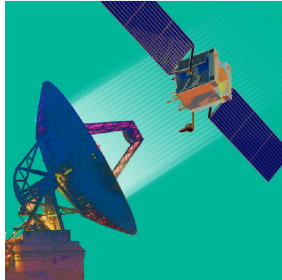




# Working Group Outbrief

## Ground System Architectures Workshop



Session 11F

Smarter Acquisition with Agile Approaches

*Supannika Mobasser and Jodene Sasine*  
*The Aerospace Corporation*

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## Session 11F

### Participants

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- Bart Hackenmack, SEI
- Enrique Praga, GMV
- Barry Boehm, USC
- Melissa Tucker, Noblis
- Britany Chamberlain, Aerospace
- Ernie Foster, Lockheed Martin
- David Wilson, Raytheon
- Gary Chinault, USAF
- Taiko Hine, Mitsubishi Electric
- Dwain Harris, Aerospace
- John Eichner, Aerospace
- Brian Bone, Kratos
- Neal Faradineh, Rocket Communication
- Jannell Villegas, Aerospace
- Barbara Mills, Sandia National Labs
- Jennifer DeNicholas, Radiant Solutions
- Sue Mobasser, Aerospace
- Jodene Sasine, Aerospace
- Scott Nigel, Aerospace
- Curt Holmer, Aerospace
- Marvin Dolin, Lockheed Martin
- Margaret Eckerman, Aerospace
- Tony Chiles, DOD Civilian
- Alan Annett, DOD Civilian
- Jeffrey Schloemer, Raytheon
- Emily Vieth, Raytheon
- Marta Verdigo, ISISpace
- Necdet Engm Oztuna, TAI
- LaDell Weinbach, Aerospace
- B. Hochstein, SMC/AD



# Ground System Architectures Workshop

## Session 11F

### Schedule

Time	Presentation and Discussion
1:00 – 1:20pm	Session Overview
1:20 – 1:45 pm	Agile Working Group 2018 Outbrief Jodene Sasine, The Aerospace Corporation
1:45 – 2:10pm	Scaled Agile in a traditional fixed contract world: A case from Satellite Monitoring and Control Enrique Fraga Moreira, GMV Aerospace and Defence
2:10 – 2:35pm	Revisit on Agile Fit Check Supannika Mobasser, The Aerospace Corporation
2:35 – 3:00pm	Agile Anti-Patterns Supannika Mobasser, The Aerospace Corporation
3:00 – 3:30pm	Break
3:30 – 5:00pm	General discussion <ul style="list-style-type: none"><li>• <b><i>Smarter software factory and product delivery</i></b></li><li>• <b><i>Smarter program oversight and incentive structure</i></b></li><li>• <b><i>Smarter quality assurance, compliance, and accreditation</i></b></li><li>• <b><i>Smarter practices and other domains</i></b></li></ul>



## Session 11F

### *Smarter Software Factory*

- Do you agree with the following minimum essential elements of a software factory?
  - Continuous integration, Continuous testing
  - Tool chain with maximum automation
  - Reusable code
- How can we make it smarter?
  - Templates : Pre-made application elements with placeholders for arguments.
  - Recipe : Automate procedures in routine tasks
  - Architecture guidance and patterns
  - IV&V with machine learning?
  - Data-driven
  - Cloud-based?
  - Continuous deployment
    - Should we / can we do that? Deploy to where?
      - *For sustainment, DevOps delivery daily or quarterly*
      - *More frequent deliveries may need reduced oversight*



## Session 11F

### Smarter Software Factory (cont.)

- How can we make it smarter?
  - *Better integration of system testing by External groups (LDTO, AFOTEC, .....) not at end*
  - *Continuous integration testing – reserve 6 weeks at end for independent system tests*
  - *Balance capability deliveries to Operations to reflect when needed*
  - *Use technical debt analyzer (avoid potential blow-ups of debt)*
  - *Require transparency of development pipeline for the Government*
  - *Create cohesive team (e.g., Civilian Govt and contractors on the team together)*
    - *Civ. Govt fosters/cultivates the team relationship and collaboration.*
    - *Civ. Govt PO makes final decision if team can't get there.*
  - *Metrics wants*
    - *For Govt, provide real-time test results, development progress using Ktr tools*
    - *FFRDC suggests number of regressions, average number of bug (found outside of sprint), bug age, story point estimation*
    - *Re-brand a 'bug' found in a sprint to a "SAVE"*
    - *Understand type of bug (i.e., functional, screen color, etc....) and impact*



