DOD Access to Intellectual Property for Sustainment of Weapon Systems

Richard Van Atta, Project Leader
Royce Kneece
Michael Lippitz
Christina Patterson

August 11, 2017

-- In support of DOD response to Section 875 of the 2016 NDAA --

Sponsor: Director, Defense Procurement and Acquisition Policy (DPAP), OUSD(AT&L)
Outline

- Background
- Approach
- Findings
- Conclusions
- Recommendations
What is “Intellectual Property (IP)”

- Intellectual property comprises patents, copyrights, trademarks and trade secrets.
- In DOD sustainment, IP largely means:
  - Technical data (trade secrets), and
  - Software (copyrights).
- §2320 and §2321 of Title 10 United States Code (U.S.C.) codifies DOD and industry rights in intellectual property.
- Access to IP requires two separate provisions:
  - Rights to the data
  - Delivery of data.
Section 875 of FY2016 NDAA calls for an independent review of:

a. DOD regulations, practices, and sustainment requirements related to government access to and use of intellectual property rights of private sector firms; and

b. DOD practices related to the procurement, management, and use of intellectual property rights to facilitate competition in sustainment of weapon systems throughout their life-cycle.

The study “shall consult with…each Center of Industrial and Technical Excellence” (CITEs) (CITEs include all major DOD maintenance depots)
Approach

- Review DOD policies, regulations and implementation documents
- Review literature on intellectual property and sustainment
- Obtain inputs from CITEs (questionnaire sent to all + selected interviews)
- Conduct interviews with DOD and industry (see table below)
- Distill key issues and examples of practices and their effects
- Document findings and conclusions

<table>
<thead>
<tr>
<th>Contractors</th>
<th>Commercial</th>
<th>CITES / PMOs</th>
<th>Other Military Offices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing GS&amp;S</td>
<td>First Aviation Corporation</td>
<td>NAVAIR</td>
<td>OSD General Counsel</td>
</tr>
<tr>
<td>Rockwell-Collins</td>
<td>HEICO Corporation</td>
<td>JAX</td>
<td>Army (Acq., Log. and Tech.)</td>
</tr>
<tr>
<td>LMCO IP attorney</td>
<td>Aeronautical Repair Station Assn.</td>
<td>PAX</td>
<td>Navy (Exp. Prog. &amp; Log. Mgmt.)</td>
</tr>
<tr>
<td></td>
<td>Mod. &amp; Replacement Parts Assn.</td>
<td>Army PMs</td>
<td>Air Force (General Counsel; Sustainment Command)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AF PEO</td>
<td></td>
</tr>
</tbody>
</table>
DOD programs report they are forced into costly sole-source contracts due to lack of sustainment IP/TD

- Tech data either not required in the original development and production contracts or not delivered due to differences between DoD and OEM
- Maintenance organizations become the “victims” — “the cake is already baked”

Original Equipment Manufacturers (OEMs) claim that their sustainment contracts are largely derived from IP/TD created with internal funds and are basis for lower initial purchase prices offered to DOD

- Sustainment has become major business focus for OEMs

In defense aviation, estimated DOD savings of $10s of billions annually if DOD followed commercial practices on systems derived from commercial aircraft

- FAA regulations mandate 3rd party access to maintenance IP/TD on aircraft they certify; unclear whether/when these rules apply to DoD systems
Leadership Focus

- Management has not given IP for sustainment adequate attention
- DoD acquisition decision makers in past failed to focus sufficient attention on identifying and acquiring the IP rights and data needed for weapon systems sustainment

*Recommendation: Make sustainment and acquisition of related IP data and rights an explicitly stated high-priority in DOD management and oversight of acquisition programs*

Impact of Insufficient Access to IP

- Inhibits ability of DoD to use competitive contracting for repair parts, maintenance, and follow-on production, and likely translates into higher longer-term sustainment costs
- Core sustainment needs may not be met because of a lack of necessary IP data

*Recommendation: Establish or expand existing organizational capabilities within OSD and the DOD components to provide expertise in the acquisition of IP to acquisition managers throughout lifecycles*

Opportunity

- Use of FAA maintenance data for DoD commercial derivative aircraft could be expanded and result in substantially lower sustainment costs

