Where Our National Security Begins...
NGA
Advisory Working Group (NAWG)
Meeting
07 April 2020
Agenda

- NAWG 2020 Project Status:
  - Industry perspectives on OMB Passback
  - Software (SW) Acquisition
  - Acquisition Communications
  - OCI policy effects on acquisition

- Potential Meeting with NGA ADC (J. Schnarre)

- Proposal – joint virtual presentation with NIAWG of GEOINT topics

- Action Items
Status of NAWG Projects

• **OMB Pass-back**: NGA is seeking information about MSA processes and responsibilities as applies to new sensors.
• NGA would benefit from large and small company perspectives on impacts of shifting MSA from NGA to NRO:
  – One of three large business interviews conducted; one scheduled; one TBD
  – Two of three small business interviews scheduled; one TBD
  – Analysis, including coding and pattern definition ongoing
• **Closure and wrap up** tentatively slated for 4/20/2020
Industry perspectives regarding **NGA SW Acquisition**

- Offer observations of the current state of SW Acquisition and recommendations to streamline the SW process and reduce waste.
- Intent is to inform or advance NGA’s interests with respect to Agile development and DevSecOps
  - Several interested members, no one stepped up to lead project
  - On hold until project leader found

**Acquisition Communications**

- NTR
NGA OCI policy effects on acquisition: Explore the impacts of NGA’s OCI policies on acquisition outcomes

- Help achieve the intent of OCI policy and improve our understanding of how it might effecting:
  - **Competition**
    - Cost of products and services
    - Quality of products and services
  - **The realization of industry benefits** to NGA’s mission. For example, do current OCI policies unnecessarily “stove-pipe” incumbent providers into only one domain, i.e., **engineering** OR **operations**

• Update here
Next Update with NGA ADC (J. Schnarre)

• Ms. Schnarre has requested we seek an appointment to update her team and her on NAWG activities
  - Given COVID-19 CONOPS, likely to be a teleconference
  - Need to resolve our message as a team
  - Introduction to Ms. Schnarre’s relief, if known
  - Have requested a time slot from ADC staff
  - Will inform the NAWG as soon as schedule options are offered
PROPOSAL

In Lieu of GEOINT 2020...
Joint NRO-NGA Working Group
Virtual Session on 4/28/20
Proposed Spring 2020 “Virtual NAWG-NIAWG”

GEOINT Theme: New Decade, New Challenges, New Strategies

1. Achieving Success with Agile
   - Agile Acquisition isn’t the same as Acquisition of Agile
   - Terms of Reference reuse for NGA

2. Reducing Industry Base Barriers to Entry
   - Attracting Talent: Latest Observations & Ideas
   - Security Clearances & Facilities access to broaden industry base

3. Improving Software Acquisition:
   - Business models & licensing
   - Architecture & requirements impact on make-buy decisions

Session Theme: Increasing Speed, Industry Capacity, and Performance
Action Item Summary
Action Items

• Revitalize Acquisition Comms Group (Paulin)
• Schedule next ADC- NAWG update (Turman)
Any other Ideas for 2020?

- Ideas from members for XTD, SS, or other activities in 2020 welcomed (and encouraged)

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Websites:  [http://usgif.org/community/Committees/NAWG](http://usgif.org/community/Committees/NAWG)
Back Up Slides
From February 2018 Report:

Agile & DevSecOps Adoption in NROs Waterfall Centric Enterprise
DevOps is more than the use of tools / services to automate workflows:
- Requires the evolution of an organization's culture and business processes on both sides of the Government / Contractor paradigm
- Emphasis on close collaboration between those who perform development, operations, and security

Organizational culture must evolve to enable DevOps
- Best practice is to start small but significant, learn, grow
- Build firm foundation with growing body of success, not Big Bang
- Overcoming the reluctance to automate the build/test/delivery of software
- Developers must embed security compliance behaviors into their DevOps teams

NRO operating model requires changes for DevOps
- Waterfall based NSIS approach appropriate for systems with well-known requirements and well-known solutions, but not appropriate for software intensive activities with evolving requirements
- “One size fits all” approach for assessing operational readiness, performing A&A, and change management limits the ability to deliver and sustain software services in a more effective manner

Recognize learning component: evolving effectiveness vs designing perfect processes
- Ex: evaluating which infrastructure is appropriate for program operations (Cloud/Virtual/Bare Metal) - One size doesn’t fit all
- Ex: how NRO/Developer community adopts & uses GFE where appropriate

Evolving culture and business processes with respect to software development and sustainment will facilitate NRO benefits from DevOps
Must we Choose Between DevOps OR Waterfall?

