Introducing Agile/DevSecOps into the Space Acquisition Environment

Orosz, Michael; Duffy, Brian; Charlton, Craig; Spear, Lieutenant Colonel

Monterey, California. Naval Postgraduate School

INTRODUCING AGILE/DEVSECOPS INTO THE SPACE ACQUISITION ENVIRONMENT

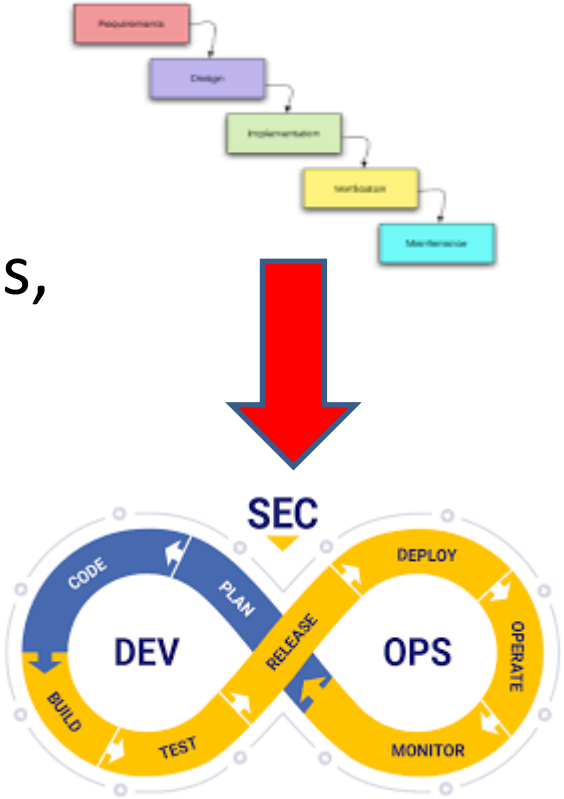
Michael Orosz, Research Professor and Director*
Lt Col Grant Spear**
Brian Duffy, Senior Systems Engineer*
Craig Charlton, Senior Systems Engineer*

mdorosz@isi.edu
Michael.Orosz.ctr@spaceforce.mil

*University of Southern California Information Sciences Institute
** United States Air Force
May 2022

Research Objectives

- **Improve DoD competitiveness**: Specifically - improve existing DoD space-based *software* system acquisition processes
- **Goals**:
  - —Determine the mission engineering methods, analysis, and metrics to transition from traditional DoDI 5000.02 waterfall development environments to agile/DevSecOps processes
  - —Includes integration of emerging technologies and related education for the future workforce



Process

1. Understand the current acquisition environment
   - Immerse into environment (become part of the team)

2. Develop approaches to transition acquisition elements from DoDI 5000.02 to Agile/DevSecOps ...including workforce training

3. Incorporate processes and “lessons-learned” into a transition process to apply to other domains

Three DoD Acquisition Projects

- **Project A:** Traditional waterfall method used (completed)
  - —Duration: 39 months (includes schedule extension)
  - —Software lines of code (SLOC): 178K

Baseline

- **Project B**: Hybrid composed of both waterfall and agile components (completed)
  - —Duration: 25 months
  - —Software lines of code (SLOC): 113K
- **Study:**: Undertake technical explorations and stand up agile/DevSecOps environment in preparation for Project C (completed)
  - —Duration: 15 months
  - —Software lines of code (SLOC): None
- **Project C**: Agile/DevSecOps (one year into project)
  - —Duration: Approximately 52 months
  - —Software lines of code (SLOC): TBD

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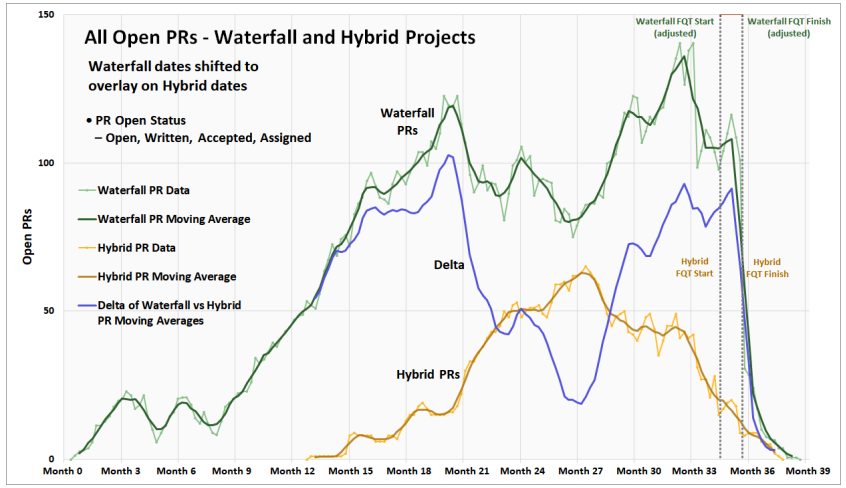
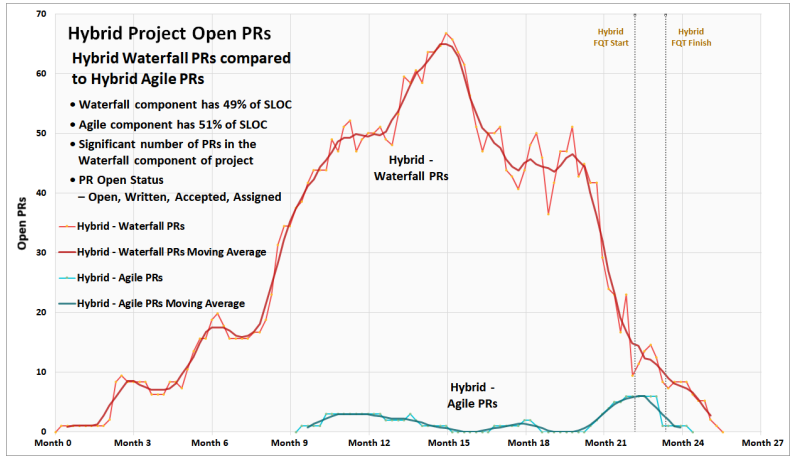
Projects A and B Results

- Project A (Waterfall) vs. Project B(Hybrid): Project B produced **85.4%** less open problem reports (PRs) than Project A



- Project B (Waterfall) vs. Project B(Agile): The agile portion of the effort produced **95.7%** less open problem reports (PRs) than the waterfall portion



Study (15 months) & Project C (12 months since ATP) Observations

- Rigidity of the Capabilities Development Document (CDD) hampers agile development operations
- Implementing agile still requires good upfront engineering
- Due to licensing issues, import controls and lack of adaptability, performance tracking tools may have to be modified or developed.
- There is no “one size fits all” agile/DevSecOps framework.
- Program increment (PI) lengths are often too short

Observations (Cont.)

- Allocate stories to sprints up front when PI planning
- Too many story points allocated to a PI and/or sprint
- Stay focused on MVP/MMPs and the project roadmap
- Training, training and training
- Need for an operations-like test environment as soon as possible

Next Steps

- Project C has started...about 12 months in
- Work with government team to continue to address observations and apply lessons learned from the study (pre-Project C)
  - For example: explore methods for improving synchronization between PI planning and the Integrated Master Schedule (IMS) which drives EVM metrics
- Continue collection of performance metrics with an eye towards velocity and related metrics.
- Continue developing/refining training materials and processes