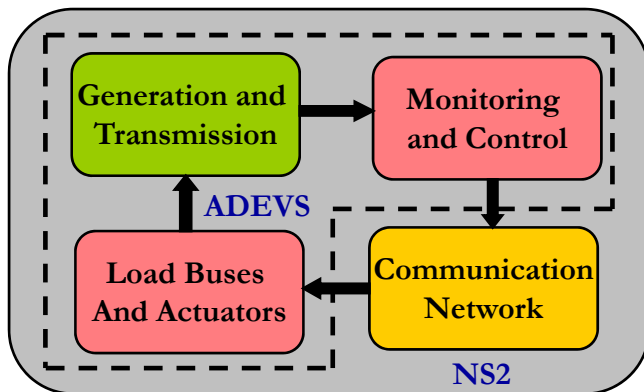
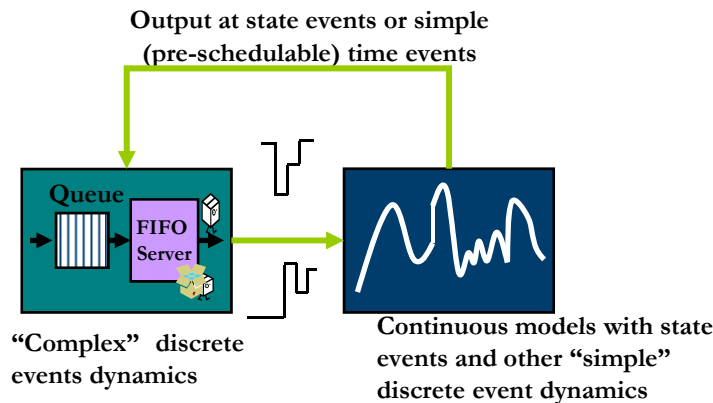


Toolkit for Hybrid Systems Modeling & Evaluation (THYME)

Modeling & Simulation Group



Problem Statement:

A new generation of large-scale distributed systems are emerging in which sensing, control processes, & actuation are separated by data communication networks. These hybrid systems can be found in electric power grids, automotive controls, & manufacturing processes. Simulation of such systems is essential for designing the next generation of communications-dependent systems. The goal is to develop software for complex hybrid systems that incorporates continuous models, large discrete event sub-components & packet-level network models.

Technical Approach:

THYME is an extensible framework for integrating continuous and hybrid system models into NS2 (open source network simulator) simulations. It includes a set of numerical integration schemes for solving ordinary differential equations & can be easily extended by users who require specialized simulation algorithms.

Benefit:

THYME will permit the accurate simulation of network-centric systems with continuous & discrete-event components.