

The ITEA Journal of Test and Evaluation Themes for 2015-2017

Please consider writing an article, share this document with coworkers, and provide feedback on the themes. – Steve Gordon

2015 ITEA Journal Themes

The Right Mix of T&E Infrastructure (Issue 36-1, March 2015)

Our T&E infrastructure is regularly evaluated for downsizing, improvement, or changes in ownership. The right footprint of T&E infrastructure depends on the tests in the pipeline and future systems in design. How do we know what and how much is necessary? Can we share government, industry, and academia facilities within and across country boundaries? Would this type of sharing cause conflict of interest issues? Will overlap of contractor testing, developmental testing, and operational testing reduce the demand on test infrastructure? Can a shift earlier for developmental testing in representative operational environments and for integrated testing reduce the load on test infrastructure? Will sharing (or dual use) of training and test venues help in use of limited infrastructure? **(Manuscript deadline: December 1, 2014)**

Test Methodology Rigor (Issue 36-2, June 2015)

The T&E workforce ideally uses the scientific method to plan, conduct, and analyze tests. Test rigor includes appropriate use of the scientific method, and test rigor is more than statistics and design of experiments. Test rigor includes following accepted processes to determine outputs that must be measured, how to measure the outputs accurately, what super-set of inputs may affect the outputs, how to determine the critical few inputs, how to measure the inputs accurately, how to set the statistical confidence desired and plan the test design for statistical power, and how to make the best trade-offs. Test methodology rigor would include designation of standard operating procedures and measurement system analysis to reduce noise and maintain statistical power. Rigor in testing would also include verification and validation of requirements, and validation and verification of modeling and simulation and databases to support the test. **(Manuscript deadline: March 1, 2015)**

T&E of Information Assurance, Information Security, and Cyber Readiness (Issue 36-3, September 2015)

Key information passed through network connections improves the speed and lethality of combat operations; yet, use of the networks opens the door to vulnerabilities. Network connections for home computers, smart phones, social media, and entertainment add enjoyment; yet, ease of use often equates to increased ease of misuse and scamming. Systems that support the military, our finances, our health records, and our other personal information must pass information assurance, information security, net readiness, and cyber readiness tests. Yet, these tests, when passed, do not provide 100% assurance of protection. Systems and the networks that connect them are subject to all sorts of attacks from all sorts of sources; however, the goal of the attack is nearly always to take something valuable. Money, personal information, trust, freedom, military information and plans, or intellectual property are often taken with very minimal effort and cost. How much testing is required to provide an acceptable level of protection to expected attacks? How do we predict future possible attacks? **(Manuscript deadline: June 1, 2015)**

Blending Systems Engineering, Reliability, Lifecycle Support, and Testing (Issue 36-4, December 2015)

Are these activities separate or integrated in a solid T&E process? Systems engineering provides the process and tools to build the right effective product in the best way. Reliability strives to develop a system that is available and suitable for the intended use. Lifecycle support looks at maintainability and supportability with long-term ownership costs in mind. Testing makes sure these requirements and others are satisfied by the system as it is designed and built. Blending of these initiatives and their development targets into an integrated T&E program could help us field the right system for the user. Invited papers could include discussions of success stories, lessons learned, drawbacks, benefits, good intentions gone awry, and alternative views. **(Manuscript deadline: September 1, 2015)**

2016 ITEA Journal Themes

Leveraging Training and Experimentation Infrastructure and Events for T&E (Issue 37-1, March 2016)

Missions, scenarios, and supporting Live-Virtual-Constructive environments for testing, training, and experimentation have different focus areas. Yet, because of fiscal realities and OPTEMPO concerns, T&E should consider leveraging the future warfighting environments of experimentation and the current operational environments of training, especially since both experimentation and training include warfighting staffs, command and control centers, and joint and coalition warfighters? T&E can add a good measure of data collection and disciplined analysis to experimentation and training events. Articles that examine this cross-use of test-training or test-experimentation environments, plans for such sharing, or articles on pros and cons of such sharing are encouraged. (Manuscript deadline: December 1, 2015)

The following themes are planning drafts for 2016 - 2017, and feedback is welcome:

Inter-Agency and International T&E (Issue 37-2, June 2016)

Improved transportation and communications systems worldwide have impacted our leisure and business activities. The improved connectivity and shared needs across countries, coalitions, and operations have also increased the desire for collaborative testing internationally and inter-agency testing within countries. Shared T&E environments and scenarios across homeland security, law enforcement, and defense will become commonplace. Likewise, T&E related to airspace control will include the Federal Aviation Authority, the National Air and Space Agency, homeland security, and defense. Sharing the international T&E infrastructure and expertise will likely benefit of all countries involved. Articles about T&E of systems intended to operate worldwide and/or in support of missions that cross the boundaries of homeland security, law enforcement, and national defense will be of interest for this issue.

