Where Our National Security Begins...
Welcome & Introductions
“Snapshots”
“S2P Corner” & “C2S Corner”
Action Team discussions
Government Perspective
Open Dialog
No-Host Social
“Snapshots”

Previous Events

• Intel Summit: 4-5 September, Classified Day 12 September

Upcoming Events

• GEOINTegration Summit: 27-28 September
• GED Agile Industry Day: 27 September (TS/SCI required)
• Attracting Talent team joint session with YPWG: 10/3
• GED Agile Brown Bag: 29 October (TS/SCI required)
• Amazon reinvent: 2-6 December

Industry Review of GED Systems Engineering Plan

Combining Nov-Dec NRO IAWG meetings: Joint NRO-NGA on 12/3
GED Agile Day: IAWG Questions Submitted

- Logistics: 9/27 at JD Hill, 0800 Check in, program 0900-1300
- Purpose: inform industry of GED’s Agile Evolution
- Agenda: final pending
- “Top 3” questions to ARC drop box based on 33 IAWG members voting
  1. What activities are ongoing to change culture to progress away from risk avoidance posture ACROSS the NRO (i.e. outside of GED)?
  2. What metrics are you using to measure success/velocity (noting that velocity by itself can be an anti-pattern)? What metrics do you WANT to use?
  3. What contract types/structures do you anticipate for future acquisitions involving Agile & DevSecOps (both Developer & SETA)?
- Additional questions provided to GED Agile Team for future reference
- Overall response from government was very positive and appreciative
Completed Project:
GED Systems Engineering Plan Review

- SEP approved by D/GED August 2019, posted on S2P Confluence
- Agile ToR incorporated into GED SEP
- GED Chief Architect ask: “Has IAWG reviewed the SEP?”
- IAWG volunteers stepped up as a review team; comments submitted 9/18
  - Ron Alford
  - Ann Waynik
  - Seth Wambold
  - Steve Plystak
  - Al Stewart
  - Nick Buck
  - Jason Dever
  - Matt Reider
  - John Hays
- Positive feedback from Government
- Discussion: review team observations
“C2S Corner”

Latest & Greatest…

Topics & Issues Discussion
How to Order Training

Submit your Training Order Form today!
On the high-side C2S Home page at:
https://c2s.cia.ic.gov/index.php/explore/resources/order-aws-training

AWS Training Credits are available thru the C2S Service catalog for purchase by any C2S Customer.
- Training Credits are invoiced immediately upon purchase.
- Training Credits are intended to be used over the next 12 months (from date of purchase).
- Training Credits can be used to purchase any training offerings on the C2S service catalog.
- Monthly reports will be sent out to customer POCs with Training Credit burn rates.
- Training Credits can be used in conjunction with our tiered pricing.

The ability to utilize Training Credits over the life of the C2S contract gives customers unparalleled flexibility with scheduling classes and allocating.

Pricing
(AWS provided facilities, IT Equipment and Meals)

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<td>Single Class</td>
<td>$29,760</td>
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<td>6-9 Classes</td>
<td>$27,960</td>
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<td>10 or more Classes</td>
<td>$26,160</td>
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*Single Seat: $2,000/seat
*Single seat classes are offered throughout the year based on demand (for frequency and topic)
Instructor-Led Training Course Descriptions (Courses are tailored for C2S):

**Applied Foundations:** This course introduces you to the foundational service domains of AWS networking, compute, storage, database, management, security, identity, and compliance. You will learn the basic knowledge and skills to implement and maintain AWS services on the job. This course is intended for entry-level personnel.

**Architecting on C2S:** This course is designed to teach Solution Architects how to optimize the use of the C2S Cloud by understanding AWS services, and how they fit into a cloud solution. This course highlights some C2S Cloud design patterns to help you learn how a service may fit in the overall cloud design, and covers best practices and lessons learned.

