



## Digital Engineering Working Group

Contact: Philomena.m.zimmerman.civ@mail.mil or Tracee.w.gilbert.ctr@mail.mil.

We are often so knee deep into our work that we don't take the time to appreciate how far we have come. As we continue our focus on Digital Engineering implementation, we will press forward with an appreciation for what we have accomplished. This issue highlights the achievements and ongoing work to mature Digital Engineering implementation across our communities of practice (CoPs). We also highlight the systems engineering modernization, test and evaluation (T&E), and additive manufacturing efforts that incorporate Digital Engineering as an enabler. As we continue to collaborate on Digital Engineering implementation, the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) will focus on addressing enterprise policy, guidance, and best practices.

—Phil Zimmerman, OUSD(R&E) Director, Engineering Tools and Environments

### Digital Engineering Community of Practice

OUSD(R&E) continues to evolve the working group concept into a CoP for Digital Engineering. Our tiger team efforts are strategically aligned to address pervasive challenges that are common across the acquisition community. To date, the Infrastructure tiger team (FY 2020 NDAA Section 231) identified candidate programs to determine the viability for partnerships for required demonstrations and benefits of Digital Engineering to automating T&E. The Digital Ecosystem tiger team has provided the initial vision, requirements, and subsequent delivery of an initial collaborative, agile, secure, interoperable, and integrated digital ecosystem. The Digital Engineering Body of Knowledge (DEBoK) tiger team has begun its initial implementation of referential resources for the DoD engineering community. The Digital Engineering Implementation tiger team continues engagements to identify implementation opportunities, best practices, and metrics. The Data and Cyber tiger teams are on hold as leadership transitions. For more information, contact [philomena.m.zimmerman.civ@mail.mil](mailto:philomena.m.zimmerman.civ@mail.mil).

### Modeling and Simulation Community of Practice

The purpose of the Modeling and Simulation Enterprise is to facilitate the effective and efficient development and use of models and simulations across the Department. Its goals are to: enable the sharing of modeling and simulation tools, data, and information; foster the development of models and simulations that are interoperable, timely, and cost-effective; ensure enterprise models and simulations are credible for the intended use with well-documented assumptions and limitations; advocate for a well-trained modeling and simulation workforce; and support modeling and simulation initiatives related to the National Defense Strategy. A key tool in implementing these goals is the Modeling and Simulation CoP, which brings together representatives from across DoD to focus on identifying and solving common problems and sharing information. For more information, contact [philomena.m.zimmerman.civ@mail.mil](mailto:philomena.m.zimmerman.civ@mail.mil).

### 2021 AI4SE/SE4AI Workshop

The workshop will be held October 20-21, 2021, virtually on ZoomGov. The U.S Army DEVCOM AC and the SERC will co-host the event. They seek abstracts for presentations and panels from government, industry, and academia addressing key Artificial Intelligence and SE initiatives. For more information, see <https://sercuarc.org/event/ai4se-and-se4ai-workshop-2021/>

July 2021

## Systems Engineering Modernization

The OUSD(R&E) Systems Engineering (SE) Modernization initiative is seeking to update current processes, practices, and guidance to develop an integrated holistic approach to program SE. This initiative is in the beginning stages of defining focus areas or enablers that are currently being separately matured. At this time, the SE Focus Areas include: Modular Open Systems Approach (MOSA); Digital Engineering; Mission Engineering; Developmental Test, Evaluation, and Assessments (DTE&A); Software (DevSecOps); Agile; and Specialty Engineering. Each of these SE Focus Areas has ongoing efforts to define and implement new tools, processes, and environments through the OUSD(R&E)-led collaboration working groups. We are scheduling SE Modernization collaboration sessions with the Service leads, industry, and academia. If you are interested in participating, contact Nadine Geier at [nadine.m.geier@mail.mil](mailto:nadine.m.geier@mail.mil) or Dr. Kelly Alexander at [kelly.d.alexander12.ctr@mail.mil](mailto:kelly.d.alexander12.ctr@mail.mil).

