

A Model for Abstract Process Specification, Verification and Composition *

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ABSTRACT

An abstract business process contains a description the protocol that a business process engages in without revealing the internal computation of the process. This description provides the information necessary to compose the process with other Web services. BPEL supports this by providing distinct dialects for specifying abstract and executable processes. Unfortunately, BPEL does not prevent complex computations from being included in an abstract process. This complicates the protocol description, unnecessarily reveals implementation details, and makes it difficult to analyze correctness.

We propose some restrictions on the data manipulation constructs that can be used in an abstract BPEL process. The restrictions permit a full description of a protocol while hiding computation. A restricted abstract process can easily be converted into an abstract BPEL process or expanded into an executable BPEL process. Based on these restrictions we propose a formal model for a business process and use it as the basis of an algorithm for demonstrating the correctness of a protocol described by a restricted abstract process. We then sketch an algorithm for synthesizing a protocol based on a formal specification of its outcome and the tasks available for its construction.