY**

Published: 22 April 2009

by

Lloyd Brodsky

**6th Annual Acquisition Research Symposium
of the Naval Postgraduate School:**

**Volume II:
Defense Acquisition in Transition**

May 13-14, 2009

The research presented at the symposium was supported by the Acquisition Chair of the Graduate School of Business & Public Policy at the Naval Postgraduate School.

To request Defense Acquisition Research or to become a research sponsor, please contact:

NPS Acquisition Research Program
Attn: James B. Greene, RADM, USN, (Ret)
Acquisition Chair
Graduate School of Business and Public Policy
Naval Postgraduate School
555 Dyer Road, Room 332
Monterey, CA 93943-5103
Tel: (831) 656-2092
Fax: (831) 656-2253
E-mail: jbgreene@nps.edu

Copies of the Acquisition Sponsored Research Reports may be printed from our website www.acquisitionresearch.org

Conference Website:
www.researchsymposium.org

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Proceedings of the Annual Acquisition Research Program

The following article is taken as an excerpt from the proceedings of the annual Acquisition Research Program. This annual event showcases the research projects funded through the Acquisition Research Program at the Graduate School of Business and Public Policy at the Naval Postgraduate School. Featuring keynote speakers, plenary panels, multiple panel sessions, a student research poster show and social events, the Annual Acquisition Research Symposium offers a candid environment where high-ranking Department of Defense (DoD) officials, industry officials, accomplished faculty and military students are encouraged to collaborate on finding applicable solutions to the challenges facing acquisition policies and processes within the DoD today. By jointly and publicly questioning the norms of industry and academia, the resulting research benefits from myriad perspectives and collaborations which can identify better solutions and practices in acquisition, contract, financial, logistics and program management.

For further information regarding the Acquisition Research Program, electronic copies of additional research, or to learn more about becoming a sponsor, please visit our program website at:

www.acquistionresearch.org

For further information on or to register for the next Acquisition Research Symposium during the third week of May, please visit our conference website at:

www.researchsymposium.org

THIS PAGE INTENTIONALLY LEFT BLANK

Aligning Acquisition Practice with Net-centricity Policy

Presenter: Lloyd Brodsky is a senior consultant in the Federal Consulting Practice of Computer Sciences Corporation, where he helps clients with issues in service-oriented architecture and healthcare IT. He taught management information systems at the Free University of Amsterdam and the University of Colorado. He holds a doctorate in management information systems from the Sloan School of Management at the Massachusetts Institute of Technology, as well as the PMP and CISSP certifications.

Lloyd Brodsky
Computer Sciences Corporation
Email: lbrodsky@csc.com
Phone: 571-205-9617

Abstract

Governance is widely viewed in the SOA literature as essential to successful SOA deployments. That literature generally draws little distinction between in-house projects and those carried out by contractors. Because the relationship with contractors is negotiated and managed by the acquisition unit, this paper finds it essential that acquisition integrate the decisions of governance both into solicitation documents and the resulting contracts for outsourced development or operations. It identifies what should be in a model SOA contract, paying particular attention to specifying, monitoring, and enforcing service-level agreements and alternative dispute resolution.

Introduction

Service-oriented architecture (SOA) depends on all participants having deep and abiding trust that software components will work when invoked. Trust must be earned prior to seeing such services existing and working. Earning this trust involves clear communication of what rules are to be followed, hiring people who are capable of following the rules, providing resources to enable following the rules, monitoring that rules are followed, and taking appropriate action when they are not. The governance process is responsible for writing those rules; acquisition is responsible for integrating those rules into solicitations, monitoring compliance, and establishing resolution procedures when those rules are violated. This paper identifies some of the SOA issues that are not well-handled by traditional contracts and proposes writing a model contract that could be customized to meet the needs of individual SOA acquisitions.

Most acquisition organizations do not develop custom contracts for each acquisition. Rather, acquisition organizations reuse so-called boilerplate, which is meant to handle all the reasonably anticipatable contingencies. Since SOA introduces new problems, that boilerplate should be reworked to handle those contingencies.

This legal analysis process would be mutually beneficial for lawyers in acquisition and enterprise architects in governance. As a profession, lawyers have considerable skill in managing the risks inherent in contractual relationships between multiple parties. They identify things that could go wrong with engagements, develop procedures for how to handle those problems, and work out legal language that will stand up in court for carrying out those procedures. This is a higher level of procedural scrutiny than customarily conducted by

enterprise architects. For example, while enterprise architects might simply call for service-level agreements, lawyers would spend time drafting precise terms for specifying those agreements, how the SLAs are to be monitored, what the process is for official notification of a breach, and what the remediation and/penalty is for each of the anticipated contingencies that could lead to an SLA breach.