*Recommendation: State as policy that DOD acquisition programs should maximize use of data provided for FAA-certified aircraft under FAA regulations to facilitate competition for maintenance and supply of parts for systems and components*
Conclusions and Recommendations (2 of 2)

Policy and Terminology

- DoD policy is robust in coverage of the importance of IP data and rights
- However, ambiguous terms and loosely defined constructs impair implementation of IP for sustainment

**Recommendation:** Establish DOD advisory group to work with industry to clarify ambiguities

Market Reality — Major Weapon Systems Acquisition has severely limited competition

- “Buy-in” bids for development and production contracts are a basis for prime contractors locking in sole-source sustainment “franchises”

**Recommendations:**

1. Require DOD acquisition programs with sole-source contracts for sustainment to conduct a Business Case Analysis to transition to a competitive model for sustainment. The results should be forwarded to the component acquisition executive with a recommended plan to obtain the necessary IP data and rights

2. Conduct assessment of alternative approaches for contracting and overseeing the development, procurement, and sustainment of weapon systems under severely limited competition
IP issues reflect differing priorities and incentives

Congress (Laws)
- Local stakeholders (unions, depot support providers)
- OSD, Defense Agencies, Military Services
  - Innovation, Industrial base
  - Budget and milestone decisions
  - Sustainment costs

Military Forces
- Performance
- Availability
- Acquisition costs
- Life-cycle costs
- Assess Req./cost tradeoffs
- PMO

Contractors
- Win initial contract
- Protect valuable IP
- Sustainment business
- Keep program “sold”
- Create Document
- Protect DOD Acquired Data Rights
- FAA Data
- Competition-sensitive

Depots
- Core system organic sustainment mandate
- "50-50" rule
- MRO Contractors
- Compete for DOD sustainment business

Multiple contending parties with differing agendas

Program Management Office (PMO) is the focal point in contracting and managing an acquisition

MRO: Maintenance and Repair Organizations
IP rules fundamentally shape how DOD interacts with its contractors and commercial companies

Laws and DOD regulations and guidance aim to foster competition in sustainment (includes IP access) and also encouraging innovation (by respecting firms’ IP rights)

- Depots have legally mandated roles in sustainment of “core” weapon systems but the required data and rights must be in contracts
- Competition in sustainment is clearly stated in DoD policies and guidance, but implementation uneven
- OEM claims of “developed at own expense” vs. government funds impact directly on IP rights

While DOD is entitled to unrestricted rights to technical data needed for “operations, maintenance, installation, and training” (OMIT) specific data required is not defined in the regulations and open to interpretation

- What is OMIT (“maintenance” vs. “detailed manufacturing”)?
- Even though DOD may have rights to data, delivery must be specified in contract deliverables
Obtaining IP data and rights is an acquisition mandate

- PMOs required “to assess the long-term technical data needs…and establish corresponding acquisition strategies that provide for technical data rights needed to sustain such systems and subsystems over their life cycle…. Before issuance of a contract solicitation.”

Funding and time pressures on Program Office often lead to “kicking the can down the road”

- Focus on concluding a competitive systems integration contract at an acceptable cost
- Upfront required sustainment plans often incomplete
- Service acquisition orgs provide little expert support to PMOs; acquisition workforce has been reduced in recent years
- Detailed IP consideration often deferred until Milestone C, at which point PMOs at a negotiating disadvantage relative to selected OEM

For PMs, TD needed for sustainment is in distant future, not on their watch, and would require allocating scarce funds needed for development and procurement
Lack of IP data and rights is an obstacle to organic depot maintenance

- For systems designated as “core,” Title X requires DoD to establish depot sustainment within 4 years of IOC
  - OEM support generally necessary for initial procurement period, due to learning curve on specialized equipment, processes and expertise
  - If PMOs didn’t negotiate tech data deliverables and rights, then there is little recourse to relying on contractor logistics support

- Purchasing the required data delivery and rights after EMD contract award can be prohibitively expensive [almost never an option]

- Programs often forced to go to OEMs for maintenance and parts, which affects availability and cost
  - Difficulty obtaining parts for weapons systems that are no longer produced and that the OEM no longer supports
  - “Public-Private Partnerships” often means OEMs subcontracting back to depots, in effect keeping the OEM as the sole-source sustainer
DOD dependence on OEM

- **P-8**: DOD plans to eventually switch to depot maintenance, but much of the needed technical data are marked proprietary. Sustainment in limbo.

