Media360 workflow - Implementing a Workflow Engine Inside a Database

Carsten Blecken

Informix
4100 Bohannon Drive
Menlo Park, CA 94025
USA
Carsten.Blecken@informix.com

Abstract

I describe a Workflow Management System, where the workflow engine is implemented inside a database. The focus here is on the architectural approach and on the lessons learned from a commercial implementation in the workflow component of the Informix Media 360 content management solution.

Conceptually, the two main primitives of workflow are activities, which represent the work items of a larger process (containing either predefined or user-defined logic) and transitions, which describe the flow logic – in essence in what order and under what conditions the activities are being executed.

Existing workflow systems are typically implemented with an n-tier architecture. The flow logic necessary to execute the workflow , user-defined logic and pre- and post-activity logic is all usually implemented in a middle tier, although the workflow-relevant data is stored in a back-end database.

However, it is rather straightforward to use features of a modern Object Relational Database Management Systems like Informix Internet Foundation.2000 to implement a workflow engine completely inside a database. The flow logic can be implemented using the trigger concept, which 'fires' an appropriate transition to execute the next activity. User-defined logic, and pre- and post-activity logic are implemented using database functions or routines, which are a common extensibility feature of any ORDBMS. There is a wide array of programming languages available to express user-defined logic.

The principal advantage of such an approach is that the workflow logic is kept directly where the workflow data resides, resulting in a more efficient, simpler and more compact system design. It also aids with the embedding of database-centric workflow into a larger framework application, since a DBMS is part of all enterprise applications.

Finally, I discuss the advantages and disadvantages of this conceptual approach, and show how additional common workflow features can be added to the current architecture of the Informix Media360 workflow component.