Identifying possible problems and working out the remediation process ahead of time both prevents some problems and reduces the amount of relationship damage if a negative outcome occurs. This section identifies issues that should be dealt with explicitly, including:

- **Intellectual property retention:** Vendors should be required at contract start to identify any intellectual property (IP) claims they intend to assert associated with their service and to grant licenses for using their IP. They also need to identify any third-party IP requiring licensing that might impede usage of the service to be developed in the future. Anything else should be explicitly recognized as work-for-hire owned by the government.

  This is important for two reasons. First, many contractors are themselves using third-party COTS products with their own license restrictions. Decision-makers do not want to be in a situation where their organization is inadvertently in breach of a license purchased on their behalf. Second, vendors have sometimes asserted intellectual property rights in their own work if the contract did not make clear who owned the resulting work product. If a contractor were to claim a copyright or trade secret in contracted work (in all or part of completed work), it could lead to a dispute regarding reuse. This would be particularly problematical if the vendor were able to get a patent issued on software or process. In that case, the vendor would have a legal right to demand royalties from any company doing the same thing, even if the contract was taken away and awarded to another vendor and work product from the patenting vendor was discarded.

- **Service-level agreements (SLAs):** SLAs are widely acknowledged to be of great importance to SOA deployment. However, the literature on SLAs often leaves out much guidance on how to write them into legal contracts or what to do if one of the SLAs has been violated. When dealing with contractors, there is a need for decision-makers to distinguish between "hard" SLAs and "soft" SLAs. Hard SLAs are contractual requirements. For a hard SLA to succeed, it should be written in legally unambiguous language, with a monitoring scheme that provides clear evidence any of breaches, and provide for clear penalties in the event of breach. What are known as "liquidated damages"—fixed amounts of money—are preferred by most lawyers. SLAs should be made hard only if the performance is completely under the control of the relevant contractor, the SLA is clearly monitored for compliance, and the performance being contracted for is clearly feasible. Otherwise, it may become difficult to get qualified vendors to bid or to prove that an SLA has been violated. Unless the service was truly intended to be fail-safe, decision-makers should consider stating a hard SLA as a percentage goal restricted to expected usage hours, such as the service must be available 99% of regular office hours. Otherwise, bids by contractors may increase as they build in multiple levels of redundancy to avoid hard SLA breaches and price in 24x7 staffing. In addition, decision-makers should consider whether all users are to receive equal quality of service. Often, the organizational unit funding the development feels it has a superior claim to available

capacity. There are also good reasons why different classes of users might be treated differently.

"Soft" SLAs are stated explicitly and are still monitored but have contractual commitments to work through conflict with a problem diagnosis and remediation process rather than a fixed penalty. Binding arbitration may also be considered, although it is best if both customer and contractor work in a spirit of cooperation. Because SOA applications are often composed of multiple services from multiple hosts, the process of debugging is often complex. In addition, SLA breaches are sometimes caused by events out of control of the service provider, such as a usage surge not in the contract or a change in requirements requiring additional resources. The model contract should have a comprehensive list of both kinds of SLAs thought appropriate to the organization. RFP writers should use that list as a menu to pick what is most appropriate to the problem at hand.

- **Interoperability help desk:** SOA eliminates the need to custom engineer point-to-point interfaces for new connections, which require skilled labor at both ends to establish a connection and security accreditation. While the term plug-and-play has been used in connection with a web service interface, there is no way connecting to a complex service will ever be as easy as plugging in a USB cable. Support will always be needed, but never more so than at the launch of a new service, when there is precisely nobody in the user community with experience getting the new "whatever" to work, and the draft documentation has had no feedback from the people trying to understand it**.** Ideally, there would be a tiered help desk funded to assist. Such an operation would fund retention of this expertise, reduce the amount of wasted developer time, and provide valuable feedback improving the documentation and in understanding the problems of the people using the services.

