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DEVS Standardization: Foundations and Trends

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Abstract: Since the early 1970s, the modeling and simulation (M&S) community has been attempting to formulate approaches to modeling as system specification formalisms. In many cases, different models (i.e., mathematical representations) of the source systems existed before their computerized incarnations. Examples of this include, for instance, differential equations (which have continuous states and continuous time), models of systems operating on a discrete time base, and so on. As discussed in other chapters of this book, the DEVS formalism was defined to bring coherence to the field of discrete-event M&S by using an organized system-theoretical framework. In spite of this coherence and the unity that this theory introduces into the field of M&S, today, almost 40 years later, the Discrete Event System Specifications are still held hostage by their simulation language implementations and algorithmic code expressions. We believe that the need for a widely accepted framework is now more necessary than ever because of the fragmentation in the field that has resulted from the growing specialization of knowledge. The need for "knowledge workers" who can synthesize disciplinary fragments into cohesive wholes is increasingly recognized. M&S as a generic, nondiscipline specific, set of activities can provide a framework of concepts and tools for such knowledge work.