- **Reaper**: Contractor-developed system for which DOD has limited IP rights but is still required to set up depot maintenance.

- **Other examples of DOD lacking technical data needed for depot sustainment**
  - MRAP, MTVR, and LVSR
  - PaveWay II & III, Laser Guided Bomb, JDAM, Advanced Kill Weapon System

DOD independence

- **C-130J**: Navy possesses TD to perform glass cockpit modernization at substantially less cost than OEM

- **F-18**: OEM claimed a $1,500 part needed to be swapped every 200 hours, but Navy had sufficient data to determine when replacement actually necessary, resulting in substantial savings
Difficult for DOD organizations to challenge IP rights

- Laws and regulations define government rights to IP
  - Either Unlimited, Government Purpose, Limited, Restricted or Specifically Negotiated License based on who funded

- Problems of whose IP it is
  - Data rights based on who funded the development—which is difficult unravel
  - OEMs stamp “Proprietary” on TD, which is not a conforming marking, but OEMs use to bolster claims of “ownership”—which DOD then has to challenge

- Challenging OEM claims is onerous
  - Cases must escalate from PMO to PEO to Service Acq. Exec to General Counsel… seldom happens
  - DOJ must initiate any lawsuits over IP rights
  - Legal challenges can take years, during which time the contractor markings must be honored
  - Certain court decisions have been detrimental to DOD’s access to IP
Limited competition for acquisition of Defense weapons constrains IP access

- Only very small number of firms (2-3) compete in any weapons segment (also for major subsystems)
- Uncertainties on front-end (Milestones A & B) make it difficult to specify IP needs early
- Once in full-scale development (FSD) there’s only one supplier—sole-source monopoly. Once a monopoly position exists for a system, sole-source provider has strong leverage in negotiations on IP
- While DOD funds much of the underlying R&D, firms fund considerable development—and some have funded most development of some systems, e.g., REAPER—making “ownership” of IP contentious
- DOD has pushed development costs increasingly onto the competing vendors—firms see this as needing to be recouped
- Reduced DOD acquisition of major systems has focused OEMs on locking in sustainment business
See DoD infringing “franchise” that OEM won competitively

- Sustainment income was a factor in the production bid; price for initial procurement [ostensibly] would be much higher otherwise
- OEMs claim ownership of IP based on internal investment—difficult to assess
- Concerns about DOD using IP access as evaluation factor in RFPs (cannot be a condition of contract award but can be an evaluation factor)

See DoD accessing “their” IP as damaging their competitive advantages

- OEMs invest in technologies they expect to use across multiple programs
- OEMs claim such IP often involve “detailed manufacturing or process data” to which DOD is not entitled (per §2420 USC 10)
- Industry organizations (AIA) have taken strong positions on “rolling back” DoD efforts to access “their” IP
See prospects of substantial business in servicing “commercially-derived” defense aircraft—but feel DOD treating them unfairly (limiting their ability to compete)

Contend that DOD can adopt FAA rules for many of its commercially-derived aircraft systems

Significant savings possible on parts, labor, facilities, commercial practices--$10s of billions annually across DOD

- Recent RAND engine study documents savings
- Earlier PBL studies show similar possible savings

Tinker AFB examples
- In 2007, AF approved use “aftermarket” parts, based on several years of effort by commercial MROs and airlines. In 2011, reversed this policy for unknown reasons, closing out commercial MROs.
- AF intends to build hangars for KC-46 Tanker, based on Boeing 767 that commercial MROs have been maintaining in high volume for 30 years.
Many aircraft systems are military-unique → strong OEM leverage
- Classified designs and specialized equipment, processes, expertise
- Highly integrated → risk in trying new approach/vendor for a subsystem

Much lower production volumes than commercial aircraft → insufficient business to sustain multiple MRO providers

Various factors inhibit near-term DOD investment for long-term savings, enterprise value maximization and risk-management
- Separated acquisition, sustainment, and operational authorities
- Budget uncertainty → risks of making longer-term commitments
- Personnel turnover and contracting rules hinder DOD from the commercial practice of building long-term, trusted relationships with preferred suppliers (Contractors develop institutional knowledge that DOD employees lack)

Laws/regulations are used (interpreted) to constrain use of 3rd party MROs by restricting the availability of tech data and rights
For commercially-derived aircraft, adoption of FAA-style rules could save money and improve readiness; however, DOD must still perform MRO at military depots for certain of these aircraft because:

- For “core” systems depots required to maintain MRO sustainment capable of surging to meeting wartime demands
- "50-50 rule": No more than 50% of a Service’s annual maintenance budget may be spent on contractors
- Some DOD programs contend that the flight profiles of their commercially-derived aircraft do not permit accepting FAA standards
What are the prospects of DOD generating greater competition for its commercially-derived aircraft?