- **SOA-specific contractual deliverables list:** Development projects have contractual deliverables. These explicitly required deliverables are traditionally milestones in the development schedules which are tied to master schedules. In traditional information technology development projects, these deliverables normally include the requirements document, technical design, unit and system integration test, among others. Listed below are other contractual deliverables which are equally important in SOA environments. There are at least three good reasons to expand the list. First, what is important should be explicit in the contract, and these are very important indeed. Second, inclusion establishes formal evaluation and verification points, which are important oversight tools for acquisition and governance. Third, inclusion of these deliverables as contractual milestones enables progress payments for the vendors, which are a real incentive for timely completion. Important deliverables of special importance to SOA are:

  o **Configuration management plan:** SOA depends on all parties being able to absolutely rely on published services. This implies the existence of very tight rules on changing both the interfaces themselves and on the controlled vocabulary those interfaces use. Indeed, it may be necessary to offer multiple interface versions to the same service during transition periods. While configuration management is hardly new to SOA, it is much more mission-critical. It follows that the configuration management plan should be one of the contractual deliverables, on the general principle that if the vendor cannot

develop a credible plan, it will probably have problems actually managing the configuration.

- o **Controlled vocabulary:** It is crucial that the same attributes mean the same thing within the relevant domain if the service is to have the interoperability promised by SOA. Being able to exchange data is not worth much if no one knows what it means. The enhanced data dictionary that identifies all the controlled attributes and their possible values needs to be reviewed in the governance process. This dictionary will also be a vital reference document for development and testing.

- o **Interoperability artifacts and service registration:** These include XML schemas, web services definition language (WSDL) messages, etc. These are supposed to vetted and entered into the services registry. These are the formal definitions of the data being exchanged and the interface to the service.

- o **Independent interoperability verification:** Developed services are supposed to be usable by anybody with appropriate authorization. Interoperability tests are testing the documentation as well as the service itself, so the ideal situation is to have the testing done by an entity completely separate from the development team. It would be third parties implementing the connections in production, so this additional step would be useful and the report of the testing outcome of great interest.

- o **Service user communications plan:** An important part of SOA's appeal is the prospect of avoiding development costs by reuse. Most new products and services need some kind of marketing beyond merely announcing availability on a website—or, in this case, a service registry. Careful consideration should be given to including a plan for marketing new services and communicating with the user base.

- o **Service-level agreement monitoring plan:** As discussed above, SLAs are central to SOA. Decision-makers need a plan for how to monitor the service levels they decided to enforce. There are commercial products which can do automated monitoring. There should also be a channel for service users to submit a documented complaint of an SLA violation directly to the acquisition office. Ideally, the service user communications plan would include some training in how to provide useful feedback and complaints to acquisition.

- • **Dispute resolution mechanism:** The default remedy for breach in contract law, as well as the *Federal Acquisition Regulations*, is to terminate the contract after giving the contractor notice and a remediation period. Firing the contractor solves very few IT problems, however. There are any number of reasons why a service-level agreement would be breached. While a vendor might actually have done something wrong, it is also possible that a component operated by another vendor failed to function properly, that demand exceeded the range specified in the contract, that the component met the contractual requirements but the situation changed, etc.

In an SOA environment, acquisition, governance, and contractors need a framework in which problems can be noted, solutions worked out, and burdens shared in accordance with responsibility. SOA calls for a shift that is as much cultural as contractual, in that different contractors and clients brought together by a problem with a complex, composed application

work together to try and solve the problem first and worry about the assignment of blame and assessment of penalties later. The sharing of information about problems between firms that were direct competitors in traditional systems—but whose components have been included in complex applications—may be a particularly large cultural shift. While the exact form of the dispute resolution will be organization-specific and will vary with how governance itself is structured, careful consideration should be given to the use of such alternative dispute resolution mechanisms as binding or voluntary arbitration. Ideally, the COTR or the contracting officer would have enough technical knowledge to understand the issues and have some background in dispute resolution as well.

In conclusion, this paper finds that acquisition is the interface between acquisition and governance. It identifies new issues SOA brings and suggests developing a model contract that explicitly addresses these concerns. It also recommends a more nuanced dispute resolution procedure that focuses more on problem solving and less on punishment.

THIS PAGE INTENTIONALLY LEFT BLANK

2003 - 2009 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st Century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting

Financial Management

- Acquisitions via leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for DoD

- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC Aegis Microwave Power Tubes

- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to Aegis and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

A complete listing and electronic copies of published research are available on our website:
www.acquisitionresearch.org

THIS PAGE INTENTIONALLY LEFT BLANK