**Advanced Architecting on C2S:** Building on concepts introduced in Architecting on C2S, this course is intended for those experienced with designing scalable and elastic applications on the C2S platform. This course covers how to build complex solutions which incorporate data services, governance, and security on C2S, as well as designing best practices for building scalable, elastic, secure, and highly available applications on C2S.

**Developing on C2S:** This course teaches individuals how to design and build secure, reliable and scalable C2S-based applications. This course covers fundamental concepts and baseline programming for developing applications on C2S, and shows how you to work with C2S code libraries, SDKs, and IDE toolkits, to effectively develop and deploy code on the C2S platform.

**SysOps on C2S:** System Operations on C2S is designed to teach those in a Systems Administrator or Developer Operations (DevOps) role how to create automatable and repeatable deployments of networks and systems on the C2S platform. The course covers specific AWS features and tools related to configuration and deployment, as well as common techniques used throughout the industry for configuring and deploying systems.

**DevOps Engineering on C2S:** DevOps Engineering on C2S demonstrates how to use the most common DevOps patterns to develop, deploy and maintain applications on C2S. The course covers the core principles of the DevOps methodology and examines a number of use cases applicable to startup, small-medium business, and enterprise development scenarios.

**Big Data on C2S:** Big Data on C2S introduces you to cloud-based big data solutions, Amazon Elastic MapReduce (EMR), and the AWS big data platform. In this course, you will learn how to use Amazon EMR to process data using the broad ecosystem of Hadoop tools like Pig and Hive. We also teach you how to create big data environments, work with Amazon DynamoDB, Amazon Redshift, and Amazon Kinesis, leveraging best practices to design big data environments for security and cost-effectiveness.

**Security Engineering on C2S:** This course demonstrates how to efficiently use AWS security services to stay secure and compliant in the C2S cloud, using AWS-recommended security best practices. The course highlights the security features of AWS key services for compute, storage, networking, and database.

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**Typical Role-Based Learning Paths**

Cloud Practitioner: The Cloud Practitioner learning path is for individuals looking to build and validate overall understanding of the AWS Cloud, learning the fundamentals so they can make effective decisions about cloud strategy for their organization. Training covers topics like AWS Cloud Concepts, Core Services, Integrated Services, Security, Account Management tools, and best practices. This path is useful for individuals in executive, program/precise manager, and business leadership roles, as well as a great first step in AWS Training for all technical roles.

Architect: The Architect path is designed for solutions architects, solution design engineers, and anyone who wants to learn how to design applications and systems on AWS. Build your technical skills and progress along a path to earn AWS Certification with these recommended courses, labs, and exams.

Developer: The Developer path is designed for software developers who want to learn how to develop cloud applications on AWS. Build your technical skills and progress along a path to earn AWS Certification with these recommended courses, labs, and exams.

Operations: The Operations path is designed for sysops administrators, systems administrators, and those in a DevOps role who want to learn how to create automatable and repeatable deployments of applications, networks, and systems on the AWS platform. Build your technical skills and progress along a path to earn AWS Certification with these recommended courses, labs, and exams.

For information on all AWS suggested learning paths, visit (Unclassified): https://aws.amazon.com/training/learning-paths/

**AWS Certifications**

- AWS Certified Cloud Practitioner
- AWS Certified Solutions Architect—Associate
- AWS Certified Developer—Associate
- AWS Certified SysOps Administrator—Associate
- AWS Certified Solutions Architect—Professional
- AWS Certified DevOps Engineer—Professional
- AWS Certified Advanced Networking—Specialty
- AWS Certified Big Data—Specialty
- AWS Certified Security—Specialty
- AWS Certified Machine Learning—Specialty
- AWS Certified Alexa Skill Builder—Specialty

For the latest information on AWS Certifications, visit (Unclassified): https://aws.amazon.com/certification/
“S2P Corner”

Latest & Greatest…

Topics & Issues Discussion

Explore on CWAN/JWICS @ https://jportal.S2P.proj.nro.ic.gov
NRO IAWG

Action Teams & Topics

- Opportunities to Participate
- Speed to Capability Team Update
- Hybrid Cloud Team Update
Opportunities to Participate!