- DOD has had some but limited success in utilizing FAA-required “airworthiness” data for competitive maintenance services and parts procurement
  - Extra burden on risk-adverse PMOs
  - Could face long legal battles with OEM (though winning an early test case could shift OEMs’ perception of risk/reward)

- Which and how much organic depot MRO capabilities is it prudent for DOD to maintain?
  - This is extremely political—unlikely anyone would take it on….

- How much could DOD actually save?—claims are in $10s billion
  - RAND study found a cost savings of over $1 million per overhaul, or over $200 million from FY 2010 to 2013 for the F103 engine used on the KC-10

- Recent successes show potential: KC-46 and Army utility helicopters

- Needs more study to assess full potential and roadblocks
Summary findings: Why DOD’s policies on IP for sustainment are often not reflected in practice?

- IP rights are fundamental to industry, with inherent tensions (and often ambiguity) between creators and users.

- IP strategy is complex and requires judgments about uncertain future needs for sustainment and associated costs:
  - “Here and now” acquisition pressures tend to take precedence.
  - OEMs focus on profits (near and long-term) whereas DOD acquisition management incentives are less focused, considering diverse stakeholders.

- DOD faces fundamental limitations in adopting commercial best practices:
  - Need to maintain sustainment capabilities for wartime (depots).
  - Much smaller, more disparate market for sustainment services than commercial airlines [but still $ billions….]
  - Budget uncertainty and personnel turnover inhibit consideration of longer-term tradeoffs.

- Higher-level DOD acquisition management has in the past given little priority on either IP or sustainment, leaving PMOs essentially on their own.
Conclusions

- **Policy and Terminology**
  - DoD policy is robust in coverage of the importance of IP data and rights to the sustainment of weapon systems
  - However, ambiguous terms and loosely defined constructs impair implementation of IP for sustainment

- **Market Reality — Major Weapon Systems Acquisition has severely limited competition**
  - “Buy-in” bids for development and production contracts are a basis for prime contractors locking in sole-source sustainment “franchises”

- **Leadership Focus**
  - DoD acquisition decision makers have in the past failed to focus sufficient attention on identifying and acquiring the IP rights and data needed for weapon systems sustainment; recent evidence of improvement exists, but it is too early to assess whether those efforts are sufficient
  - Management has not given IP for sustainment adequate attention

- **Impact of Insufficient Access to IP**
  - Inhibits ability of DoD to use competitive contracting for repair parts, maintenance, and follow-on production, and likely translates into higher longer-term sustainment costs
  - Core sustainment needs may not be met because of a lack of necessary IP data

- **Opportunity**
  - Use of FAA maintenance data for DoD commercial derivative aircraft could be expanded and result in substantially lower sustainment costs
Outline

- Background
- Findings
- Conclusions
- Recommendations
Recommendations

- Place a higher priority on sustainment and the acquisition of IP and technical data rights and deliverables in the management and oversight of programs
- Establish or expand Component organizational capabilities (with OSD help) to provide expertise on IP and technical data rights and deliverable requirements to programs
- Require that programs dependent on sole-source sustainment contracts to conduct a Business Case Analysis of options for transitioning to a competitive model for sustainment; the results should inform the IP and technical data rights and deliverables obtained
- Establish policy for programs that use commercially derivative aircraft to maximize the use of data provided for Federal Aviation Administration-certified aircraft, in order to facilitate competition for maintenance and supply of parts
- Establish an advisory group to identify and, in consultation with industry, resolve ambiguities and disagreements in terms and provisions related to DoD sustainment needs, particularly related to access to and use of IP
- Fund an assessment of acquisition and sustainment focused on alternative approaches for contracting and overseeing the development and sustainment of weapon systems under severely limited competition