“Bimodal IT”* - the practice of managing two separate but coherent styles of work

Mode 1 (Waterfall)
- Single sequential progression from requirements to development to test to deployment
  - Typically requires long timelines (e.g. years) from problem to delivered solution
  - Concentrates on development of many (possibly diverse) capabilities to be delivered at the same time (or as a small number of drops)
- Baseline for Government programs with which any other approach must likely combine and coordinate

Mode 2 (DevOps)
- Evolving requirements prioritized as backlog
- Multiple cycles (e.g. sprints) to develop, test, and deploy additional capability as capability becomes available
  - More frequent delivery of more focused capability
  - Delivery of small batches, fully tested and avoiding accumulation of issues that harder to isolate in larger batches
- Goal is rapid delivery of value to stakeholders
- Numerous methodologies, e.g. Agile Scrum, SAFe

* Source: Gartner
Recommendation: Elect a Hybrid Approach

DevOps AND Waterfall

- Recognizes transition state between legacy system development and emerging framework and services development
- Combines modes for optimum benefit
  - DevOps mode can provide capabilities scheduled for waterfall delivery
  - DevOps contributions to waterfall delivery can have benefits of small batch size
  - Do not need Big Bang adoption of DevOps to start seeing DevOps value
  - Recommend starting DevOps with small but significant project
    - Show value, Learn, grow
    - Needs to be a real program... “pilot” project should mean “first” not “trial”
  - Migrate larger Waterfall development to appropriate mix with DevOps
- Challenges:
  - DevOps delivery speed can overwhelm Waterfall transition processes
  - Waterfall governance models tend toward “one size fits all”
What does NRO need to do to make DevOps work?

**Leadership Commitment to Changing Culture**
- Must take place at the Director level and include all echelons
- Recognize conflict between Waterfall & Agile/DevOps approaches
- Ensure MOD, Security, and SED share in *accountability* to accelerate speed to operations. There is a mission opportunity cost to delay.

Adoption requires ongoing collaboration between:
- Acquisition
- Program Management
- Developers
- Infrastructure Providers (NISP)
- Software Service Provider (NASP)
- Security

Start with Program Development environments, labs, & factories
NRO
Industry Advisory Working Group

Hybrid Cloud Adoption & Business Model Action Team

Chris Arroyo, Keith Barber, John Farrell, Scott Lawler,
Tim Stewart, Romano Romani, Al Stewart, Ron Alford, Marc Kriz
Objectives:
1. Build a *decision framework* to guide government/industry on path to hybrid cloud
2. Characterize “as a Service” business and acquisition models
3. Identify alternatives for deciding which cloud and how (centralized vs distributed decisions)

Approach & Ground Rules
- Unbiased, research-driven best-practice recommendations
- We may NOT recommend virtues of one cloud over another!
- Different agencies identify decision criteria levels based on own mission requirements

Aspects to Consider:
- Operating Models – who makes the decisions? At agency level or program by program?
- Business Models - cost (i/o performance, data storage and compute) and data rights
- Acquisition Models - [need to explore]
Notional Work Plan

1. Decision Framework
   - Brainstorm criteria list
   - Group / consolidate criteria into “like things” (Business, Performance, etc)
   - Vet against an industry standard of like scale (highly regulated industry)

1. As-a-Service Business & Acquisition Models
   - Crowd source existing industry and government alternatives
   - Crosswalk vs NRO operating model and mission types
   - Develop pros and cons, intended and unintended consequences of each

1. Decision Operating Models:
   - Brainstorm options for decision authority, e.g. agency level vs. PM level vs. Prime contractor
   - Flesh out a “Day in the Life” of each option, what it would take, what it would mean
   - Develop pros and cons, intended and unintended consequences of each
Focus Area 1: Terms of Reference & Taxonomy

- Commercial definitions: “private” = on-prem, “public” = external
- Government definitions to coordinate: Public, Private, Hybrid
- Variations to consider
  - “Public cloud provider on-prem” vs Government IaaS/PaaS: are both “Private”?
  - Does fielding to a commercial data center = on-prem or public?
- Multi-Cloud:
  - Single-Cloud services available from multiple vendors
  - “I have multiple cloud infrastructures to choose from”
  - “I want the cloud that matches my mission and business objectives”
- Hybrid-Cloud:
  - Mix of cloud services provided by different vendors and/or on-premises.
  - “Some of my workloads exceed cloud provider offering so I need on-premise IaaS”
  - “I use cloud for intermediate processing but store my finished data in IC Gov Cloud”
Focus Area 2: Public/Private Sector Models & Trades

- Define what costs exist in hybrid cloud architecture
  - What is the cost of exfiltrating your data?
  - How much is compute?