- Proposed NRO-NGA IAWG joint session on 12/3/19
- New topic: GOTS/GOSS Management Model for GED Software
- Potential new topic: Optimizing development using cloud infrastructure
- USAF Agile RFI: IAWG cross-industry response
  - Need: Volunteer contributors
  - Need: Topic(s) selection
Proposed Joint NRO-NGA IAWG Topics
December 3, 2019

1. Joint Action team on accelerating Transition to Ops
2. Agile Terms of Reference reuse for NGA
3. Hybrid Cloud decision framework
4. Improving Agile acquisition: Right-sizing RFPs & Pre-award comms
5. Attracting talent
New Topic:
GOTS/GOSS Software Management Models

- Government query at last QUINT SPO interaction

- Potential options
  1. GED as repository provider / administrator for program level development (status quo)
  2. GED using commercial open source mgt approach to acquisition
  3. GED being a GOTS mgt role across NRO/Community
     - Providing code as Govt Open Source (GFE style model)
       - Controlled eco system
     - GOTS / open source mgr where other agencies could self-select
       - Repository open to other agencies
       - Open eco system

- Next Steps: Meet with GED Deputy Chief Architect to understand goals
  - Speed & Cost?
  - Agile adoption?
  - Economies of scale?
Potential New Topic:
Optimizing Development Using Cloud Infrastructure

- Government observations: Industry Partners are:
  - Manually configuring development environments by hand on C2S in lieu of preconfigured or auto-deployed alternatives
  - Leaving environments running when they are not being used

- Perception: industry developers trying to do what they’ve always done
  - Developers are trained to develop on custom, stand-alone IDEs
  - Developers not trained on best practices for developing in cloud environments
  - No accountability mechanism for sub-optimal development practices

- Challenge: there appears to be no incentive for optimizing cloud dev use
  - GFE compute resources make it the government’s cost problem
  - Developers prefer their own unique environments so they aren’t complaining

What will it take for Industry to accept accountability and drive optimization?
USAF RFI: Contracting for Agile Dev 1

• RFP & Contract Information/Artifacts
  • What information should be made available in the market research phase to better inform your recommended approach(es) to the government? What artifacts would provide value in terms of proposal development? (i.e. notional backlog, end-user commitment, technical debt, software assessment, current SDLC and labor structure).
  • What common CDRLs, DIDs, and clauses do you consider as being Agile anti-patterns?
  • What RFP/FOPR artifacts are required in proposals that are of questionable value to the evaluation process and/or subsequent Agile performance?

• Contracts Language/Specifications
  • Identify contract type(s) you feel would have the greatest potential of encouraging truly Agile behavior? Please provide rationale.
  • Recommendations on changing contractual language from specifying how work is to be completed to focus more on the expected productivity and quality of work?
  • Thoughts on adjusting pay for based on productivity and/or quality of work?
Using the Product Owner-Scrum Master-Dev team triad as the starting point, provide your thoughts on:

- Contracting Officer Representative as Scrum Masters
- Government Program Managers as Scrum Master
- Government Program Managers as Product Owner
- Contractor Program Manager as Scrum Master
- Incorporating 3rd party contracted personnel to round out a Development Team
- 3rd party contractor as Scrum Master or Agile coach

Implementation

- If sufficiently informed by market research, should appropriate Agile methodology (i.e., Scrum, XP, etc) be dictated by government in RFP/FOPR or left to vendor’s discretion?
- Pros and cons of 1) govt/BES-provided CI/CD pipeline & development environment, 2) contractor-provided CI/CD pipeline & development environment, and 3) hybrid approach
- What is the impact of having more than one vendor supporting an Agile program?
- What should a generic “definition of done” for sprints, increments, and releases contain that would deliver value to the government while providing sufficient protection to the development team?
GED Engagement Way Ahead

- Government recognizes we have MANY topics
- QUINT is a good entry point but some topics belong elsewhere
- Recommendations
  - Categorize contracts-related vs PM-related venues
  - Encourage shoulder-to-shoulder roundtable discussions

Contracts Topics (ACE?)
- Right Sizing RFPs
- Pre-Award Communications
- Outcome-based contracts
- Agile Contract Structures
- CAIV pricing approaches

PM Topics (QUINT SPO)
- Attracting Talent
- GOTS-GOSS Management
- Hybrid Cloud Decision Framework
- DevSecOps ToR
- Accelerating TTO
Identify Approach: Hybrid Cloud Model Implications

- **Increased flexibility** - Competition is a *good* thing and GED can leverage this for increased savings.

