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Independent Validation and Verification in an Agile World

Independent Validation and Verification (IV&V) is popular on Government software programs and was born in a waterfall world. But the software industry has spoken: good agile simply works better than waterfall in the majority of cases. So we are often asked, "is there still a role for IV&V on 'agile done right' initiatives?"

The Bottom Line Up Front (BLUF) version is this: no, traditional IV&V has no place on a "real agile" initiative. Period.

Before the hate mail starts, notice the focus on the word traditional. It doesn't mean IV&V skills and support can't provide value on agile programs. It just means we need to shift how we deliver those services to align with agile values and principles.
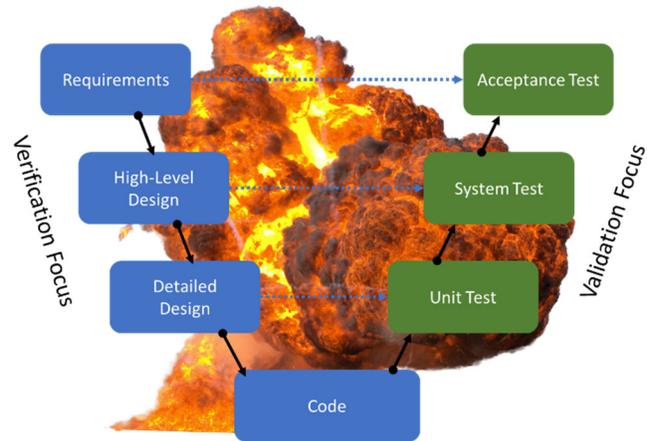

Figure 1 – Traditional IV&V

What is IV&V?

> " *The intent of IV&V is to improve the quality of delivery, which is completely compatible with agile values and principles. But the ways IV&V teams traditionally work to achieve that objective is incompatible with many of those same agile values and principles.*

According to the Government Accountability Office (GAO), IV&V is a "way to manage the inherent risks of developing and acquiring systems." The process is "conducted by a party independent of the development effort that provides an objective assessment of a project's processes, products, and risks throughout its life cycle and helps ensure that program performance, schedule, and budget targets are met[1]."

Even with this definition, IV&V means different things to different people. To some, it focuses on independent staff evaluating programs and delivery teams to find areas where they are out of compliance with perceived best practices. To others, it means having an independent group perform testing.

[1] GAO–11–581

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Regardless of your definition, values and principles are the heart of agility that provides tangible improvements. So determining how IV&V can work with agile teams must consider those values and principles. When we searched for IV&V-related articles, we found none with that focus so we're filling that gap with this article.

Understand the Problem to be Solved

To start, we need to focus on the intent of IV&V. At its core, the Government uses IV&V to improve the quality of product delivery (e.g., software, hardware). This goal is completely compatible with agile values and principles. But the ways IV&V teams traditionally work to achieve that goal is incompatible with many of those same agile values and principles.
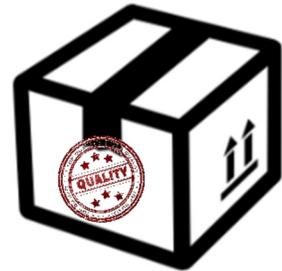
Figure 2 – Goal of IV&V is delivering high-quality products.

IV&V Incompatibilities with Agile Done Right

Why do we say that traditional IV&V is at odds with "agile done right"? Here are specific examples.

Agile, Scrum, and Lean Values, Principles, and Concepts	Traditional IV&V Practices
Working software over comprehensive documentation	Focus on documenting perceived shortcomings and improvements
Individuals and interactions over processes and tools	Deemphases interactions with agile team members due to drive for independence
Learn rapidly using fast feedback loops	Significant delay, often weeks or months, between observations and feedback to the team
Self-organizing teams	IV&V staff and skills are outside the team, removing discretion to self-organize
Scrum Value: Openness	Team members feel like IV&V is waiting for them to make a mistake, reducing openness, trust, and psychological safety Recommendations often kept confidential until management decides they are ready to be 'revealed'

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Agile, Scrum, and Lean Values, Principles, and Concepts	Traditional IV&V Practices
Scrum Value: Respect	Separateness suggests to some that the Scrum team is unable to internally find and apply effective, context-specific good practices

Google
Project Aristotle

1 **Psychological Safety**
Team members feel safe to take risks and be vulnerable in front of each other.

2 **Dependability**
Team members get things done on time and meet Google's high bar for excellence.

3 **Structure & Clarity**
Team members have clear roles, plans, and goals.

4 **Meaning**
Work is personally important to team members.

5 **Impact**
Team members think their work matters and creates change.

re:Work

Figure 3 – Psychological safety named the most crucial factor in high performing teams.

While all the issues above make traditional IV&V a poor fit with "good agile," let's discuss one pivotal concern: psychological safety.

> *So how does the importance of psychological safety mesh with traditional IV&V? Very badly.*

We can define psychological safety as how comfortable people feel raising concerns and new ideas to others. Multiple studies recognize psychological safety as a critical factor in individual and team performance.

In fact, Google's Project Aristotle[2], which evaluated 180 teams and looked at hundreds of variables, named psychological safety as the most essential factor in building a high performing team.

So how does the importance of psychological safety mesh with traditional IV&V? Very badly.

Teams often view IV&V staff as waiting for them to make a mistake. Worse, IV&V staff typically won't even tell team members about the perceived mistake. Instead, IV&V provides the issue to the boss or boss's boss, and the team learns about it third hand. In many ways, IV&V operates more like auditors than people primarily focused on improving delivery.

