

Thanapan Kongtong 2010: Development of Simulation Template for Supply Chain Network Analysis. Master of Engineering (Industrial Engineering), Major Field: Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Mr. Pornthep Anussornnitisarn, Ph.D. 111 pages.

Discrete event simulation is a popular tool for analyzing complex system, such as a factory or its supply chain networks however to develop a simulation model demand significant amount of time in requirement analysis, modeling, verification, and validation. To shorten the time of these activities, the simulation software developer such as Arena (Rockwell Software) developed a tool called template. Template development tool helps a modeler to combine command and logic into system object. The system object has a predefined logic with parameters where user can adjust to change the behavior of the system object. In this paper calls this system object as entity template such as machine template which combine queue and resource related command all together. So that the user only add a new template when new machine added into the model without creating new but similar commands.

The primary purpose of this study is to demonstrate the usefulness of the template development tool. By using supply chain management system as a case model, the entities such as suppliers, manufacturers, distributors, and retailers including their operating, logic are modeled in the form of template for a particular type of supply chain entity. These supply chain entity templates are tested with regular users who have knowledge of using simulation modeling software but do not frequently using it. The results show that the user can model the supply chain network with is considered as complex system in a short period of time. For example, the supply chain that consists of 5 suppliers, 1 manufacturer, 1 distributor, and 5 retailers can be modeled within thirty minutes in order to analyze the behavior of inventory of each entity and the entire supply chain network.

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