

Is CAD A Good Paradigm for MBSE?

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Abstract. Those looking to advocate for MBSE in the Systems Engineering field often turn to more established fields that have made a similar transition to models to assure others it will be beneficial. One practice that is often compared to MBSE is Computer-Aided Design (CAD) from the field of mechanical engineering. However, when examining the definitions of MBSE against CAD, it is evident that while CAD can be considered a method of mechanical drawing, MBSE cannot be described as only a method. MBSE is more than installing and utilizing software, it is a process in and of itself. Comparing MBSE to CAD runs the risk of oversimplifying the MBSE process and setting up expectations that may not be met. Therefore, while CAD represents the same paradigm shift as MBSE, it may not serve as an adequate paradigm. In this paper, we characterize and compare CAD and MBSE and identify the similarities and differences between them. We use the resulting insights to level the expectations of adopting and using MBSE.

Biography

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Kaitlin Henderson is a PhD candidate in the Grado Department of Industrial and Systems Engineering at Virginia Tech with a concentration in management systems. She received her BS and her MS degrees in industrial and systems engineering from Virginia Tech. Kaitlin earned best presentation award at the SERC Doctoral Student Forum in 2020. Her research interests include model-based systems engineering, organizational design, and performance measurement.