Guide to Modeling and Simulation of Systems of Systems
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Aspects and Multi-aspects

Abstract

This chapter starts with a discussion of how different aspects can be associated with the same entity and how this allows you to decompose a system in different ways. This leads to a consideration of the concept of multi-aspect which provides a uniform way to associate an unlimited number of related aspects with the same entity. Pruning a multi-aspect involves setting its multiplicity and restructuring it into an ordinary aspect with the specified number of components. We show how pruning of multi-aspects effectively open up a large space of simulation models with an unbounded variety of possibilities for coupling their components. Unfortunately, unless properly managed, this variety can also entail enormous amounts of detailed data entry which can be tedious and error prone. This leads to development of a uniform coupling rule which separates node-to-node network connectivity (specified by a directed graph) and port-to-port coupling which is forced to be uniform across all network connections. Some commonly employed schemes such as cyclic, cellular, and tree compositions have well defined digraphs with uniform couplings so they fit this mold.

Within this Chapter:

Related Content

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