On the Roles of
Simulation, Analytical Modeling, and Measurement
in Solving Complex Problems

A Panel Presentation at the 1985 Winter Simulation Conference

organized and moderated by

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ABSTRACT

A variety of tools and techniques are used in the design phase of new products. Three major techniques used both to assess preliminary designs and to monitor progress from design to fruition include Analytic Modeling, Measurement, and Simulation. The three techniques can be viewed as a tripod of evidence supporting the realizability of a design. In this view, each complements and assists the others.

Measurement data provides facts from a prototype that can be extrapolated to the new product. This data can also provide valuable insight to interactions that may not be predicted from either analytical or simulation models.

Simulation experiments can provide better understanding of interactions and relationships among system components. These experiments can show which areas of the design need further exploration via the other techniques.

Analytic modeling can provide rapid answers to certain questions. It too can point to areas needing further design refinement and study.

There are facets of the design process where each technique is the most appropriate for use and provides the best results. Conversely, each of the three techniques has its own specific drawbacks and limitations. Fortunately, the techniques complement one another and can interact in a synergistic fashion to provide a whole that is greater than the sum of the parts.

The purpose of this panel presentation is to explore the roles and interrelationships of the three techniques. As of the proceedings publication deadline, the participants scheduled for this session include:

Ms. Edie T. Stevenson
A. T. and T. Information Systems

Dr. Edward D. Lazowska
Digital Systems Research Center

Professor Paul F. Roth
Computer Science Department
Virginia Polytechnic Institute & State University

Dr. Domenico Ferrari
Computer Science Department
University of California, Berkeley

Mr. Julian Reitman
Norden Systems