Continuous Competition as an Approach to Maximize Performance

The Limits of Competition in Defense Acquisition

Defense Acquisition University Research Symposium

18 September 2012

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Outline

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- Competition in Defense Contracting
- Continuous Competition Approaches
- Competitive Multi-Sourcing with Distributed Awards
- Implementation
- Recommendations
Abstract

- When competition is continually present, industry responds with their best team and more agility

- **Continuous** competition motivates contractor performance throughout the life of a program
  - Creates leverage to acquire more effective and affordable systems

- Introducing the concept of Multi-Sourcing with Distributed Awards
  - An acquisition strategy that enables continuous lifecycle competition under an applicable set of conditions and supporting business case

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Competition in Defense Contracting

Law, Regulation and Policy
- Competition in Contracting Act of 1984
- Weapons Systems Acquisition Reform Act (WSARA) of 2009
- Better Buying Power (BBP) Memo of 2010

Current Environment
- >50% 2010 Major Defense Programs below performance/cost goals
- 32% Defense Programs have cost overruns after initial competition
- 66% Nunn-McCurdy cost threshold breaches from 1997-2011 related to engineering design issues

Renewed emphasis on competitive designs
- DoDI 5000.02 requires material development decision up front
- WSARA competitive prototyping before development start
- BBP invest in design to mitigate performance failure

Maintain competitive design, invest in alternatives
A Changing Competitive Marketplace – 1980’s

- 1980’s build up, many competitors for defense business
  - Dual Sourcing and Leader Follower contracting strategies
  - The Engine Wars, Missiles, Sonobuoys, components
  - Private investment for big pay off in production

Engines – Fighter engine dual sourcing saved $2-3B over 20-year life cycle, doubled reliability per 1000 flight hours

Missiles – 14 tactical missiles with dual sourcing saved 20% over life cycle, 1975-1995; Tomahawk saved $270M, 17% reliability improvement

Systems - Joint Direct Attack Munitions – dual sourcing saved 33% in development time, 42% in development cost, 50% in the per-unit cost

Sonobuoys – dual sourcing of annual buys brought prices down and improved performance
A Changing Competitive Marketplace - Today

- 1990’s draw down at the end of the Cold War
  - Smaller budgets for Defense procurement
  - Mergers and Acquisitions, Joint Ventures
  - Less investment dollars for a second source

- Today
  - JSF F-35 Second engine cancelled, not affordable
  - Same top four Defense contractors 1999-2011
  - Vendor Lock after initial competition

- 1990’s - Ten aircraft programs overran their budget by 46%
- 1994-2000 – Patriot Missile PAC-3 cost increase of 77%, $3B

- 2011 - Air Force KC-135 Tanker single award for 179 aircraft, $35B
- 2004 -Navy P-8 Poseidon single award for 117 aircraft, $15B
- 2012 – Sonobuoys single award for 50,000 units to Joint Venture
# Continuous Competition Approaches

<table>
<thead>
<tr>
<th>Continuous Competition Development Model</th>
<th>Competitive Ordering (Multiple Award IDIQ)</th>
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<tbody>
<tr>
<td>• Continuous number of competitors, ready for production</td>
<td>• Multiple qualified contracts who meet broad requirements</td>
</tr>
<tr>
<td>• Private investment for product development, big pay-off</td>
<td>• Post-Award competitive pressure</td>
</tr>
<tr>
<td>• Works well in IT or components</td>
<td>• Severable tasks</td>
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<table>
<thead>
<tr>
<th>Competitive Dual Sources</th>
<th>Competitive Multi-Sourcing with Distributed Awards</th>
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<tbody>
<tr>
<td>• Two or more sources develop and produce their designs</td>
<td>• A new approach</td>
</tr>
<tr>
<td>• Continuously drive down prices through annual buys</td>
<td>• Second design maturity</td>
</tr>
<tr>
<td>• Works well with high quantities, known technology</td>
<td>• Low level of work share to second source</td>
</tr>
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</table>

<table>
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<tr>
<th>Few Sources</th>
<th>Multiple Sources</th>
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<tbody>
<tr>
<td>Sharing All Work</td>
<td>Partial Work Share</td>
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</table>
Competitive Multi-Sourcing with Distributed Awards

- Use of competition to motivate contractor performance throughout the life of a program drives incremental improvement and game-changing innovation.
- The state of competition today rarely continues after initial award of either development or production – “vendor lock”

A Recommended Alternative Approach to Competition

The Government awards contracts to two (or more) sources, with a primary contractor receiving the majority of funding. A second receives significantly less funding than the primary contractor, but enough to gain program expertise and to develop plans and concepts to meet program requirements (e.g., a 90/10 split).

