The simulation experiment description markup language (SED-ML): language specification for level 1 version 5

Abstract: Modern biological research is increasingly informed by computational simulation experiments, which necessitate the development of methods for annotating, archiving, sharing, and reproducing the conducted experiments. These simulations increasingly require extensive collaboration among modelers, experimentalists, and engineers. The Minimum Information About a Simulation Experiment (MIASE) guidelines outline the information needed to share simulation experiments. SED-ML is a computer-readable format for the information outlined by MIASE, created as a community project and supported by many investigators and software tools. Level 1 Version 5 of SED-ML expands the ability of modelers to define simulations in SED-ML using the Kinetic Simulation Algorithm Ontoloy (KiSAO). While it was possible in Version 4 to define a simulation entirely using KiSAO, Version 5 now allows users to define tasks, model changes, ranges, and outputs using the ontology as well. SED-ML is supported by a growing ecosystem of investigators, model languages, and software tools, including various languages for constraint-based, kinetic, qualitative, rule-based, and spatial models, and many simulation tools, visual editors, model repositories, and validators. Additional information about SED-ML is available at https://sed-ml.org/.