Abstract

A workflow describes the flow of various processes, taking place inside any establishment, in accordance with pre-determined definitions of business process. All these processes follow principles with respect to their place and objective inside of the framework they reside in. As described earlier, workflows involve certain principles with respect to how different processes have been defined. Designing a workflow model that conforms to uninterrupted execution of all the activities undermines the core of workflow. After defining different process, a model whereby all these processes are designated resources and timing, is crucial. This is where petri nets come in. Petri nets on the other hand, represent the best formalism for modelling. Because workflows need to be modelled, petri nets are the best choice since they also account for exceptions, resource allocation, individual and parallel execution and therefore, make the ultimate tool for modeling. In this work, we formally analyze and design the workflow of processes of deliverance of a utility service to the end user. Once we have formally designed the framework of the processes, we convert this framework into an equivalent petri net model, in order to determine the proper and uninterrupted flow of activities and providing solutions to various shortcomings that occur during the course of execution, using the analysis techniques offered by petri nets.

Keywords: Formal Methods, Petri nets, Modeling, Analysis, Framework, Design, Workflows, Processes, Resources, Exceptions, Failures