

Towards agent-based petri net decision making modelling for cloud service composition: A literature survey

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An agent-based decision-making method for boosting cloud services composition and modelling such complex systems using petri net (PN) techniques was surveyed.

A survey of relevant and related literature was reported based on analyzing the surveyed works and explain their strengths and weaknesses.

How these technologies and techniques can be well-suited for CSC requirements in overcoming the most important documented challenges was addressed.

A couple of techniques to efficiently composite singular services in an automated way, supported by hybrid multi criteria decision making methodology to facilitate ranking and selection of compromise solutions were suggested.

The proposed techniques are quite impressive solution if we are systematically and mathematically formulated the whole process by Petri Nets.

Abstract

Context

In recent years, various complex and similar-function cloud services with different quality of service features are offered in services pool. Such diversity of services complicates the efficient selection of [atomic services](#) and the automatic provision of composited ones.

Objective

We aim to shed light on the significance of agent-based [decision-making](#) methods for boosting cloud services' composition and modelling such complex systems using [petri net](#) (PN) techniques.

Method

In this paper, we report a survey of relevant and related literature focusing on agent-based petri net decision-making modelling for cloud service composition (CSC). We analyse the surveyed works and explain their strengths and weaknesses.

Results

We found how these technologies and techniques can be well-suited for CSC requirements in overcoming the most important documented challenges. Aside from agent technologies for boosting CSC, [multi-criteria decision-making](#) (MCDM) methods are suitable for ensuring [service selection](#) for composition operatively because they match [end-user](#) requirements with the trade-off criteria that cloud

services are characterised with and are well-suited for the agent-based architecture. Furthermore, PNs are appropriate for supporting the modelling of such systems as groups of independent and loosely coupled modules.

Conclusion

We suggest using a couple of agent-based problem-solving techniques to efficiently composite singular services automatically. This utilisation must be supported with an integrated and hybrid [MCDM](#) methodology to facilitate the ranking and selection of compromise solutions. The proposed solutions will be impressive if the whole process is systematically and mathematically formulated by PNs. This survey can be used by researchers aiming to join this line of research for further achievement.