

Call for Papers

Systems Engineering Journal Special Issue: **Digital Engineering: Enabling Digital Transformation of Engineering, Processes, and Enterprises**

Digital Engineering, the digital transformation of engineering, is an emerging effort with a variety of names and focuses. The US Department of Defense (DoD) launched their Digital Engineering Strategy in 2018, defining digital engineering as “...an integrated digital approach that uses authoritative source of system data and models as a continuum across disciplines to support lifecycle activities from concept through disposal.” (<https://fas.org/man/eprint/digeng-2018.pdf>). The implementation of DoD’s strategy will significantly change engineering practice for DoD enterprise, the US defense industry, and beyond. More broadly, digital engineering proposes to transform engineering standards, engineering practice paradigms, engineering knowledge, engineering processes across life cycles, the engineering workforce, the engineering environment, and the culture of engineering. Digital engineering will operate in a digital and connected environment with shared or standardized digital artifacts, including models and data. This includes both systems-level artifacts and highly specialized, discipline-specific artifacts. Engineering systems design and operation will face unprecedented richness of information from various sources in the shared digital environment. Such a revolution in an approach to engineering involves a combination of an evolution of existing approaches as well as the development of novel approaches.

This special issue of *Systems Engineering* solicits high-quality papers on the theme of digital engineering and digital transformation, broadly defined. The special issue accepts the following types of papers: 1) research papers, 2) case studies or projects on digital engineering, 3) literature review, and 4) communications as position papers. This special issue seeks papers on principles, theories, paradigms, models, methodologies, and applications of digital engineering. Interested topics include:

- Taxonomies, ontologies, and interoperability frameworks
- High fidelity models and semantic rules
- Digital twin and digital thread
- Cloud manufacturing / Manufacturing-as-a-Service
- Artificial intelligence/Machine learning for digital transformation
- Artificial intelligence/Machine learning adoption in digital engineering, including trustworthy, explainable, and privacy-preserving AI
- Big Data in digital engineering
- Test, evaluation, verification, and validation in digital engineering
- Digital engineering processes (such as design, manufacturing, maintenance, reuse and recycle)
- Change management and life-cycle support of artifacts
- Digitalization of engineering artifacts
- Digital engineering in the acquisition process
- Workforce development, education, and training
- Cultural changes and processes to support a digital transformation
- Model-based engineering and model-based systems engineering tools, processes, and methods

- Digital assistants and AI-based support
- Security and trust in digital engineering

Important Dates:

Call for papers published: July 15, 2021
Paper submission deadline: December 15, 2021
First-round review: February 15, 2022
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