

## ISSUE AT A GLANCE



Laura Freeman, Editor in Chief

Welcome to the first issue of the new online format of the ITEA Journal!

I am thrilled to have had the opportunity to pioneer this new format for the Journal to make our content more accessible to the Test and Evaluation (T&E) community. We hope our readers find this new format easier to browse and search online. We will also be moving to web-based submissions to the Journal in the upcoming months. Please stay tuned as we continue to improve the Journal for our readers!

The theme for the issue was: Test and Evaluation Across the Acquisition Life Cycle. We challenged authors to think about: For new and emerging technologies when should a T&E program start and end? How has integrated testing evolved over the years? What is the impact of the “Shift Left” initiative? Is there a role for T&E in fielded systems? Please consider submitting articles discussing T&E best practices and approaches across the full life cycle of a system from requirements development to deployment and beyond.

For this issue we are also pleased to be continuing our Workforce of the Future column with an article written by a postdoctoral researcher from DEVCOM Army Research Laboratory. Dr. Robert Slapikas’ article is on “Foundational Aerothermodynamic and Ablative Models in Hypersonic Flight Environments.” The article is coauthored with Dr. Anindya Ghoshal, Dr. Luis Bravo, Dr. Ryan McGowan, Dr. Muthuvel Murugan, and Dr. Douglas E. Wolfe.

Our first technical article: “Test and Evaluation as a Continuum” by Mr. Christopher Collins and Mr. Kenneth Senechal makes the case for changing the paradigm of test and evaluation.

- **Abstract:** For the United States to maintain an advantage over our potential adversaries, we must make a critical change in how test and evaluation (T&E) supports capability delivery. Making this change requires a new paradigm in which T&E will inform today’s complex technology development and fielding decision space continually throughout the entire capability life cycle—from the earliest stages of mission engineering (ME) through operations and sustainment (O&S). This transformational shift will significantly strengthen the role of T&E in enabling critical warfighting capability delivery at the “speed of relevance.”



In our next article, HON Nickolas Guertin and Dr. Alison Goodman discuss “Operational Test and Evaluation (OT&E) for Rapid Software Development.”

- **Abstract:** The Department of Defense (DOD) is moving towards rapid and iterative software development and deployment. Operational testing strategies for programs utilizing iterative software development should include looking left for technical measures, looking at use in an operationally representative environment to evaluate mission accomplishment, and looking right for long-term suitability. Automated testing should inform operational testing and evaluation and is essential to software development. It alone, however, is not sufficient to determine a system’s operational effectiveness, suitability, and survivability because those determinations incorporate the operationally representative use of the system by representative users. The operational test and evaluation community should build these concepts into planning now to position the DOD for the future.

Rounding out an excellent set of articles, Dr. Victoria Sieck and Dr. Kyle Kolsti provide their perspective that Bayesian methods can play in T&E across the acquisition lifecycle in “Bayesian Methods in Test and Evaluation: A Decision Maker’s Perspective.”

- **Abstract:** The field of statistics can broadly be broken into two branches: frequentist and Bayesian. The frequentist approach is more common in general use, academia, and Department of Defense (DOD) Test & Evaluation (T&E); however, Bayesian methods can provide many benefits, to include: (1) potential for better estimation, (2) more natural interpretability, and (3) flexibility. This article provides a high-level summary of how Bayesian methods can help DOD decision makers make more effective and efficient decisions about whether a system under test would provide the needed capabilities to the warfighter, or other similar questions of interest. The goal of this article is to offer T&E leadership with a concise treatment of Bayesian methods that can be referred to if questions or concerns arise. In addition to discussing key benefits to a Bayesian approach, a few starting questions are offered here for leadership to explore whether a Bayesian approach has been appropriately applied.

Enjoy the Issue!