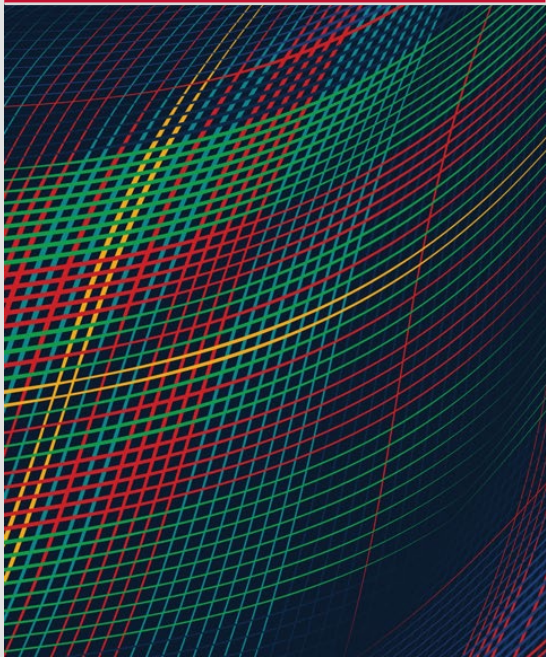
Carnegie Mellon University
Software Engineering Institute

The Value of an Agile Approach to Independent Verification & Validation (IV&V) for Acquisition

MAY 8, 2024

Justin Smith
Agile Transformation Team



Document Markings

DM24-0502

What are we going to discuss?

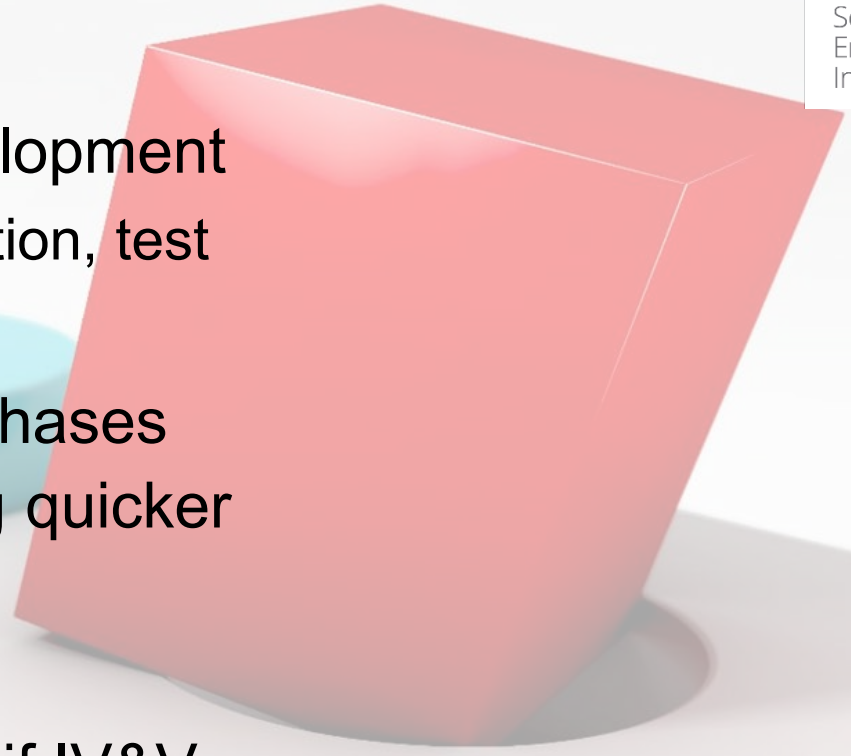
- Independent verification & validation (IV&V)
- Challenges Agile presents
- Adopting values and principles
- Benefit for acquisitions
- Observations
- Conclusions

Carnegie Mellon University Software Engineering Institute

Independent Verification & Validation (IV&V)

- Software IV&V is a second set of eyes on the software
  - Technically, managerially, and financially independent
- Can be mandated or voluntarily chosen
- Risk mitigation approach
- Assurance is the product
- How is it done:
  - Document reviews
  - Code inspections and analysis
  - Independent testing

Agile Challenges with IV&V



- Traditionally built on waterfall development
  - Requirements, design, implementation, test
- “Timing” challenge for IV&V
  - With an iterative approach, the phases mentioned above are happening quicker and repeatedly

- Being “in phase” becomes evident if IV&V is to provide value and make an impact

Adopting Values and Principles

- Mindset shift
- Backlog of work
- Visualization of work
- Planning
- Stand-ups
- Retrospectives

Benefit for Acquisitions

- Independent Perspective
- Transparency
  - Insight into IV&V work
  - Better understanding of what developer is doing
- Early Detection of Issues
- Getting inside the developer's OODA loop (Observe, Orient, Decide, and Act)
- Risk Mitigation

Observations

- Agile IV&V approach has been implemented at NASA and DoD
- Beware the “us vs them” mentality
- Stick to the facts
- Rely on the evidence

Conclusions & Recommendations

- Approach focuses on continuous improvement
- Transparency and communication
- Will get program office more insight - earlier
- Get inside developers OODA loop

- Ultimately program offices acquiring the software product from a developer will have to make a final call on acceptance of that software

Contact Information

Justin Smith
Senior Agile Transformation Leader
Carnegie Mellon University
Software Engineering Institute (SEI)

Telephone: 1-412-268-8892
Email: jlsmith@sei.cmu.edu

Carnegie Mellon University
Software Engineering Institute