- **Sunk Costs** - have you broken down the cost to migrate to the cloud and factored in investments already made?  
  - Implication is that it may not be cheaper to move to the cloud

- **Attracting the right talent** - *Cleared* Cloud expertise can be difficult to recruit

- **Data and Operational Complexity** - Multiple clouds increase management complexity

- **Ownership** - Is there a clear understand on who owns what?
Decision Authority in Hybrid Cloud Model

- Whether it’s GED leadership or program managers, everyone with a stake in the process should be involved.
  - Understand cost / benefit of allowing developers to choose cloud of their choice
- Data to be considered should be gathered through the following:
  - Cost benefit analysis
  - Comparative performance analysis
  - Metrics established for expected performance advantages.
- It is important to thoroughly consider pros and cons in each option before deciding to migrate to the cloud.

Source: General Services Administration
Hybrid Cloud Model: Framework - Business Model Impact

• **Different models will have different impacts** - Mission needs will direct GED to different models

• **Conduct a Pilot** - Use a subset (approximately 5%) of locations or users that are a close representation of the whole, to conduct a pilot. The purpose of the pilot is to determine the following
  • Anticipated costs
  • Capacity/resource usage
  • Services needed to support the cloud
  • Acquisition contract type needed

• **Different Models = Different Costs** - Build a business case based on a clear understanding of the costs around:
  • Data Migration
  • Integration and Testing
  • Consultants

Source: General Services Administration
Hybrid Cloud Model: Framework – CSP Exit Plan

• **Risk Management** - Identify, in writing, a plan for addressing risk across the directorate, acquisition, security, etc.

• **Address Exit Plan EARLY** - Clearly understand from both government and industry what and who needs to be involved when leaving your cloud service provider
  
  • *Clearly* understand ownership rights for data and applications

• **Develop a clear SOP document** - should accomplish the following:
  
  • Roles of CSP, Federal government and any other interdependent Subject Matter Experts
  
  • Continuous monitoring related to Security & Vulnerability analysis
  
  • Actions to conduct (and responsible Point-Of-Contact (PoC)) during a security incident
  
  • Regularly test the SOP’s and update with current PoC information details as needed.

Source: General Services Administration
Action Team: Speed to Capability (STC)

Right Sizing RFPs
UPDATE

Ben Chicoski (Lead)
Joe Chioda  Scott Lawler  Pete Epstein
Mike Moran  Ron Alford  Eric Viglione
Right-Sizing RFPs

Observations
• “Solicitation Bloat” deprives government of qualified, innovative performers (mostly SBs), creates extra work – on both sides – without necessarily providing benefit
• Increasing complexity of acquisitions in areas like IT has caused a skills gap in the acquisition workforce; challenge increases with advent of AI / ML

Contributing Factors
• “Include Everything” historically seen as easiest and lowest risk re compliance
• High variance and low predictability of acquisition timing

Movement within DoD
• Dr. Will Roper (Under Secretary for AT&L) at INSA Summit: “Work with users for Acquisitions” and get to “…shorter description of needs”
• USAF Chief Software Officer: “Mandate the use of Agile methodologies, including for the creation of RFPs, by using user stories….RFPs should NOT define precise requirements with pre-defined technologies but focus on establishing mission outcomes and precise metrics to prove success of those end-goals.”
• DAU: Agile / DevSecOps training for acquisition staff
IAWG Ideas for Right-Sizing RFPs

• Avoid complex RFPs with long planning phases which include deliverables and milestones and fixed budgets, and which can stifle ability to learn and adopt new ideas along the way.