## Additive Manufacturing Policy

On June 20, 2021, OUSD(R&E) issued a comprehensive policy, DoD Instruction 5000.93, “The Use of Additive Manufacturing in DoD,” to support the implementation and use of additive manufacturing (AM) technology and to provide more consistent operations across the DoD enterprise. The issuance establishes overall policy, roles and responsibilities, and overarching guidance regarding the secure use of AM. Related to digital engineering in particular, the DoDI calls out the need to ensure DoD entities adequately protect data, digital systems are interoperable, and common processes and standards are created and used. The Joint AM Working Group (JAMWG) Data and Model Sharing Stakeholder Council meets regularly to identify gaps, share best practices, and align activities related to this area. For more information on JAMWG, contact [kelly.t.visconti.ctr@mail.mil](mailto:kelly.t.visconti.ctr@mail.mil).

## Test and Evaluation

The Developmental Test, Evaluation, and Assessments (DTE&A) office is leading an initiative to champion and shape guidance on T&E in a Digital Engineering environment in coordination with the SE and T&E community. To further enhance partnerships and adopt best practices, DTE&A is hosting bimonthly workshops. These series of workshops are designed to address various challenges posed by the community, including the evolution of T&E planning and execution within the DE environment, given Model-Based Systems Engineering (MBSE), Mission Engineering, and automated testing. The most recent workshop took place on June 15, 2021, addressing T&E in a Digital Engineering Ecosystem. The next workshop is scheduled for August 17, 2021, on the topic “Planning for T&E in a Digital Engineering Environment.” For more information, contact Jean Petty at [jpetty@mitre.org](mailto:jpetty@mitre.org).

## Metrics

Representatives from the Aircraft Industries Association (AIA), the International Council on Systems Engineering (INCOSE), and the National Defense Industrial Association (NDIA) have formed a Digital Engineering Metrics Working Group. The group is using Practical Software Measures guidance to develop metrics and is planning to release an initial set of metrics specifications for digital and model-based engineering by the end of the year. If you would like to be involved in this effort please contact the chair, Joseph Bradley, at [atjoseph.bradley@mainsailgroup.com](mailto:atjoseph.bradley@mainsailgroup.com). The Systems Engineering Research Center (SERC) is conducting a project to test these metrics specifications with selected DoD programs. If you are interested in participating, contact Tom McDermott at [tmcdermo@stevens.edu](mailto:tmcdermo@stevens.edu).



## The INCOSE Digital Engineering Information Exchange Working Group (DEIXWG)

The DEIXWG held a panel session at the INCOSE International Symposium. Terri Chan (Boeing) moderated a panel consisting of Philomena Zimmerman (OUSD), Celia Tseng (Raytheon), Tamara Hambrick (Northrop Grumman), and Sean McGervey (JHU/APL) that discussed recent activities of the DEIXWG and also explored the future of Digital Engineering. If you are interested in participating, please contact Sean McGervey at Sean.McGervey@jhuapl.edu.



## Digital Engineering Competency Framework

The SERC completed a project to develop a Digital Engineering Competency Framework (DECF). DECF version 1.1 describes five competency groups, nine competency subgroups, and 31 competencies. The five competency groups are Data Engineering, Modeling and Simulation, Digital Engineering and Analysis, Systems Software, and Digital Enterprise Environment. To access the DECF reports, visit <https://sercuarc.org/serc-programs-projects/project/86/>

## SERC Talks

The SERC Talks for the remainder of 2021 will be focused on T&E, led by Laura Freeman (Virginia Tech). The series kicks off on August 18 at 1:00 pm EST with guest speaker Darryl K. Ahner, Ph.D., P.E., Director, Scientific Test and Analysis Techniques Center of Excellence, and Interim Dean for Research, Air Force Institute of Technology. To view past SERC Talk recordings and register for upcoming talks, visit <https://sercuarc.org/serc-talks/>



## Upcoming Events:

### 08/02-06/2021 AIAA Aviation Forum

<https://www.aiaa.org/aviation/>

### 08/05/2021 DAU Microelectronics Series #3 - Digital Twinning

<https://www.dau.edu/events/Microelectronics%20Series%20Digital%20Twinning>

### 08/05/2021 Air Force Institute of Technology (AFIT): SYS 400 Current Topics in Acquisition Support

<https://www.afit.edu/LS/course.cfm?c=56>

### 09/14 -16/2021 AIAA Defense Forum

<https://www.aiaa.org/defense/>

### 09/28/2021 Digital Mission Engineering (Webinar)

<https://www.phoenix-int.com/dme-keynote-webinar-digital-engineering-discussions-us-office-of-the-secretary-of-defense/>

### 10/4 -7/2021 24th Annual Systems and Mission Engineering Conference

<https://www.ndia.org/events/2021/10/4/24th-sme-conference/>

