Where Our National Security Begins...
NRO
Application Service Provider
Industry Advisory Working Group

Working Session
August 23, 2016
Agenda

- Welcome & Introductions
- IAWG “Snapshots” & Government-Industry Dialog
- Action Team: Requirements
- Implementation Team: Software Business 101
- “C2S Corner”
- IAWG Way Ahead dialog
- No-Host Social
“Snapshots”

• Next NRO ICITE Day is November 3rd

• Young Professionals Working Group engagement: Acq 101 on 9/19

• Around the Room
Action & Implementation Teams

Updates & Discussion
Requirements:
What the Government Wants vs What Industry Can Provide

Action Team Update
August 23, 2016
Steve Thomas
Governments Needs vs. Industry Capabilities

- The government will receive the best overall value when:
  - Requirements align to industry capabilities, be they commercial, open source, or developmental
  - Requirements are prioritized and prioritization is reflected in RFP/RFQ (high to low; threshold-objective)

- When government requirements and Industry capabilities diverge, best value suffers:
  - “Over Asking”: viable alternatives may not receive credible consideration, development risk increased
  - “Under Asking”: capabilities are “left on the table”, requirements risk increased
  - Distinction between commodity commercial item vs. tailored solutions procurements

- To align requirements to industry capabilities, the government would, prior to RFI stage:
  - Perform market research to identify commercially available capabilities (including in-person dialog)
  - Identify and publish specific gaps between requirements and commercially available capabilities
  - Reflect capabilities and gaps in the RFI for industry comment and recommendations

Action Team activity: develop recommendations to address the issues
Recommendations: Market Research

- Market Research is Key
  - The single best way for the government to understand the capabilities of industry
  - Must be intentional, organized, diligent and rigorous (i.e. it does take time & resources)

- Requests for Information (RFI) should not constitute the full breadth and scope of government market research. Additional vehicles and actions should be performed
  - Regular, recurring Tech Days to see a wide variety of Industry capabilities
  - Tech Summits to discuss specific capabilities with Industry
  - Government presence and participation at Industry Conferences and Expos
  - Keeping SETA/FFRDC and other third party technical experts current
  - Focused “topical” industry briefings (government site or industry site) with 2-way dialog
  - Open door policies and established Government POCs to receive Industry demonstrations and briefings related to the now, next and after next (roadmaps)
Recommendations: Requirements Prioritization

Prioritize the requirements within acquisitions

- Allows Industry to quickly understand which government requirements are critical and which are lower in priority or tied to stretch objectives.
- Helps ensure industry responds with the most appropriate solutions

A number of methods can be used by the government to evaluate and establish the priority of requirements

- Mission Need Analysis – Abstract analysis that identifies what is necessary for the mission and what is merely beneficial
- Weighted Shortest Job First – Identify capabilities that can be rapid delivered from those with long lead times
- Gap Analysis - What capabilities exist as opposed to what capabilities do not exist
- Kano Method - Distinguish the "expected" and "delighting" features
- Pareto Analysis - Separate the vital few from the trivial many
- Cost Analysis – Distinguish the expensive for the affordable, as well as the cost of delay
- Cause & Effect Diagrams - Identify the causes of key problems
- Failure Mode Effects Analysis - understand negative impacts of certain actions. Improve by fixing what's broken rather than by adding more features.
**Recommendations: Requirements**

- **Establish Thresholds and Objectives that align to Requirements**
  - Draw a clear line between the requirements that are essential for mission success and those that are beneficial but not essential
  - Establish these as thresholds/objective requirements within acquisitions, such as:
    - Reliability Requirements (i.e. .9995 vs .99999)
    - Performance Requirements
    - Surge Requirements
    - Capability Requirements
    - Schedule Requirements (i.e. Delivered in 1\textsuperscript{st} year vs 5\textsuperscript{th} year of contract)

- **Establish incentives that reward exceeding thresholds and have negative consequences for failing to meet thresholds**
  - Align the cost, schedule, and proposal grading criteria to meeting thresholds and essential objectives not all requirements listed (e.g. USD AT&L’s “VATEC” approach)
  - Provide criteria within L & M that allows Industry to receive credit for presenting additional capabilities, specifically all of those that come at no additional cost to the government because they are already include within the solution
Next Steps

- Complete Brainstorming of Recommendations – September
- Build Out Final Report – September
- IAWG Peer Review – Sep/Oct IAWG
NRO IAWG
Software Business 101 Course