• Right-size compliance documentation (especially docs listed as “reference,” which can be misleading, overly onerous, or unnecessary) to match the work being procured.

• Train program officers and contract managers to specialize in IT acquisition (e.g., mimic Digital IT Acquisition Professionals Program).

• Train people from variety of functions (tech, finance, contracting, security) on Lean-Agile practices.

• Minimize CDRLs to extent practical to avoid unnecessary effort and disrupting execution flow
  o Start with minimum (e.g., financial CDRLs required by law) and add more only if deemed mission-essential
  o Match program size and contract type

• Make CDRLs “contractor format” to mitigate anti-patterns tied to delivering classic CDRLs

Benefits include:
• Access to more qualified performers
• Clearer and shorter acquisition process
• Less disruption to flow during execution
Contractor team was provided a top-level SOW describing the objectives to be achieved
- Didn’t drive an extensive proposal response
- Discussion with customer helped explain the context of the SOW

Customer explained budget constraints (providing price target ≠ exposing the budget)
- Allowed team to focus on achieving the desired scope at expected cost
- Team was able to bid capacity within an Agile methodology, reflecting desire to allow innovation and modifications as necessary

Proposal outlined the agile interaction business rhythm with the customer
- Detailed frequent touch points were identified allowing the customer to re-prioritize work between each 3-month increment and at each sprint/iteration

Single CDRL with minimal requirements was requested
- To be provided 30 days post award, as opposed to with submission, allowing time to work details
- Content was viewed to be realistic and necessary to maintain oversight

Products delivered with RFP were minimal, predominantly contractor format, and allowed the customer to quickly assess cost and schedule approach
- Reduced production, review, and negotiation time

GPOC willing to share best practices

Ander Swanson, Contracting Officer, GED SG SPO
email: swansoan@xxx.ic.gov
Open phone: 703-808-8195
Secure phone: 850-8195
Other Useful Exemplars

- **NISCC 2 (under OASIS IDIQ)**
  - Structuring CDRLs/DIDs to allow contractor format supporting agile devt techniques

- **Space Enterprise OTA Consortium (SpEC)**
  - Process is well-defined but flexible
  - Open access to acquisition team up to proposal submittal. Some benefits:
    - Much less overhead and documentation for submissions
    - Typically shorter timelines from “industry day” to proposal submission (often within 30 days) as well as proposal submittal to award announcement

- **Iron Patriot**
  - 15-day cycle from posting a solicitation to proposer submit
  - 15ish-day review period followed by award
  - Proposal is greatly simplified (set of charts and cost data) to cut down on effort to both create and review the material.
    - Initial, short chart package with technical approach and costing provided early on to allow down-select and to fine tune more formal response
Discussion and Next Steps

Proposed Process

*Focus: Right-sizing CDRLs*

- Obtain Government down-selected CDRL list from Confluence
- Research other sources: 18F, USAF, DHS / USDS, etc.
- Gather RFPs from exemplar programs that have actually worked
- Poll IAWG contracting and PM experts
- Cross-walk for alignment and outliers
- Conduct Government-Industry round table to converge
- Outbrief to IAWG, USGIF-wide, and QUINT SPO
Government Perspective
Open Dialog

Additional Topics for Consideration

Actions & Next Steps

No-Host Social
NRO IAWG Contact Information

• Nick Buck:  nick@buckgroup.net  (703) 801-3405
• Ann Waynik:  Ann.Waynik@tenica.biz  (571)-376-5641
• Mike Moran:  mmoran07@peraton.com  (571) 524-1184

USGIF coordination:

• Shai Sobrino:  shai.sobrino@usgif.org  (571) 392-7205
# NIST Cloud Deployment Models