## Session 11F

# Smarter Cybersecurity Compliance

- Do you agree with the following minimum essential elements of Cybersecurity approach?
  - Automated Testing/Test Reporting
    - *Automated pipeline kicks off on code check-in; performs static code analysis*
    - *New automated testing written by independent developer (need to understand programming language of automated test tool); done within the sprint*
  - Automated Security Scanning
  - CI/CD integrated with source code scans (security and quality)
  - All deployment candidates scanned prior to deployment
  - *Other techniques:*
    - *Red team penetration testing*
    - *Embed in static analysis where critical; peer review based on static analysis*
- How can we make it smarter?
  - Automated compliance monitoring
    - *Embedded in continuous integration/build pipeline*
    - *FOSS testing / risk assessment*



## Session 11F

### *Smarter Certification and Accreditation*

- Do you agree with the following minimum essential elements of certification and accreditation process?
  - Plan for early and upfront involvement
  - Define as part of acceptance criteria and definition of done
- How can we make it smarter?
  - Composable certification [DARPA 2018]
    - Use the evaluated criteria of a subsystem as evidence in a system evaluation
  - Automated evaluation [DARPA 2018]
    - Produce compelling, checkable assurance arguments backed by evidence
  - Data-driven evidence



## Session 11F

### *Smarter Certification and Accreditation (cont.)*

- How can we make it smarter?
  - *Include accreditors, AO as part of Agile team*
  - *Provide baseline of security controls to start from*
  - *Accreditors need to know what they're accrediting*
  - *Certification and accreditation needs to cognizant of DevOps risks*
  - *AI driven 24 hour certification by DARPA*
  - *Use containers for accreditation scope*
  - *Microservice architecture for accreditation to support continuous ATO*





## Session 11F

# Smarter Government-Led Testing

- How can the government test be performed early and often?
  - How early?
    - *Pre-ATP, be part of the team to write RFP and SOW*
    - *Very early; need a large paradigm shift for Govt to fully staff early*
    - *Govt test team (i.e., external, AFOTEC, ops acceptance team (typically require 6-8 month lead time))*
  - How often?
    - Sprint-level, quarterly, annually, one-time
    - *Deliver as often as possible based on operational availability and risk*
- How can we make it smarter?
  - *Govt tester sitting with developer*
  - *When requirements are defined gain agreement of how it will be tested/verified/signed-off*
  - *Include early testing in acquisition strategy (i.e., need agile testing strategy for verification/acceptance)*
  - *AFSPC has stood up a test organization to install a better methodology for testing – contractor-level testing, embedded LDTO structure, ....*



## Session 11F

### *Smarter Incentive Structure*

- “Be careful what you wish for”
- From Govt to contractor
  - What to incentivize?
    - Specific goal? Stretch goal? Innovation? Schedule? Quality?
  - What not to incentivize?
- From high level management to development team
  - What to incentivize?
    - Specific goal? Stretch goal? Innovation? Schedule? Quality?
  - What not to incentivize?



## Session 11F

### *Smarter Incentive Structure (cont.)*

- From high level management to development team
  - What to incentivize?
    - *Define mission value and quantify busy-ness*
    - *Incentivize based on number of fixes delivered in a determined amount of time; up award fee based on number of fixes*
    - *Incentivize during test phases based on requirements, capabilities*
    - *Ktr: if we deliver what we signed up for then incentivize (“doing what we said we’re going to do” (i.e., in an increment)*
    - *Incentivize developers for each bug they fix*
    - *Govt knows what they want then go fixed price, otherwise go cost plus or capacity (T&M)*
  - What not to incentivize?



## Session 11F

### *Pain Points*

- Fight about how to do Agile
- Not sure how to do it
- How to fit in acquisition paradigm
- Shared understanding, same pace
- Government Agile rhythm, management
- Decision maker (with no authority)
- Buy-in, leadership onboard
- “Responding to change”
- Coordinating with waterfall
- Team coordination



## Session 11F

### *Good Points*

- Good and quick feedback
- Agile and Lean
- Quality, Speed