

## An Integrated Web-Based Workflow System for Design of Computational Pipelines in the Cloud

**Authors :** Shuen-Tai Wang, Yu-Ching Lin

**Abstract :** With more and more workflow systems adopting cloud as their execution environment, it presents various challenges that need to be addressed in order to be utilized efficiently. This paper introduces a method for resource provisioning based on our previous research of dynamic allocation and its pipeline processes. We present an abstraction for workload scheduling in which independent tasks get scheduled among various available processors of distributed computing for optimization. We also propose an integrated web-based workflow designer by taking advantage of the HTML5 technology and chaining together multiple tools. In order to make the combination of multiple pipelines executing on the cloud in parallel, we develop a script translator and an execution engine for workflow management in the cloud. All information is known in advance by the workflow engine and tasks are allocated according to the prior knowledge in the repository. This proposed effort has the potential to provide support for process definition, workflow enactment and monitoring of workflow processes. Users would benefit from the web-based system that allows creation and execution of pipelines without scripting knowledge.

**Keywords :** workflow systems, resources provisioning, workload scheduling, web-based, workflow engine

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