# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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#### Digital Engineering Toolchain: Requirements and Implementation

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#### Abstract

This presentation documents MITRE’s Digital Engineering (DE) Toolchain, an effort to build a digital engineering environment that connects people, processes, tools and data across an end-to-end digital enterprise. This work makes use of models to digitally represent the system or System of Systems (SoS) of interest throughout the life cycle. The approach is motivated by the DoD Digital Engineering Strategy1 (DES) which is intended to guide the planning, development, and implementation of the digital engineering transformation across the DoD.

Digital Engineering Toolchain is a MITRE internal capability development project that aims to break silos of engineering and acquisition disciplines by enabling reliable, repeatable, standards-based digital exchange of authoritative information on systems and SoS design, missions and relevant operational environments. DE Toolchain partners with Systems Engineering (SE) efforts focused on specific systems and SoS to document existing engineering workflows and identify portions of the workflow where data is repeatedly exchange between specialists from different technical and acquisition domains.

This presentation details lessons learned from implementation of DE Toolchain on several engineering projects. A set of available commercial and open source software solutions is assessed against the main requirements for DE environments. Examples of successful integration among several disciplinary tools are demonstrated. Finally, the needs of the multidisciplinary acquisition community for accessible information and online training in DE tools and methodologies are briefly addressed.

#### Biography

Dr. Aleksandra Markina-Khusid leads the Systems and Mission Analysis Department at the MITRE Corporation. Aleksandra supports a variety of SoS modeling efforts for the DoD and civilian agencies. She is the Project Leader for MITRE’s Digital Engineering Platform. Dr. Markina-Khusid holds a BS degree in Physics, MS and PhD degrees in Electrical Engineering, and an MS in Engineering & Management, all from the Massachusetts Institute of Technology.