Modular Open Online Systems Engineering Education



Modular Open Online Systems Engineering Education (MOOSE) is a MITRE experimental initiative created to make systems engineering learning material readily available and accessible. MOOSE modules aid in the understanding of the state of practice for domains including system of systems (SoS) engineering and mission engineering (ME).

MOOSE Concept

As the demand for systems engineering (SE) has grown, so has the need for more broadly available educational material to support the SE community. Traditional sources of education exist but aren't always the best solution. MOOSE was created to provide a cost-effective solution to educate a large number of learners in current SoS engineering and ME practices.

MOOSE provides users with practical approaches and methodologies designed to lower the barrier of entry for learners to apply state-of-practice techniques using various modeling capabilities.



Mission engineering is the deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects.

Mission Engineering Guide, OUSD R&E

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MOOSE Characteristics:

- Designed to be *modular*, so learners can choose the topics of immediate interest to them
- Comprised of *open*, publicly released content available to government, industry, and academic users
- Available *online,* requiring nothing more than an email address to create an account and access desired modules
- Centered around introductory and advanced *systems engineering* topics, including model-based systems and digital engineering
- An *educational* resource, offering on-demand, self-paced learning based on short course video modules, 30–60 minutes in length

System of Systems (SoS) Engineering

SoS engineering "deals with planning, analyzing, organizing, and integrating the capabilities of new and existing systems into a SoS capability greater than the sum of the capabilities of the constituent parts." (Defense Acquisition University)

Military applications for SoS engineering include the design of platforms (ship, aircraft, satellite, ground vehicle), information technology (networked information systems supporting operations), and missions (sets of systems working together to provide a broader capability or mission).

Mission Engineering (ME)

ME is "the deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects." (Defense Acquisition University)

ME is a top-down approach that delivers engineering results to identify enhanced capabilities, technologies, system interdependencies, and architectures. Its goal is to guide development, prototypes, experiments, and SoS to achieve reference missions and close mission capability gaps. ME uses SoS engineering in an operational mission context to inform stakeholders about building the right things, not just building things right. It guides capability maturation to address warfighter mission needs.

Information about MOOSE is available at *mitre.tahoe.appsembler.com*. For more information about MITRE, visit *mitre.org*.





MITRE MOOSE Website

mitre.tahoe.appsembler.com

Webinar Archive Also Available!

We also have a collection of recordings dating back to 2014 for the System of Systems Engineering Collaborators Information Exchange (SoSECIE) Webinars. They can be found online on the MOOSE website.

MITRE's mission-driven teams are dedicated to solving problems for a safer world. Through our public-private partnerships and federally funded R&D centers, we work across government and in partnership with industry to tackle challenges to the safety, stability, and well-being of our nation.

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