

The ITEA Journal of Test and Evaluation Themes for 2019-2022

Please consider writing an article, share this document with coworkers, and provide feedback on the themes. For all themes in 2019-2022, please check the ITEA website at www.itea.org under the "Journal of T&E" then "Upcoming Issue Themes" tab. – Steve Gordon

Upcoming ITEA Journal Themes

Statistical Methods in T&E (Issue 40-1, March 2019)

Mathematical and statistical methods have traditionally been used in testing. Some new approaches in using statistical methods provide new tools 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 underpinning of tests. Up-front analyses include following accepted processes to determine outputs, determining how to measure the outputs accurately, identifying what super-set 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: December 1, 2018)

Aligning Modernization of DoD Test Ranges with National Defense Strategy (Issue 40-2, June 2019)

DoD test ranges need to be modernized in order to adequately test advanced systems in development and current, updated systems designed to perform in future warfighting environments. Our systems must be tested sufficiently in the anticipated environments and scenarios to make sure they are resilient. Unless properly handled or accommodated, environmental encroachment can cause limitations to testing and training; these limitations can include restrictions, degradations, interference, pressures to reduce maneuver space, and increased cost. The science and technology (S&T) research in this

area is extensive. Are there lessons learned or success stories in preventing incompatible development near test and training ranges? Papers related to these topics, to developing improved and expanded ranges, and to resolving encroachment issues are requested. Also, papers that discuss ways to complement range testing with gaming or simulation are welcomed. Range challenges will continue to impact test and training ranges, but the limitations can be moderated. Best practices in this area would be of interest to the readers.

(Manuscript deadline: March 1, 2019)

Drowning in Data: How to Gain Timely Information and Knowledge from Data (Issue 40-3, September 2019)

Digital technology and accelerating improvements to digital technology provide us with the ability to acquire, create, and store data at unprecedented rates and volumes. Literature searches that would have taken days or weeks in the age of library card catalogs now can be accomplished in seconds over the internet. Data, or more generally, information, has become big business, in addition to being the business of T&E. Yet, technological solutions come with their own problems: the immense flow of data from tests has not been met by a commensurate growth in the ability to exploit the data to gain information and knowledge. This theme examines the issues and the potential solutions for the need to extract meaning and value from the mountains of data. Articles are invited on such topics as data acquisition, storage, archiving, access, validation, exploitation, and visualization; data as a service; cloud computing; service-oriented architecture; metadata syntax and semantics; instrumentation; accelerating the process of acquiring data to making a decision; data and sensor fusion; data preservation; distributed and nonrelational databases; and related topics. The theme seeks insights, lessons learned, and success stories of gaining information and knowledge in a timely manner from test data.

(Manuscript deadline: June 1, 2019)

The Right Mix of T&E Infrastructure (Issue 40-4, December 2019)

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? How do we find the right sources of information (who knows?), and how can we search for facilities available nationally and internationally? Can we share government, industry, and university 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 or increase the demand on test infrastructure? Can a shift to earlier developmental testing in representative operational environments and a push for integrated testing reduce the load on test infrastructure?

(Manuscript deadline: September 1, 2019)

Accelerating T&E to the Speed of Need (Issue 41-1, March 2020)

The speed of need is the speed required to transition the system tested from definition of a user need to the initial operation of the capability in the time operationally necessary. The demands of war have shortened the timeline on requirements for military systems. Rapid acquisition and rapid fielding initiatives arising from urgent operational needs have created an entire industry in the defense community. The pace at which transportation security and border protection measures need to be deployed is similarly increased. We see information technology (IT), especially software and cyber threats and defenses, change with a frequency of months, not years. Test and evaluation (T&E) must be

responsive to the acquisition timelines. The Federal Aviation Administration, Border Patrol, law enforcement, and many other organizations are adapting to the changing speed of need. This issue takes a candid look at agile software development processes, cyberspace T&E, defense IT acquisition reform, rapid acquisition and fielding, reconfigurable test capability, testing on demand, reuse, and other ideas for streamlining the T&E process in support of accelerating deployment of new products, services, and capabilities.

(Manuscript deadline: December 1, 2019)

Systems Engineering and T&E Synchronization

(Issue 41-2, June 2020)

These activities are part of an integrated, solid T&E process. Systems engineering provides the process and tools to build the right effective products in the best way. Reliability strives to develop a system that is available and suitable for the intended use and resilient to disruption. Life cycle support looks at maintainability and supportability with long-term ownership costs in mind. Testing makes sure these requirements and others are satisfied by the designed and produced system. Blending these initiatives 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: March 1, 2020)

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