Draft Presentation V2
August 23, 2016
Agenda

- Introduction and Genesis
- Objectives
- Business Drivers for Software Firms
- Types of Software Licenses and considerations for each
- Types of Software maintenance and considerations for each
- Terms of reference
- Balancing Mission Objectives and Requirements with Software License types and Terms/Conditions – seeking clarity and fairness
- DevOps (?) - discuss

At the end of the draft content are some lingering questions as well as some additional slides which have been removed from the working document. The “lingering considerations” are for requested review. The additional backup slides are for reference purposes only.
Software maintenance refers to the set of activities that are performed to keep a system operational as software changes after the system is fielded.

- Maintenance begins as soon as system has been released to users for the first time in the case of incremental, evolutionary, or spiral developments.
- Encompasses modifications to subsequent release of the system.
- At time of software maintenance, a set of system components are in place, system has been tested and accepted for operational use.
- Operators have been trained, logistics support in place. Data accumulates in system as a result of operational use.
DNI IC IDIQ Contracts & Licenses

Goal: Achieve an IC ITE operating model that employs common business practices and Community teams to deliver, adopt, and sustain shared enterprise services and capabilities across the IC.

Software Contracts Types:

• **Enterprise License**
  - An Enterprise License Agreement (ELA) is an agreement to license the entire population of an entity (employees, on-site contractors, off-site contractors) accessing a software or service for a specified period of time for a specified value. Consolidated contracts are often confused with ELAs.

• **Unlimited License**
  - An Unlimited License Agreement (ULA) is a timebased contract for unlimited use for a subset of Oracle products. At the end of the term, the customer may choose to renew the ULA or declare and certify usage to Oracle.

• **IC IDIQ Software License**
  - Indefinite delivery, indefinite quantity contracts provide for an indefinite quantity of services for a fixed time. They are used when GSA can’t determine, above a specified minimum, the precise quantities of supplies or services that the government will require during the contract period. IDIQs help streamline the contract process and speed service delivery.
# Typical Cloud-Based Software Licensing Models

<table>
<thead>
<tr>
<th>Most Common Licensing Models</th>
<th>Benefits</th>
<th>Drawbacks/Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repurpose Existing License</td>
<td>Leverages existing investment and can provide savings if usage in the Cloud is predictable</td>
<td>Typically the entire license must be maintained, not allowing for variable costs when expanding or contracting usage</td>
</tr>
<tr>
<td>Purchase New Cloud License</td>
<td>Leverages the flexible usage model of the Cloud best – enables costs to expand and contract with usage</td>
<td>Costs less predictable, could provide for increased cost if usage requires more PAAS or users than anticipated</td>
</tr>
<tr>
<td>BYOL (per AWS)</td>
<td>AWS Marketplace welcomes these products (Bring Your Own License software and Trials) and there is no charge for listing them on AWS Marketplace. However, in order to deliver on our customer promise of choice, we require that all BYOL products to also be listed on AWS Marketplace, so that customers who don’t have existing licenses have the option to purchase the products.</td>
<td>Cost and unpredictability. Who manages the licenses is also not clearly defined.</td>
</tr>
</tbody>
</table>

Etc.
Software Business 101
Update & Dialog

August 23, 2016
Mike Miller
**DevOps** is a culture, movement or practice that emphasizes collaboration and communication between software developers, operators and testers while automating the process of software delivery and infrastructure changes.

- Successful implementation of DevOps is possible through:
  - collaborative involvement of all stakeholders,
  - governance in regards to infrastructure, and
  - equipping staff with skills.

- DevOps describes techniques for automating repetitive tasks within the software development lifecycle (SDLC): software build, testing and deployments.