- Story from the Public Sector: Capitalization – Usage cost trade
  - NGA - NCL proposed move to C2S. Customer deemed more cost effective to use the stay in place.
  - NRO AUE/MUE

- Story from the Private Sector (Goldman Sachs): performance & security trade
  - Private Cloud (on-prem):
    - Applications that create and store sensitive information
    - Low latency, mission critical analytics (time = money)
    - Sensitive, or proprietary data sets
    - Sensitive app development
  - Public Cloud (Commercial Cloud Offerings)
    - Important, but less critical back-office applications
    - General app development
    - Web based applications such as marketing campaigns (surge, less sensitive data)

- Crosswalk: Look for intersections & incompatibilities
Focus Area 3:
Mission/Enterprise Data as a Decision Driver

- **Driver: Data conops**
  - Data - What is the end goal?
  - Raw vs intermediate vs finished data bear different cost profiles

- **What is most important to the mission?**
  - Raw data – does government need to “see” every data point before it’s fed into an algorithm?
  - Finished data & Results - Is it more valuable to see the end result of that data?
  - Mechanisms - what levels of service are expected wrt data storage and handling?
Joint NGA-NRO WG Action Team

Accelerating System-Level Integration & Transition to Operations (TTO)

Jason Dever     Marlu Oswald
Jeff Goerges    Renard Paulin
John Hays       Sonny Sarkar
Matt Madigan    Steve Sharp
Mike Manning    John Sutton
Nick Miller     Fred Turman
Curt Nare       Eric Viglione
Seth Wambold
Challenge:
System Level Integration, Test, and TTO Timelines

Current Agile implementation has improved the development cycle but not the integration, test, and TTO cycles.
### (U) Functional Equivalency

<table>
<thead>
<tr>
<th>Process</th>
<th>GED Waterfall Events</th>
<th>Agile Ceremonies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements and Design</td>
<td>SRR, PDR, CDR</td>
<td>Solution and Program Increment Planning Events</td>
</tr>
<tr>
<td>Configuration Management</td>
<td>GED Level Request for Change (RFC)</td>
<td>Pre-Planning Phase, Solution and Program Increment Planning Events, Deployment Checklists (after Initial Installation RFCs)</td>
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<tr>
<td>Test and Evaluation (T&amp;E)</td>
<td></td>
<td>Sprint, Program and Solution Level demonstrations</td>
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(U) There is not a one-to-one mapping between Agile ceremonies and method and Waterfall events. The risk mitigation that drives the traditional Waterfall Readiness Events is still accomplished in Agile, however; the mitigation is done iteratively instead of in “big bang” events.
GED Agile Development Day 2019: Agile Integration with Traditional Milestones
* (U) Solution Epics are not decomposed from Function Level requirements. The Solution Epics will be mapped to the Function Level requirements they cover to provided a trace to the allocated baseline.
(U) Program Increment Demos

- Pre-Planning Increment for Release Train X
  - Release 1
  - Release 2

- Pre-Planning Increment for Release Train Y
  - Release 1
  - Release 2

- Integrate, Test and Demonstrate
  - Simulators or Early Releases

- Waterfall Delivery A
  - SRR
  - PDR
  - CDR

Graphic is Unclassified
GED Agile Development Day 2019

(U) Solution Demonstrations

[Diagram showing stages of development including:
- Requirements Reviews
- Design Reviews
- Development
- Integration & Test
- Enterprise Integration
- Solution Closure
- Roadmaps/Epic
- Continuous Delivery of building capabilities
- MVP Release
- Release 1, 2, 3, 4, 5
- Reqt's Closure
- Early Integration
- Solution Demonstration
- Int. & Workoff]
System Level Integration & TTO Action Team

- **Proposed Objectives for SI and TTO Team**
  1. Root cause analysis WRT problems in the SI and TTO phases in an Agile/DevSecOps world
  2. Barriers to adopting changes in the SI and TTO phases and how to overcome
  3. What makes sense in terms of SI/TTO phases, DevSecOps, and Critical systems?
     - How are commercial *critical* systems treated? (pacemaker, high-speed financial transactions, others)

- **Discussion Topics**
  - Concepts of Roll-back/forward for error and problem recovery
  - Agreeing on the level of (automated) test that is sufficient to reach ops
  - What level of human interaction is right?
  - Are there multiple approaches that make sense depending on the nature of the system?
Future: System Level Continuous Integration & Delivery (CI/CD)

Parallelization across all phases enables new capabilities to reach operations faster … but still has imposed limits from SI, test, and TTO
  - Also requires that changes are identified at “byte-sized chunks” vs. the large knife-switch style cutover events that predominate govt programs

Progression takes into account current scope of national programs and differing organizational requirements/limitations involved in delivering new capabilities to an operations group

Next Logical Step

Agile/DevSecOps Development
System Integration & Test
TTO

New Capability to Ops
What is the NAWG?

The NGA Advisory Working Group (NAWG) is...

... a group of government and industry professionals who aim to promote actionable ideas for improving the contract procurement process and providing mission-relevant consequences.