- Creates a continuous competitive environment
- Creates an insurance policy if the primary contractor fails
- Matures an alternative design for investment decisions
Benefits of Competitive Multi-Sourcing with Distributed Awards

- Greater flexibility – the Government is not locked-in to a single solution
- Both contractors refine and mature their technical designs, allowing better investment decisions with cost estimates
- Low-level second source early in program could generate high pay-off in production and cost containment
  - Maintain pressure of price competition, prevent monopolistic behavior
  - Minimize transition to a second source already familiar with the program, shorter ramp up
  - Stimulate credible competitors, potential future business
- Reduces barriers to entry
- Alternative to traditional dual sourcing where continuous competition has been successfully applied in the past
Competitive Multi-Sourcing with Distributed Awards - Application

- Percentage-based Distributions (%)
  - Set percentage of funding is allocated to each source

- Partial Contractor-funded Development Model
  - Funding cap for second contractor ($$)
  - Second contractor has choice to add private investment

- Full Development with Scaled Production (Shared Production)
  - Fully fund both sources to develop prototypes
  - Down-select for full scale production and limited production

- Next Increment Prototype Model (Follow-on Competitor)
  - Primary contractor maintains engineering capability
  - Secondary contractor builds prototype for next program increment
  - Positions both contractors to compete for follow-on work
Conditions for Use

- Projected Pay Off in Production Phase
  - High quantities with economic production rates
  - Investment costs are low

- Credible Competition
  - Second source represents a real threat
  - Prime contractor recognizes second source as a peer
  - Contracting arrangements facilitate alternating sources

- Technical Know-how
  - Available technical knowledge and intellectual property
  - Adequate technical and manufacturing readiness
  - Close design maturity gap and technology readiness levels

- Business Case Analysis
  - Effective cost-benefit analysis, switching costs
  - Potential to save in the long run, may require up-front funding
Challenges

■ Ensure second source represents a real competitor
  – Known and respected in the marketplace
  – Evaluate level of independent investment in design

■ Coordinate activities between the two sources
  – Evaluate contractors along the same path and milestones
  – Synchronize testing

■ Product maturity
  – Relatively mature products, investment in technology advances

■ Savings will not be immediate
  – Business case and cost benefit analysis needs to indicate timeline for return on investment

■ Supply chain risks
  – Multiple primes with multiple sources – supply chain vulnerability
Measures of Success

Three main areas of concern: cost growth, schedule slip and performance failure

- Ability to contain costs, measured against statistical cost growth percentages over the lifecycle, benchmarked against GAO, CSIS, and Nunn-McCurdy cost figures

- Ability to reduce known causes for schedule slip in production, such as lack of alternative sources of critical suppliers, or unplanned engineering changes

- Ability to improve performance by achieving or exceeding technical performance against key performance parameters that are part of program requirements
## Implementation

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Parameters</th>
<th>Products</th>
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| Products with known dual sourcing success          | • Economic production rates  
• Willingness for shared public/private investment | Engines, Missiles          |
| Products in highly competitive environments that typically result in a single award | • Leverage technology from the non-selected competitor  
• Enable faster technology advances and higher TRL levels | Aircraft Systems, components |
| Programs with high cost overruns                  | • Nunn-McCurdy breach analysis for engineering design problems  
• Develop alternative design to contain cost growth | Space Systems, components |

# Recommendations

<table>
<thead>
<tr>
<th>Factor</th>
<th>Considerations</th>
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<tr>
<td>Best Fit</td>
<td>Apply the method under a clear set of conditions and expected measures of success</td>
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<tr>
<td>Business Case</td>
<td>Use a business case to support the value of an additional source to improve performance and control costs</td>
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<tr>
<td>Cost</td>
<td>Evaluate the cost of the additional source as an investment to improve decision making and enhanced life-cycle cost estimating</td>
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<tr>
<td>Risk</td>
<td>Develop risk/reward factors that clearly incentivize both the prime and the second source contractor</td>
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<tr>
<td>Contracts</td>
<td>Include clauses in the contract specifically to accommodate technology sharing and ease of transition from one contractor to another</td>
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<tr>
<td>Industry</td>
<td>Engage industry through clear direction and defined outcomes</td>
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