(Manuscript deadline: March 1, 2016)

Changes to Developmental and Integrated Testing (Issue 37-3, September 2016)

Smooth handoffs are likely to save time and money and improve quality, suitability, and effectiveness. This issue seeks articles that cover current and future plans for changes to developmental testing and articles on how developmental and operational/acceptance testing are being integrated to allow smoother handoffs that improve testing, save time and funding, and/or improve the product. This topic seeks articles beyond the Department of Defense; so, articles from industry, other federal agencies, and international partners will be welcomed. The theme of this issue could easily be reworded as "How can early testing assist in the transition to most efficiently facilitate full independent testing?" or "How does final independent testing collaborate with early developmental testing to ensure a smooth transition and effective and efficient testing?".

(Manuscript deadline: June 1, 2016)

Statistical Methods in T&E (Issue 37-4, December 2016)

Mathematical and statistical methods have traditionally been used in testing. Some new approaches in using statistical methods provide a tool to allow testers to estimate how much testing is enough. Too little testing and too much testing waste money. Application of statistical methods coupled with disciplined up-front analyses, may help increase the scientific unpinning of tests. Up-front analyses include following accepted processes to determine outputs, determining how to measure the outputs accurately, identifying what superset of inputs may affect the outputs, determining the critical few inputs and how to measure the inputs accurately, setting statistical confidence, evaluating the design for statistical power, and making trade-offs. How are designation of standard operating procedures and conducting measurement system analyses related to reducing unnecessary noise and maintaining statistical power? Would upfront analyses also include verification and validation of requirements and verification, validation, and accreditation of modeling and simulation to support the test? What are the consequences of unnecessary noise in the systems that support testing? How can we increase statistical power of tests without increasing testing?

(Manuscript deadline: September 1, 2016)

2017 ITEA Journal Themes

T&E for Enhanced Security (Issue 38-1, March 2017)

This issue seeks articles about testing for enhanced security in the land, sea, air, space, and cyber domains. The theme includes testing by homeland security and law enforcement of systems to protect water, power, natural gas/petroleum, food, pharmaceuticals, transportation, and communications processing and distribution systems. The United States National Guard, the Department of Homeland Security, and State homeland security components have unique testing needs and experiences, and articles on these topics are encouraged. How do the Federal Aviation Authority and the National Aeronautics and Space Administration collaborate on testing the nation's airspace? How are robotic vehicles tested? Articles from international partners are also encouraged in these listed areas and in the areas of national defense.

(Manuscript deadline: December 1, 2016)

Success Stories in T&E (Issue 38-2, June 2017)

But for the improved testing regimen, under which this system was evaluated, lives would have been lost, costs would have increased, and/or battles would have been lost. For this issue, we will mostly focus on the high-profile T&E experiences where the testing helped influence product changes that made the product better in terms of cost, safety, or effectiveness. Feedback from tests at or before the design phase can be implemented with minimal cost to the program and can help improve the cost, suitability, and effectiveness of the system. Product or system modifications as a result of feedback from tests after the development phase of acquisition may cost more, but the test results later in a program are often essential to building the right product. This issue is also seeking examples of tests where, for some reason, systems were fielded even though they were lacking in effectiveness, suitability, or resiliency. So, we would also welcome "Less than Successful Stories in T&E" in this issue as well. Examples of how things have gone wrong help us understand the importance of making sure things go right

(Manuscript deadline: March 1, 2017)

Articles of General Interest in Any Issue

Articles of general interest to ITEA members and *The ITEA Journal* readers are always welcome and authoring these articles is a great way to contribute to our industry.

Refereed Articles

ITEA members may submit articles designated by the author(s) to be refereed. These refereed articles will be highlighted in *The ITEA Journal*; this new opportunity for authors offers more value to their published article.

Other articles needed by *The ITEA Journal* include specialty features, each 2-3 pages long, in contributed articles:

- **Featured Capability** describes unique, innovative capabilities; demonstrates how they support T&E.
- **Historical Perspectives** recall how T&E was performed in the past or a significant test or achievement, often based on personal participation in the "old days" of T&E.
- **Tech Notes** discusses innovative technology that has potential payoff in T&E applications or could have an impact on how T&E is conducted in the future.
- **Cultivating the T&E Workforce** addresses the future of T&E by looking for ways to encourage students to pursue and remain in STEM (Science, Technology, Engineering; and Mathematics) courses and academic majors. This section also welcomes articles on ideas for innovations in professional education for the T&E workforce.

Articles and Submission

Articles of general interest to ITEA members and *ITEA Journal* readers are always welcome. *The ITEA Journal* offers a forum for sharing knowledge and ideas crucial to our changing T&E workforce.

Submit your contributions today to journal@itea.org, attention: Publications Chair. Manuscript guidelines are found at www.itea.org under the Share and Publications tabs.