

十一、研究計畫中英文摘要：請就本計畫要點作一概述，並依本計畫性質自訂關鍵詞。

(二) 計畫英文摘要。(五百字以內)

Keywords: workflow, agent-based workflow management system, scripting approach, IC design cycle

A workflow is a composite process that consists of tasks, activities, involving human, resources and software tools. It is used to provide the automation and coordination of a process. Traditional process management uses a centralized workflow engine to control entire processes. The activities and execution paths are determined at design time. The workflow engine executes the straightforward tasks defined in the process specification. It does not have the ability to modify the workflow dynamically. However, in distributed environment, activities may be owned and administrated by individual agencies. The activities and environment may change over time. The execution of a process has uncertainty and failure risk.

Agent-based workflow systems are considered to have more benefits than traditional ones. Using autonomous agents is able to provide more flexible workflow to determine the execution at run-time. In this proposal, a scripting approach is proposed to assist an agent-based workflow system. In order to allow task allocation in execution time and rapid composition of workflow agents, the internal workflows of agents are represented by using scripting language instead of system programming language. In the design of script syntaxes, task allocation, agent cooperation and dynamic adaptation are considered to support autonomy and cooperation in the agent systems. For workflow execution, a multi-agent architecture is also proposed based on JADE platform. Finally, to demonstrate the feasibility, an IC Design Cycle Assistant System (ICDCAS) will be implemented based on the proposed approach to assist IC designers in handling design cycle.