

## Abstract

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In the design process of a system various simulations and experiments should be performed to study the behavior of the system, to analyse the system performance and to make design decisions. As virtually all high-tech systems are multi-disciplinary in nature the modeling and simulation methods must deal with interaction between the various disciplines to support the system design. It is important to bring the disciplines together in an early design stage in order to avoid severe problems at the system integration phase that cause delays and additional design effort (see the Boderc research hypothesis in Chapter 1).

In this chapter a system design trajectory is proposed that facilitates the design steps from initial models to final realization. The system (or part of the system) is considered to be composed of three components: the plant, the input/output (I/O) interface and the controller.