

# **Introduction to Discrete Event Modeling and Simulation: Arena and ProModel**

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## **Workshop Abstract**

This workshop introduces the concept of discrete event simulation of processes and systems found in the service industry, military, production, healthcare, and many other types of businesses and industry. Discrete event modeling is a mathematical procedure that is created to describe a dynamic process then the model is simulated so that it predicts possible situations that can be used to evaluate and improve system performance.

Discrete event modeling and simulation is used to create predictions of the system states during time intervals, which can be modified to examine what if situations. For example, a common use is to evaluate a waiting line, called a queue. The question that is often asked is how long on average would a customer have to wait in a line to get to a customer representative and if the wait time is excessive how it can be reduced. Adding additional customer reps is one solution but how many reps should be used is another common question. Modeling and simulation can help answer these questions without actually creating a physical situation that has to be measured which could be an expensive process.

Discrete event modeling and simulation is one of the newest computer software tools that can be used by managers and others who need to decide if a process or service is operating appropriately or can be improved and what should be changed to cause this improvement. Students in Engineering and Technology need to be aware of this new type of tool. Faculty is needed to teach this technology. Industrial managers need to know this tool is available to them to help them in their decision making process. This workshop will provide an introduction to modeling and simulation for this audience. Each workshop participant will be provided with evaluation disks for two software packages that are the two most popular discrete event modeling and simulation programs used in the US: Rockwell Automation Arena and ProModel Process Modeling (ProModel). Hands on work with each software including graphically oriented experiences, how to teach modeling and simulation, potential textbooks that can be used, suggested instructional project based instructional methods, example syllabi, and several specific case studies.

No specific knowledge is needed except for basic experience with a computer. Each participant must bring a windows based laptop to run the simulation software packages. Workshop is limited to 12 participants because of the number of evaluation software disks available.

## **Key Words**

Industrial Leadership, Engineering Curricula, Engineering Technology Curricula