<table>
<thead>
<tr>
<th>DevOps Benefits</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Time to Market</td>
<td>CD lets an organization deliver the business value inherent in new software releases to customers more quickly</td>
</tr>
<tr>
<td>Building the Right Product</td>
<td>Frequent releases let application development teams obtain user feedback more quickly. Enables work on only the useful features. If feature not useful, no further time spent. Helps build the right product.</td>
</tr>
<tr>
<td>Improved Product Quality</td>
<td>The number of open bugs and production incidents has decrease significantly</td>
</tr>
<tr>
<td>Improved Customer Satisfaction</td>
<td>A higher level of customer satisfaction is achieved</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DevOps Obstacles</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Preferences</td>
<td>Some customers do not want continuous updates to their systems. This is especially true at the critical stages in their operations</td>
</tr>
<tr>
<td>Domain Restrictions</td>
<td>In some domains, regulations require extensive testing before new versions are allowed to enter the operations phase.</td>
</tr>
<tr>
<td>Lack of Test Automation</td>
<td>Leads to lack of developer confidence, can prevent continuous delivery</td>
</tr>
<tr>
<td>Differences in Environments</td>
<td>Different environments used in development, testing and production can result in undetected issues that slip to production environment</td>
</tr>
<tr>
<td>Testing Needing a Human Oracle</td>
<td>All quality attributes cannot be verified with automation. This requires humans in the loop that slows down the delivery pipeline</td>
</tr>
</tbody>
</table>
DevOps as an IAWG Topic

- Observations:
  - DevOps is a culture shock to the IC, both developers and programs
  - DevOps has great advantages but faces significant obstacles

- Question: Is DevOps fundamental to cloud adoption by NRO?
- Question: Does DevOps change the software development & integration model?
- Question: Does DevOps change the NRO’s business model?
- Consider where it belongs: Software Business 101 or Software Dev vs Integration

Consider DevOps as a new “SI-related” topic?
“C2S Corner”

Latest & Greatest...Fact vs Fiction
Topics & Issues Discussion
Marketplace C2S install concept:
- “install once, don’t need additional install services”
- Cloud model, applies to a single domain

Outcomes benefitting the government
- There is no government direction or preference to put software in Marketplace
- Access to non-traditional vendors who don’t have GWACs or other reseller options
- “Try it” space: low barrier to uptake without precluding BYOL or other approaches

Contractual access to Software Vendors
- From the Integrator (losing favor with contracts?)
- From the vendor subcontracted to the Integrator (losing favor with contracts?)
- From the vendor direct to government
- From a C2S Marketplace AMI
C2S/Marketplace: 
Open Contracts-related Questions

- Acquisition Policy: is C2S Marketplace considered a pre-competited contract/schedule?
  - If no, customers are still responsible for market research and competitive selection based on requirements. Provisioning conops must take this into consideration.
  - If yes, Marketplace is one of many potential pre-competited (GWAC) vehicles and programs would still be required/encouraged to compare pricing. If cheaper via a different vehicle, the government would BYOL from the other vehicle.
  - Pay for Use is a subscription approach that falls under different FAR clauses than procurement/capital acquisition.

- Or is C2S Marketplace considered an “Other Transaction” vehicle?

- Pricing questions
  - If industry must price C2S offerings the same as commercial AWS, is the assumption commercial pricing is always higher than government thus allowing the vendor to recoup the cost of additional requirements for C2S as cost of business?
  - If Marketplace uplifts differ by vendor, how does that reconcile with GSA pricing and reseller uplifts?
NRO IAWG Way Ahead

“You are here”

What Topics are next?

How do we approach balance of 2016?
"You Are Here"
Implementation & COTS/GOTS Action Teams Map

COTS/GOTS Open Source Software Business Models

Business Model Differences + Terms of Reference → Drivers: Make-Buy Decisions

Software Business 101
Software Dev vs Integration Defined for OCI

GOTS? → Hybrid?
COTS? →

NEED TO BEGIN PEER REVIEW PROCESS

NEED TO BEGIN STAFFING INDUSTRY-GOVERNMENT DIALOGS
Prioritization of SI-Focused Topics

✓ Requirements: what govt wants vs. what industry can provide

1. Viable industry revenue models in an ASP-ISP cloud world;
   – What business model looks like @ 1 year, 4 years, 10 years (roadmap; requires cloud provider participation)

2. Adopting agile methods:
   – Evolving dev-ops paradigm, workforce knowledge base, changing industry base

3. Systems integration vs Software integration;
   – Total system prime vs segment integrator model
Mission: Help move NRO from vertical systems to mission platforms
  – Identify business models that will support government and industry objectives
  – Identify potential pitfalls and recommend potential solutions

Charter: Provide expert industry resource and sounding board focused on Business aspects of emerging models to acquire software services
  – Ramifications of componentizing software applications,
  – Benefits accrued to the government & industry,
  – Intended and unintended consequences against the industry base,
  – Limitations and viability as a reasonable course of action