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[2] https://rework.withgoogle.com/print/guides/5721312655835136/

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> *Because it interferes with psychological safety, traditional IV&V may actually significantly reduce the effectiveness of the team.*

So if team members perceive IV&V staff is auditing them and waiting for them to make a mistake (people on teams I coach have relayed exactly that view), they are far less likely to propose innovative ideas and concerns, which are the lifeblood of good teams. As a result, traditional IV&V may actually significantly reduce the effectiveness of the team.

It would be hard to design a structure less conducive to psychological safety than how IV&V traditionally works. At best, money the Government spends on traditional IV&V staff is wasted on an agile initiative. Our experience, which we believe is more common, is that money spent on IV&V reduces the effectiveness of the whole program.

Transforming IV&V for An Agile World

What can we do to address these issues? Can we find a way to achieve the intent of IV&V in a way that meshes with good agility? Yes, we can.

If you currently run an agile program and use traditional IV&V, the best course of action is to exchange the staff for agile coaches[3]. If some of the IV&V staff are testers, we can integrate those people into existing agile teams while still improving quality.

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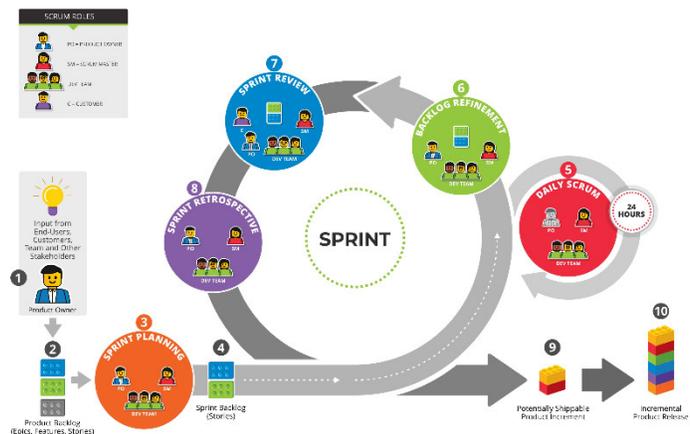
[3] This typically means replace. The skills of most traditional IV&V staff are hugely different from those of strong agile coaches. If someone tries to convince you otherwise, be wary.

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Exchange IV&V Staff for Agile Coaches

Good agile coaches focus on instilling values, principles, and related practices that create high-performing delivery teams. So there is significant overlap with what agile coaches do and the intent of IV&V.

Strong agile coaches understand concepts critical to agility and work to create an environment where teams flourish. They give fast feedback and foster interactions to help promote the best ideas and improvements. Coaches also identify a manageable set of metrics most likely to uncover impediments, maintain a culture of relentless improvement, and inspire delivery of products that are valuable for customers.

Small Changes, Big Results

" Small changes can produce big results...but the areas of highest leverage are often the least obvious. "

— Peter Senge

Figure 4 – Great coaches understand and focus on a small set of improvements with high leverage.

And what about psychological safety? Providing a psychologically safe environment to give and receive feedback is at the heart of effective coaching.

But will agile coaches let leadership know when there are significant issues to address? Absolutely! Good coaches expose areas of high leverage where leadership engagement can be a huge help.

For example, team X doesn't have the testing skills it needs, which is causing tons of defects. Or team Y has too many part-time team members and as a result they get much less done in comparison to other teams. Great coaches help teams escalate these types of "big rock" issues quickly so problems don't sit for weeks or months out of fear.

So how do you find a really good agile coach? For mission-critical initiatives, start with people certified to train by one of the two creators of Scrum, Dr. Jeff Sutherland or Ken Schwaber.

Engaging Good Agile Coaches

How many coaches do I need? For immature teams, we recommend starting with a ratio of 1 agile coach for every 2 scrum teams for 90 – 180 days. If you have good scrum masters, as teams mature a ratio of 1 coach per 4 to 5 teams is realistic.

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Admittedly, the market is flooded with people who call themselves agile coaches but often promote what the Department of Defense (DoD) Innovation Board (DIB) refers to as "Agile BS[4]."

So how do you overcome the BS to find a really good agile coach? When quality matters, start with people certified to train others by one of the two creators of Scrum, Dr. Jeff Sutherland or Ken Schwaber. Those people are coaches who have proven their expertise to the two people most associated with the leading agile methodology in the world. No list of other certifications is a substitute for the stamp of approval from Scrum's creators.

If you need support finding good coaches and scrum masters, email us.

In some cases, you will need to supplement coaches with Subject Matter Experts (SMEs) in specific domains. For example, a test automation SME or senior architect may help address team-specific challenges. A good agile coach can help identify the types of SMEs who will provide the highest leverage improvements after working with each team for 2 - 4 sprints.

Integrating Independent Testers

If IV&V in your organization means having independent testers, we have good news. Integrating those testers into agile teams significantly improves quality and saves money. Why? Similar to rationale behind the waterfall concept of phase containment, finding and addressing bugs within a sprint is exponentially more cost effective. Some research found a 2,300% increase in the cost to fix a bug when teams discovered it outside the sprint where it was introduced.

In the past, the IT industry advocated that only independent staff should perform testing. That is no longer the case. Our industry has since revised that view and has found we can still achieve sufficient independence even if testers are integrated into teams.

We welcome your feedback. If you have integrated traditional IV&V into agile programs, let us know what you did and how it went.

[4] See our article on Agile BS here: https://packagedagile.com/detecting-agile-bs-revisited/