Compliance-Based Decomposition of Processes *

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Abstract. In service oriented computing, trend is also to decompose complex business processes for the purpose of querying, debugging, understanding and reuse. Contract or Compliance -based languages which underpin a complex process usually crosses cut over the whole applications, and the carried out business logic which is implemented in hard code to comply with those high level requirements may be very tricky and appears redundant. This renders the traceability from high level requirements to hard code for the traditional bottom-up purposes difficult. This is especially the case when one has to highlight the solely critical variables and actions that enable to verify a compliance rule. In the literature, two key notions of decomposition of a process are "similarity" querying and correct "decomposition" regarding variable dependencies. On one hand, similarity is tackled by many methods which are reachable analysis, temporal property or (statistical or classical) graph pattern matching providing 'sub' control flow or set of execution paths as output. On the other hand classical correct decompositions (slicing, parallelization) use static analysis to provide a subprocess as flexible as possible containing solely the necessary tasks, variables and sequencing that comply with the request. However, there is no method that combines current similarity and correct decomposition techniques, i.e., no "compliant" decomposition technique exists.
In this work we focus on temporal property-based compliance. We decompose a process in such a way it is consistent as an answer of a process query expressed in temporal logic. The decomposition remains compliant and highlights the necessary constraint to keep compliant. We show the method is relevant for compliance-based understanding and reuse of processes.

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