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Towards a more flexible inter-organizational workflow design: the application of local criteria principle

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**Towards A More Flexible Inter-organizational Workflow Design:
The Application of Local Criteria Principle**

A thesis submitted in partial fulfillment of the requirements for the award of the degree

Master of Information System (Research)

From

University of Wollongong

By

Geng Liang

(2854004)

Information Systems

School of Economics and Information Systems

2006

Thesis Certification

CERTIFICATION

I, Geng Liang, declare that this thesis, submitted in partial fulfilment of the requirements for the award of the Degree of Master of Information Systems (Research) at the University of Wollongong, is wholly my own work otherwise I have given fully documented references or acknowledgement to the work of others. The document has not been submitted for qualification at any other academic institution.

Geng Liang

March 2006

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Abstract

Process oriented technique such as workflow management system is attracting increasing attentions in the e-commerce environment, especially from an inter-organizational workflow perspective. A soundness concept, which identifies if a workflow can terminate properly, is an important factor that needs to be considered when designing a workflow. In an inter-organizational workflow environment, the soundness issues become more complicated considering the size of the overall workflow and the privacy of the workflow within individual organization. One of the major approaches to tackle this problem is to use local criteria principle. This principle allows the soundness of the entire inter-organizational workflow to be achieved without knowing the detail workflow of every participating organization. This way, the privacy problem is addressed. Moreover, the coordination effort among business partners to ensure soundness can be reduced. However, this principle sometime can become too restrictive when we attempt to ensure the overall workflow is sound while changes are made to the workflow. It is not always easy to reach a balance between achieving soundness and flexibility.

The public-to-private (P2P) approach is one of the important inter-organizational workflow design methods that follow the local criteria principle. The concept of branching bisimulation is considered as the local criterion in the P2P approach. This research investigates approaches to make the P2P approach more flexible by proposing a limited equivalence concept in an inter-organizational workflow context that can function as a local criterion. This research will also prove that this new local criteria concept will make the overall inter-organizational workflow sound.