Studies in Workflow Structure and Correctness

Abstract

After a workflow is modeled, it must be verified for correctness before it is put to use.

and address correctness issues of workflows that make use of connectors like Inclusive OR, Synchronizing OR and Multiple Execution OR.

Dataflow verification has not yet received much attention from researchers. Tasks need data to execute. They also generate data after execution. The output data of a task can be fed to subsequent tasks as input. Errors sometimes arise in the flow of data causing data to be unavailable, inconsistent or redundant. There is a need to develop techniques for identifying and detecting all possible types of dataflow errors. We present an algorithm for detecting dataflow errors such as missing data, lost data, redundant data and redundant data in loops. We allow the revision of data by tasks. Our algorithm successfully detects errors in workflows with interconnected loops. It has been test run on many different workflows. Our study implies that it might be possible to develop a unified method for detecting control-flow and dataflow errors at the same time. We expect our error detection methods to prove useful to different categories of users including business analysts and process consultants.