

# ENTERPRISE-LEVEL, RISK-BASED IV&V

**FACT SHEET**

NTT DATA improves how Independent Verification and Validation (IV&V) works by identifying schedule, budget, and mission risks early in the development, acquisition, or procurement lifecycle. With early risk identification, agencies can implement treatment plans before potential risks impact mission objectives. By accelerating and prioritizing IV&V activities based on mission risk, our IV&V approach optimizes work efforts, driving mission success, using fewer resources and less time.

## OVERVIEW

Creating a clear view of project performance, IV&V effectively contains defects, dramatically reducing re-work throughout acquisition and program lifecycles. Objective assessments of products and processes determine whether or not mission requirements and system capabilities are correct, complete, accurate, consistent, and testable.

Providing IV&V for our customers since 1997, our approach is based on many years of lessons learned and industry best practices, and leverages NASA's Criticality Analysis Risk Assessment (CARA) methodology. CARA optimizes and prioritizes IV&V activities and resource assignments based on mission risk and technical complexity. Using IV&V best practices, our industry-recognized subject matter experts (SMEs) drive these clearly prioritized activities and resource assignments through technology, transforming the standard IV&V "checklist" approach into a quickly organized, highly manageable program.

Through this enterprise, risk-based approach, we confidently provide stakeholders with the critical information they need for timely decisions, ultimately ensuring mission success.

### INTRODUCING IV&V EARLY IN THE LIFECYCLE BENEFITS CUSTOMERS:

- » Early detection and correction of defects and anomalies
- » Management insight into process and product risks
- » Assured conformance to program performance, schedule, and budget
- » Optimized return on investment (ROI) from concept to completion
- » Objective evidence of conformance for formal certifications

### INTRODUCING IV&V PRIOR TO THE REQUIREMENTS PHASE RESULTS IN COST SAVINGS:

- » One study found that detecting and correcting a requirements defect during the requirements phase costs approximately \$139. The same defect that is not detected until deployment to production costs over \$14,000, an increase in rework cost of over 100 times!

("Government IT Projects Need QA/IV&V," KPMG, 2009 [www.kpmginstitutes.com/government-institute/](http://www.kpmginstitutes.com/government-institute/))

## NTT DATA Independent Verification and Validation (IV&V)



# IV&V AND MISSION SUCCESS





## FACT SHEET

To facilitate mission success when implementing IV&V, our SMEs focus on three critical factors:

- Determining the best use of IV&V resources.** Using mission criticality and risk factors, we determine the most effective application of IV&V resources (e.g. budget, processes, tools, and techniques), planning and scheduling activities to reduce mission and program risk.
- Introducing IV&V prior to the requirements phase.** We introduce IV&V prior to the requirements phase (e.g. concept and acquisition) to ensure money and resources expended have optimal impact.
- Using the appropriate independence model.** The IEEE 1012 *Standard for System and Software Verification and Validation* identifies five independence models designed to meet varying mission requirements. Implementing the appropriate independence model (one size does not fit all) ensures process improvement and optimal speed of adoption.

Focusing on these critical success factors, we have been highly successful in helping organizations reduce acquisition risks, improve mission capability, and increase operational effectiveness. In order to mitigate the time and resource challenges of traditional IV&V, we have developed a number of accelerators (tools and efficiency wizards) that deliver great savings.

### NTT DATA FEDERAL IV&V ACCELERATORS

| CHALLENGE  | TECHNOLOGY  | BENEFIT  |
|--|---|--|
| IEE 1012 Identifies over 200 IV&V activities, and defining the scope of work can take many weeks or even months to complete                  | <br><b>CARA Wizard</b>                             | Our CARA Wizard, using client input, prioritizes IV&V activities based on mission risk, delivering an IV&V plan and schedule within hours.             |
| PCAs can take many weeks to complete. Though labor intensive, they are necessary for IV&V, environment control, performance, and security.   | <br><b>Physical Configuration Audit (PCA) Tool</b> | We developed a parsing tool that crawls the baseline configuration, recording deltas. It can accomplish a full PCA in hours, as often as clients like. |
| With wide ranging requirements, quality IV&V requires knowing what inputs to assess, a decision that can potentially take many hours.        | <br><b>Assessment Framework</b>                    | Our Assessment Framework categorizes inputs by artifact type. Quick access to replicated items saves time to complete work and increases reliability.  |
| Many clients have similar IT portfolios. Starting each IV&V project from scratch requires time and unnecessary costs and can be ineffective. | <br><b>Collaboration Tool</b>                      | We systematically catalogue all IV&V work in a collaboration tool, giving our team immediate access to the most relevant and current data available.   |

- In summary, our enterprise, risk-based IV&V approach delivers:
- » A rapid evaluation of IV&V needs based on risk and technical complexity
  - » Prioritized IV&V activities to help determine the best use of resources
  - » Quick identification of appropriate artifacts and inputs for review
  - » A complete, automated physical configuration audit (PCA) within hours
  - » An enterprise picture of assets and the level of risk if an asset fails

### NTT DATA IV&V – MISSION SUCCESS

#### Reduced Acquisition Risk

Evaluating 220 software products for a government client, our team found 77% of them contained risks. Reporting these risks early in the procurement lifecycle allowed for corrective action prior to contract award.

#### Improved Mission Capability

Our SMEs identified deficiencies in an operational evaluation of a fielded system that reduced mission capability by 7%. Our recommendations helped the customer avoid similar degradation on other programs.

#### Increased Operational Effectiveness

Many of our highly skilled IV&V SMEs participate on international standards committees such as IEEE, ISO, and PMI, allowing us to be early adopters of emerging industry standards and best practices, to our customers' benefit.

### ABOUT NTT DATA FEDERAL

#### LEARN MORE

about how we can help you enhance your mission assurance capabilities, drive application excellence, and capitalize on data value, contact us at [americas.nttdatafed.com](http://americas.nttdatafed.com)

