# TP-Monitor-based Workflow Management System Architecture

Christoph Bussler
*The Boeing Company, Applied Research and Technology*
*P. O. Box 3707, m/s 7L-70, Seattle, WA 98124-2207, U. S. A., Christoph.Bussler@pss.boeing.com*

## Abstract

*Workflow Management System (WFMS) implementations traditionally follow a client/server architecture with monolithic servers (workflow engines). This poster presents a WFMS architecture based on a TP-Monitor environment which partitions the workflow engine into several resource managers (RMs) individually managed by a TP-Monitor environment. The RMs together form the workflow engine serving user requests.*

## 1. Workflow Meta-Model and Workflow Execution Semantics

In order to partition the workflow execution across several cooperating RM within a TP-Monitor environment [GrRe93], the workflow meta-model as well as the workflow execution model must support partitioning accordingly [JaBu96]. Figure 1 shows a workflow meta-model supporting partitioning (for details see [Buss98, JaBu96]).

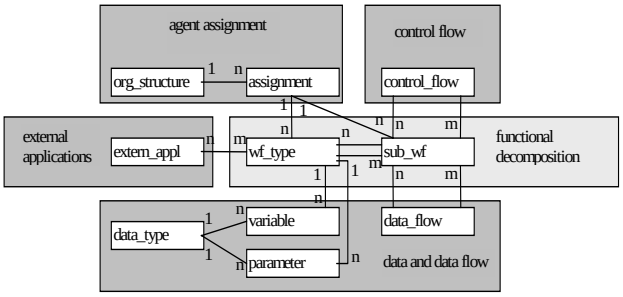


Figure 1: Partitioned workflow meta-model

## 2. TP-Monitor-based WFMS Architecture

In Figure 2 a 3-tier TP-Monitor architecture [GrEd95] is shown. Additionally, Figure 2 depicts five resource manager implementing different partitions of the workflow meta-model. For example, “FD” implements the partition “functional decomposition” shown in Figure 1. Furthermore, Figure 2 contains an invocation path of a user calling the method “create” to create a workflow instance. The invocation path shows that only three out of the five resource manager are involved in executing “create”.

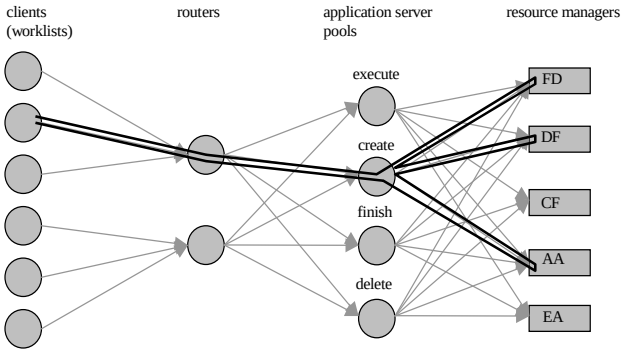


Figure 2: Architecture of a TP-Monitor-based WFMS

## 3. Workflow RM Architecture

Each resource manager consists of a workflow independent layer as well as a workflow dependent layer (Figure 3). Chapter 6.4 in [GrRe93] provides the construction principle of building specialized RM based on generic ones (like a relational database management system).

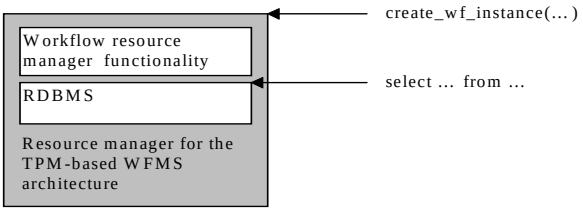


Figure 3: Workflow Resource Manager Architecture

## 4. References

[Buss98] Bussler, C.: *TP-Monitor-based Workflow Management System Architecture*. Technical Report. The Boeing Company, December 1998

[JaBu96] Jablonski, S.; Bussler, C.: *Workflow Management – Modeling Concepts, Architecture and Implementation*. International Thomson Computer Press, September 1996

[GrEd95] Gray, J.; Edwards, J.: Scale Up with TP Monitors. In: *Byte*, April 1995

[GrRe93] Gray, J.; Reuter, A.: *Transaction Processing: Concepts and Techniques*, Morgan Kaufmann Publishers, San Mateo, 1993