Objectives:
  – Provide strategic industry input to a changing acquisition landscape
  – Provide an objective and neutral venue for discussing approaches to business models
  – Foster effective communication between government and industry leadership

“Action Team” Approach: 4-6 week durations & deliverables-based makes it worthwhile to participate!
Open Dialog
Additional Topics for Consideration
Actions & Next Steps
No-Host Social
IAWG Contact Info & Additional Information

- Nick Buck: nick@buckgroup.net (703) 801-3405
- Keith Barber: kbarber@qfederal.com (703) 835-6502
- Justin Franz (USGIF coord): justin.franz@usgif.org (571) 392-7213
- NASP IAWG Website: http://usgif.org/community/Committees/NROASPIAWG
- S2P Website: https://ged.svc.nro.ic.gov/nasp/softwareservicesplatform
What is the NRO ASP IAG?

Industry partners self-organizing to discuss matters of mutual concern and affecting the future business of the NRO industrial base.

The IAG is...
- Volunteer-based
- Strategic in nature
- Objective (pros & cons)
- Open to participation
- Company-agnostic
- Problem-centric
- Focused on outcomes

The IAG is not...
- Sponsored by the government
- Restricted in participation
- Proprietary
- A pursuit/capture venue
- A shaping & positioning opportunity
- A venue to recommend products
- An open ended discussion forum

“Action Team” Approach: 4-6 week durations & deliverables-based
Download at http://usgif.org/community/Committees/NROASPIAWG
Industry-Government Dialog Topics and Ideas
A (More or Less) Running List...

Industry Observations & Questions
- Would govt solicit industry feedback on S2P services for C2S migration?
- Not clear whether IC Marketplace is a pre-competed sourcing vehicle (CIA vs DoD rules)
- BAA’s are a good idea but payment structures aren’t conducive to NDI solutions
- Need Government PM/Engineer empowerment for 2 way conversations pre-RFP
- Prioritization of requirements needed: Industry can’t differentiate responses when all are equal
- Why can integrators get paid for S/W services but product companies are expected to provide at no cost?

Government Observations & Questions:
- is there a “spectrum model” that simultaneously incorporates PFU, Term and Perpetual licensing into an integrated program life cycle?
- How to leverage COTS when requirements are in flux/evolving?
- How to program/budget for a pay for use licensing model with pre-negotiated break points?
- Is there a way to add flexible t’s and c’s to DNI ELAs?
- Could IAWG review the standard t’s and c’s on DNI ELAs?
- What does industry care/need to know about future data center planning? Why does it matter?

DNI ESEWG: Need real world examples of metered service on contract today
GOTS vs. COTS Drivers: Understanding the Make-Buy Decision

Action Team Update
July 26, 2016
Nick Buck
# Risk Comparison – COTS/GOTS/Hybrid Models

## Factors to Consider

<table>
<thead>
<tr>
<th>Development</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Development done prior in anticipation of market need: Commercial and Government Studies</td>
<td>• Requirements must be well defined upfront to control risk • Purpose built • New dev methods (spiral→Agile) • Feature/function creep…</td>
<td>• Services to modify to fit COTS/GOTS to mission environment • Essentially Integration process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market driven performance • Unique mission configuration or adaption to legacy may be required.</td>
<td>• Requirements driven performance and testing.</td>
<td>• Requirements driven performance &amp; testing, leverage COTS tested components</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cost derived from amortization. Risk-based on larger market assumptions and competitive posture.</td>
<td>• Cost derived from requirements, testing and service rates.</td>
<td>• Cost derived from reqts, testing &amp; service rates. • Leverage available COTS, Maintain OSS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Schedule</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• As available of the shelf without modification. May require labor to configure or adapt. Training.</td>
<td>• Requirements, testing and available and services driven</td>
<td>• Requirements, testing and available and services driven</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Services of COTS and version control based on licensing parameters.</td>
<td>• Maintenance services. • Version control, promotion to ops • Sustaining outage</td>
<td>• GOTS and COTS are delineated terms • Managed maintenance model</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Indemnification and protections, IA are added costs carried by supplier.</td>
<td>• Labor services to certify and maintain.</td>
<td>• Embedded license and liability</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integration</th>
<th>COTS</th>
<th>GOTS</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Configuration compatibility with mission requirements (mitigate via published, open APIs)</td>
<td>• Re-integration, re-test, re-qualify • Purpose built to govt architecture • Reuse challenge for other govt</td>
<td>• COTS keeps pace with integration standards • GOTS extensions for mission</td>
<td></td>
</tr>
</tbody>
</table>
Drivers Action Team: Deliverable

- **Goal:** Lift barriers to mission execution by providing guidelines to the two sides of the “agency” business: Mission & Acquisitions - working in concert and industry can serve more effectively.

