

Available online at www.sciencedirect.com



Data & Knowledge Engineering 50 (2004) 87-115



www.elsevier.com/locate/datak

A case-based reasoning framework for workflow model management

Therani Madhusudan *, J. Leon Zhao, Byron Marshall

MIS Department, University of Arizona, Tucson, AZ 85721, USA Available online 25 January 2004

Abstract

In order to support efficient workflow design, recent commercial workflow systems are providing templates of common business processes. These templates, called cases, can be modified individually or collectively into a new workflow to meet the business specification. However, little research has been done on how to manage workflow models, including issues such as model storage, model retrieval, model reuse and assembly. In this paper, we propose a novel framework to support workflow modeling and design by adapting workflow cases from a repository of process models. Our approach to workflow model management is based on a structured workflow lifecycle and leverages recent advances in model management and case-based reasoning techniques. Our contributions include a conceptual model of workflow cases, a similarity flooding algorithm for workflow case retrieval, and a domain-independent AI planning approach to workflow case composition. We illustrate the workflow model management framework with a prototype system called Case-Oriented Design Assistant for Workflow Modeling (CODAW).

Keywords: Case-oriented workflow modeling; Case-based reasoning; Ad hoc workflows; Model reuse

1. Introduction

Business process modeling is a critical activity in modern organizations to enable enterprise application integration, standardization of business processes, and online B2B and B2C E-commerce. The importance of business process modeling in IT-enabled business process management

* Corresponding author.

E-mail addresses: madhu@email.arizona.edu (T. Madhusudan), lzhao@bpa.arizona.edu (J.L. Zhao), byronm@ eller.arizona.edu (B. Marshall).