Abstract

With the booming business globalization, organizations tend to rely more on business process management to streamline their operations. All business experts agree upon the fact that time is a key resource for processes within organizations. Satisfying time constraints such as time deadlines is vital for a large set of processes. In our research work, we proposed a business process specification supporting a large set of advanced temporal constraints. In the premise of ensuring the correctness of already defined process models, we investigated an efficient verification approach to diagnose potential temporal violations of the process. After that, we automatically generated public view from private one, by tacking in consideration temporal properties. We proposed also a verification approach dedicated to Inter-organization business process (IOBP). Next, we extended our approach to support cloud resource allocation and the pricing strategies proposed by cloud providers (specially Amazon). We proposed to optimize/schedule the cloud resource allocation in business processes. Finally, we applied our previous work on Cyber physical systems by tacking in consideration temporal and physical properties. An approach based on constraints satisfaction problem is also proposed to verify the consistency of cyber-physical processes.

Keyword

Business process, Temporal properties, Cloud resource allocation, Cyber-physical systems, Formal verification.