



Beyond Rigidity - Lifecycle Management for Dynamic Processes

Abstract

The economic success of an enterprise increasingly depends on its ability to react to changes in its environment in a quick and flexible way. Recently, a new generation of process-aware information systems (PAIS) has emerged to provide this flexibility and to support dynamic processes. Similar to classical information systems development lifecycles, studies on life cycle support for dynamic business processes are often sweeping the issues pertaining to post deployment change management, under the banner of maintenance. However, the pervasiveness of dynamic changes in business processes warrants targeted attention.

This tutorial presents a review of the basic challenges and techniques that exist for life cycle management of dynamic processes. Our approach is to present ideal support for the needs of the various life cycle phases and then to deliberate on various developments from academia and industry in terms of their closeness to these needs, thus identifying open questions where relevant. A case study is presented which forms a motivational backbone for the whole tutorial. A detailed discussion of the process lifecycle structured around the three main phases of design, execution, and monitoring & analysis and proof-of-concept demonstrations are provided.

Outline

The tutorial is split into 3 parts covering the three phases of the process lifecycle:

Part I: Definitional Phase (by Shazia Sadiq):

We discuss business process definition both from a management strategy perspective and from a means to realize executable processes. This covers:

- a survey on approaches to business process modelling (including best practice templates, reference models, formal languages, patterns and standards)
- a presentation of the specific challenges for modelling the dynamic process as well as the various solutions and approaches (e.g., case handling, emergent workflow, exception handling, rule driven)

Part II: Execution Phase (by Barbara Weber):

We discuss challenges and solutions for flexible process execution and particularly motivate the importance of run-time process adaptability. This covers:

- a survey on state-of-the-art technology enabling ad-hoc changes, late modelling and late binding.
- a discussion of change patterns and change features in PAIS as well as a pattern-based comparison of state-of-the-art technology for dynamic processes

Part III: Monitoring & Analysis Phase (by Manfred Reichert):

We discuss challenges and solutions related to the monitoring and analysis of process execution data. This covers:

- process performance analysis and organizational learning based on process logs (i.e., execution as well as change logs)
- discovering process improvements by mining these process logs
- implementing process changes through process schema evolution techniques

The final discussion at the end of the tutorial comprises a summary on open questions.

Presenters Background



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Barbara Weber is currently Assistant Professor in the Department of Computer Science at the University of Innsbruck, Austria. Here she also obtained her PhD degree. Barbara is a member of the Quality Engineering research group and is involved in teaching and research in business processes and workflow management. Her main research interests are agile and flexible processes and intelligent user support in flexible systems. This spans several technology areas including workflow management systems, case-based reasoning, process-oriented knowledge management, enterprise information systems, process mining, and agile software development. To allow for the exchange of ideas with practice she is engaged in third-party funded projects with partners from different domains (e.g., healthcare, logistics). In the area of dynamic workflows Barbara has published several papers on topics like integrated process lifecycle support and change patterns. Further, Barbara has been organizer of several international workshops like Proflex'06, ProGility'07 and BPI'07 as well as of a think tank on business agility at AGILE 2007, which are related to dynamic workflows.



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Shazia Sadiq is currently Senior Lecturer in the School of Information Technology and Electrical Engineering at The University of Queensland, Brisbane, Australia. She is part of the Data and Knowledge Engineering (DKE) research group and is involved in teaching and research in databases and information systems. Shazia holds a PhD from The University of Queensland in Information Systems and a Masters degree in Computer Science from the Asian Institute of Technology, Bangkok, Thailand. Her main research interests are innovative solutions for Business Process Management that span several technology areas including workflow systems, service oriented computing, messaging technologies, and deployment of large scale distributed devices. Shazia has contributed widely to the body of knowledge in the field of dynamic workflows and has published several papers on this topic.



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Manfred holds a PhD in Computer Science and a Diploma in Mathematics. Currently, he is working as Associate Professor in the Information Systems Group at the University of Twente (UT), The Netherlands. At UT he is also leader of the strategic research orientation on e-health and member of the Management Board of the Centre for Telematics and Information Technology (CTIT), which is the largest ICT research institute in the Netherlands (with more than 400 researchers). Before Manfred joined UT in October 2004 he was working as Assistant Professor in the Institute for Databases and Information Systems at Ulm University, Germany. Here he also finished his PhD thesis on adaptive process management (with honors). His major research interests are next generation process management technology (e.g., adaptive processes, process lifecycle management, process visualization, data-driven workflows), service-oriented architectures (e.g., service interoperability, service change), and advanced applications for ICT solutions (e.g., e-health, automotive engineering). Together with Peter Dadam he pioneered the work on the ADEPT process management system. Manfred has been participating in numerous research projects in the BPM area and contributed numerous papers. Finally, he has co-organized international and national conferences and workshops.