- **Deliverable:** Develop a “best-practice” for make/buy/integrate decisions
  - “Something between an educational tool on decision factors and a decision matrix.”
  - What: Product or Compendium of Ideas…
    - As a Guidebook or/and
    - As a Recipe (step by step) or/and
    - As a Wiki (allowing community input) or/and
    - As a Decision Matrix (multiple?) or/and
    - As a TOP 10 or/and
    - As an FAQ (Fact vs Fiction) [*this would be a good Appendix*]
  - Where: Into the NAM or an IC or NRO Directive
  - Timing: before RFP and/or After Award – fit the continuum where capability is being added/modified in mission
Drivers Team: Factors to Consider

OPERATING MODEL FACTORS

- ABC (Adopt, Buy, Create) vs CBA?
- Ease of dev with Service contracts
  - Measures of Success
  - QA/QC Independent
  - Ownership – Make/Buy/Integrate components
- Complexity of NDI Product procurement
- Different pots of money: Dev vs O&M?
  - What are “colors” of money for NRO or other IC (list)
- Licensing (OSS contribution?/Middleware)
- Incremental capabilities as available (esp. COTS)

BUSINESS MODEL FACTORS

- Funding source models
- How are they acquired?
- Life cycle costs and cost recovery
- Intellectual property influences
- Maintenance and licensing, royalties
- Protections and indemnification
- Retirement and refresh
- Identify Representative models
- Risk models
- Observations – by example to adopt or avoid
- Timeline – Need/Desire
- Trade studies/Market research
- Modify Requirements to be “Outcome” based

ARCHITECTURAL FACTORS

- Level of componentization
- Reuse/Tech Insertion/TRL-#
- Degree of API publication
- 80-90% fit vs 100% fit vs not avail in marketplace
- Open I/Fs vs Open Source code
- Define CLOUD (vs. other architectures)
### Potential COTS-GOTS Procurement Models

#### COTS
- Govt buys 100% functionality, but it addresses less than 100% of reqts
- Govt request new requirement
- Vendor assesses market ROI and pays to develop “100%” solution, OR Govt defers requirement and waits for Vendor roadmap

#### “Accelerated” COTS
- Govt buys 100% functionality, but it addresses less than 100% of reqts
- Govt identifies “delta” requirements
- If no COTS Market ROI, Govt pays vendor for accelerating capability
- If potential Market ROI, Govt/Vendor cost share accelerating capability

#### COTS-GOTS
- Govt buys COTS but it meets less than 100% of requirement
- Govt assigns “delta” reqts to integrator
- Integrator extends COTS via API/SDK

#### GOTS
- Govt builds 100%
- Govt assigns reqts to integrator
- Govt self-indemnifies & ensures compliance with Economies Act
- Vendor-free supply chain

---

**Assumptions:** both COTS/GOTS providers use open source
Ideas & Potential Recommendations

- Government make conscious shift in contracting: toward buy vs build (“ABC”)
  - Hawkeye as an example: identifying proprietary interfaces as the culprit in vendor lock in
  - Require life cycle cost estimate in BOE (government provide LCC template)
  - Include an ODC line for licenses in RFPs

- Recommend that contract awards include requirement for prime to complete a market survey and make/buy assessment for government approval
  - Include life cycle costs and the various factors identified by the IAWG COTS/GOTS/Hybrid matrix
  - Market survey…Life Cycle Costs….Risk Factors

- Recognize make-buy tradespace as a requirements trade space…government should include ALL requirements in RFPs.
  - Program should not “cherry pick” requirements in order to justify a “Create” (vs “Adopt”/”Buy”)
  - Require programs to determine what portion of the requirements have viable commercial solutions prior to deciding on the acquisition/procurement strategy.
  - Specify requirement to automate & innovate: show labor savings, speed, etc

- Encourage Programs to consider incremental capability approach
  - Stress “Day 1” capability as high value to support “speed to need”
  - If there is an incremental approach does it change the make-buy?

- Drive acquisition to an “outcome based” requirements model