

# Second IEEE Workshop on Agile Cooperative Process-Aware Information Systems (ProGility 2007) - Workshop Report

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## Abstract

*The goal of the ProGility workshop is to bring together practitioners and researchers from different communities who share an interest in agile cooperative process-aware information systems. The vision is to be able to rapidly implement new processes and to quickly adapt existing process implementations to environmental changes. This workshop report gives an overview of the presented papers that address various flexibility issues of process-aware information systems.*

## 1 Introduction

The economic success of an enterprise more and more depends on its ability to react to changes in its environment in a quick and flexible way. Business trends such as increasing product and service variability, quicker time-to-market, and increasing division of labor along a global supply chain of goods and services force enterprises to collaborate with each other in networks that are dynamic, flexible, ad-hoc, and adaptive. Thus enterprises are developing a growing interest in new concepts, systems, and solutions which help them to flexibly align their organizational structures, business processes, and supporting information systems to these new requirements and to optimize interactions with customers and business partners. While there has been major progress in disciplines that are interested in structured and unstructured intra-organizational business processes, the agile enterprise is still a vision. Agility in this context refers to the ability of an enterprise to rapidly set up new business processes and projects in order to quickly adapt to changes in the environment. To support these changes, traditional enterprises have to align their existing information systems while virtual enterprises need to customize and integrate the individual partner processes. To

meet its business objectives, the agile enterprise continuously re-aligns its business processes as well as the interactions with its partners and customers to meet the current requirements.

The ProGility workshop is a merger of two previous WETICE workshops on process flexibility (ProFlex) and process integration (PINCET). Building upon the success of these workshops, the goal of the ProGility workshop is to bring together practitioners and researchers from different communities such as BPM, software engineering, service-oriented computing, artificial intelligence, and Computer Supported Cooperative Work (CSCW) who share an interest in flexibility of cooperative process-aware information systems and team support in both an intra- and inter-organizational setting. The workshop aims at discussing the current state of ongoing research and at sharing practical experiences. Submitted papers have been evaluated on the basis of significance, originality and technical quality.

## 2 Overview of the Papers

The paper by Bobrik and Bauer presents ongoing work done in the Proviado project on the visualization of large business processes. The presented approach provides for flexible and highly configurable business process visualizations, which can be personalized and adapted to users' needs. In detail, Proviado distinguishes three dimensions for process visualization: First, it allows to reduce complexity by discarding or aggregating process information not relevant in the given context. Second, the notation and graphical appearance of process elements (e.g., activities, data objects, control connectors) is customizable. Third, different presentation forms (e.g., process graph, swim lane, calendar, table) are supported. Regarding the first dimension, Proviado provides a powerful and customizable view mechanism. The supported view concept allows to flexibly adapt the presented process information through customiz-

able graph aggregation and graph reduction techniques.

The paper by Minor, Schmalen, Koldehoff and Bergmann addresses run-time process flexibility. In the proposed approach flexibility is achieved through structural adaptations of process instances, late planning, and breakpoint mechanisms. Structural adaptations of running process instances (e.g., to add or delete process steps) are supported by an authoring component. This component also enables the case-based retrieval of similar past workflows. Similarity calculation is based on the structure and the status of the ongoing process instance as well as on its context. The late modeling feature allows to deal with uncertainty by leaving parts of the model unspecified during build-time and by deferring the decision how the respective parts should look like to the run-time. Finally, the suggested breakpoint mechanism ensures that parts of a process can be further executed while other parts have to be blocked in order to decide about a change.

Mueller, Reichert, Herbst and Poppa present a tool which addresses one of the biggest challenges for cooperative processes in the engineering domain, namely the modeling, coordination and maintenance of the many interdependencies existing between the different sub-processes in engineering. For dealing with this challenge, the COREPRO project follows a model-driven approach. It allows to semi-automatically derive process structures from large data structures. Basic to this is the observation that in the engineering domain respective process structures are characterized by a strong relationship with the assembly of the product; i.e., the sub-processes to be coordinated can be related to the different product components. COREPRO utilizes this information about the product and its structure for deriving, coordinating and maintaining such data-driven process structures. This will be of particular benefit if hundreds up to thousands of sub-processes have to be coordinated (as it is the case, for example, in the automotive domain).

Mehandjiev, Stalker and Carpenter present an approach which aims at more flexible supply chains. In particular, companies and large organizations should be enabled to build *Instant Virtual Enterprises* in order to react to emerging market opportunities. For this, the authors suggest an approach, which is based on coordination theory and virtual organizations. By systematically delaying the recruitment of partners more flexible supply chains can be built.

Vonk, Wang and Grefen aim at more agility by facilitating the exchange of services or partners. The authors argue that bridging the gap between business-level SLAs and IT-level SLAs is fundamental. The paper focuses on transactional QoS and suggests a mapping between process and services.

Finally, the paper of Ziemann, Werth, Matheis and Kahl present ongoing work towards tool support for integrated

modeling of private and public business processes. The paper presents a view concept for modeling private and public processes. The tool aims at supporting the transformation of public to private processes as well as the transformation of business level representations to executable process specifications (i.e., technical level).

### 3 Conclusion and Future Research Topics

The different papers illustrate various flexibility needs of process-aware information systems (PAIS) from different domains, and they make evident that any PAIS will not be accepted by its users if rigidity or inflexibility comes with it. Flexibility issues do not only arise at the level of intra-organizational business processes, but increasingly emerge at the level of business collaborations (i.e., inter-organizational business processes) as well. Many different aspects have to be considered when realizing flexible process support including the correctness of (dynamic) process changes, ease of change, cost of change, and security.

Often, tool vendors promise flexible technologies and paradigms for realizing process-aware information systems, but are often unable to cope with fundamental issues related to process flexibility and process change (e.g., correctness and robustness). The existence of different process support paradigms and the lack of methods for comparing existing change approaches makes it even more challenging for PAIS engineers to choose the adequate technology. This necessitates a framework which fosters the systematic comparison of existing process management technologies with respect to their flexibility and change support. The recent emergence of change as well as exception handling patterns constitute an important step towards such a comparison framework. Furthermore, more experimental and empirical research is needed in future.

Though considerable progress has been achieved with respect to the realization of flexible PAIS, a lot of challenges remain. While there exist many approaches and paradigms for the flexible support of intra-organizational processes, only little flexibility support has been provided for inter-organizational processes so far. One major challenge existing in this context concerns the evolution of process choreographies, i.e., the change of interactions and message exchanges between the partner processes in a cross-organizational setting. If respective modifications are conducted in an uncontrolled manner, severe inconsistencies or errors might occur in the sequel. In particular, modifications of private processes performed by a single party may indirectly affect the implementation of the private processes of partners as well. What is needed is a powerful change framework for choreographies that allows process engineers to reason about changes of private processes and their effects on public processes as well as on partner processes.