<table>
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<th>Model</th>
<th>Cloud Infrastructure Is</th>
<th>Managed by</th>
<th>Location</th>
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<tr>
<td>Private cloud</td>
<td>Provisioned for exclusive use by a single organization comprising multiple consumers (for example, business units, etc.).</td>
<td>Owned, managed, and operated by the organization.</td>
<td>On or Off premises</td>
</tr>
<tr>
<td>Community cloud</td>
<td>Provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations).</td>
<td>May be owned, managed, and operated by one or more of the organizations in the community, a third party, or a combination.</td>
<td>On or Off Premises</td>
</tr>
<tr>
<td>Public cloud</td>
<td>Provisioned for open use by the general public.</td>
<td>Owned, managed, and operated by a business, academic, or government organization, or a combined organization.</td>
<td>On the premises of the cloud provider.</td>
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<tr>
<td>Hybrid Cloud</td>
<td>Composition of two or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability.</td>
<td>Each infrastructure may be owned, managed, and operated by one or more of the organizations involved.</td>
<td>On or Off Premises</td>
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Sample Decision flow for migrating or hosting USG Information Technology systems in the Cloud

1. Determine Reasons for migrating
   - Reduction in Hosting Costs
   - Improving System Performance
   - Improving Security
   - Publicly accessible data
   - CIO Mandate
   - Consolidate multiple locations
   - Other

Cost Benefit Analysis completed

Comparative Performance Analysis completed & Metrics established

FedRAMP, DoD SRG or other Security, PIA, PII requirements

Technical requirements completed

Acquisition Analysis completed

Business Case Analysis completed

Contingencies Analysis completed

Decision Point

CSP Evaluator, SI, Broker or CSP

Existing Hosting Facility

Source: General Services Administration
Framework - Business Model Impact

- **Determine Model for Mission Need** - This should be based on a clear understanding of the operational needs, mission, and security requirements.

  - Below is an image from NOAA that can be used as a guide:

```plaintext
```
GOSS/GOTS Management Operating Model: Key Questions

QUINT SPO Customer questions:
- Can we (why not) open source our code to the IC?
- Do we already have an open source or re-use operating model in place?

IAWG follow up observations
- “Manage it like open source” isn’t the same as “Open source it”
- GED code changes are done via contract (no “community contribution”)
- State the objective: promote re-use via libraries? Share source code?

Consideration/Discussion areas
- Contract/Operating model
- Code management functional R&Rs
- IP & Data Rights
GOSS/GOTS Management: Some Benefits of a User Community

For GED: Other missions are already using core product; in-house champion may help Agency and IC-wide adoption process

For Agency: Product is widely known, hopefully loved, and supported by community to speed time to mission

For PMO: Feedback is fast and comprehensive, getting users close to GED App Development

For engineering: Feedback improves product, contributions speed up development; GED gets development contributions from a wide range of contributors, not just those on the program

For support: Self-supporting community lowers overall support costs, makes documentation more comprehensive (instill “document first” before code accepted)
GOSS/GOTS Management Operating Model: PMO Function for Community Management

Goal: Drive adoption of free core product by growing a self-supporting open source community.

- Lead community to deploy and use core product
- Lead community to evangelize more new members
- Lead community to be self-supporting wrt core product
- Firm can steer its investment by user-conversion metric
- Many best practices of community building apply
User community provides fast and comprehensive feedback

Feedback on functional needs and issues (e.g. usability)

Faster and more immediate and more accessible than in traditional setting

Helps prioritization and triage of features and road maps

User community is source of user innovation

Source of new feature ideas and insights

Helps find new application ideas

Community gets product management closer to user.
GOSS/GOTS Management Operating Model:
PMO Function for Engineering

**User community provides fast and comprehensive feedback**

Fast feedback on functional and non-functional issues (bugs, performance, …)

Also for most unusual circumstances

User community extends core solution into new applications

Users can help themselves and develop free open source add-ons

Effectively, free mission usability research and exploration

Pre-screening of potential future GOSS Application contributors
NRO IAWG Data Call

• Unintended Consequences of AF/IF
• Getting Industry Feedback on FGA architecture