

Demonstration of the Agile Workflow Management System CAKE II Based on Long-Term Office Workflows

Mirjam Minor, Daniel Schmalen, and Stephan Kempin

Department of Business Information Systems II, University of Trier,
54286 Trier, Germany
[\[minor,schmalen,kemp4102}@uni-trier.de](mailto:{minor,schmalen,kemp4102}@uni-trier.de)

Abstract. This demonstration extends previous work on the agile workflow management system CAKE II [2]. CAKE focuses on structural changes of long-term workflows at run time. A workflow modeling GUI that allows the user to suspend parts of an ongoing workflow instance and to adapt it is demonstrated in conjunction with CAKE's workflow enactment service and a worklist GUI. The CAKE prototype has been applied in chip design, in the banking sector, and in the office domain. This demo uses a repository of office workflows that have been collected during a case study with three offices of research groups at the University of Trier. The repository consists of 24 workflow templates, for instance, on making an application for leave and of agile instances that deal with unforeseen cases like finding a substitution for a professor in order to get a signature. The demonstration aims at showing how CAKE is able to handle structural adaptations in form of ad hoc changes and late modeling, which both occur frequently in office workflows.

Keywords: workflow management system, flexibility, adaptive workflows, long-term workflows.

1 Introduction to CAKE II

The agile workflow management system CAKE II has been developed for long-term workflows that require structural adaptations during run-time [4]. Long-term workflows are workflows that are executed over several days, weeks, or even months. Typical ad-hoc changes are, for instance, to re-order some parts of a workflow or to insert an additional task. Late modeling is a previously expected adaptation of a workflow's structure.

CAKE is a prototypical implementation that supports flexibility of workflow instances (ad-hoc changes and late modeling) by novel concepts like a suspension mechanism using *breakpoints*, which prevent the workflow engine from overrunning tasks that are about to be modified. Furthermore, a special *loop handling* is implemented that separates future iterations from the presence by means of master copies. This is a prerequisite for applying changes to ongoing loops. Late-modeling is facilitated by *hierarchical process models*. CAKE has been applied so far to three real world scenarios: to the project management of a real chip design project with

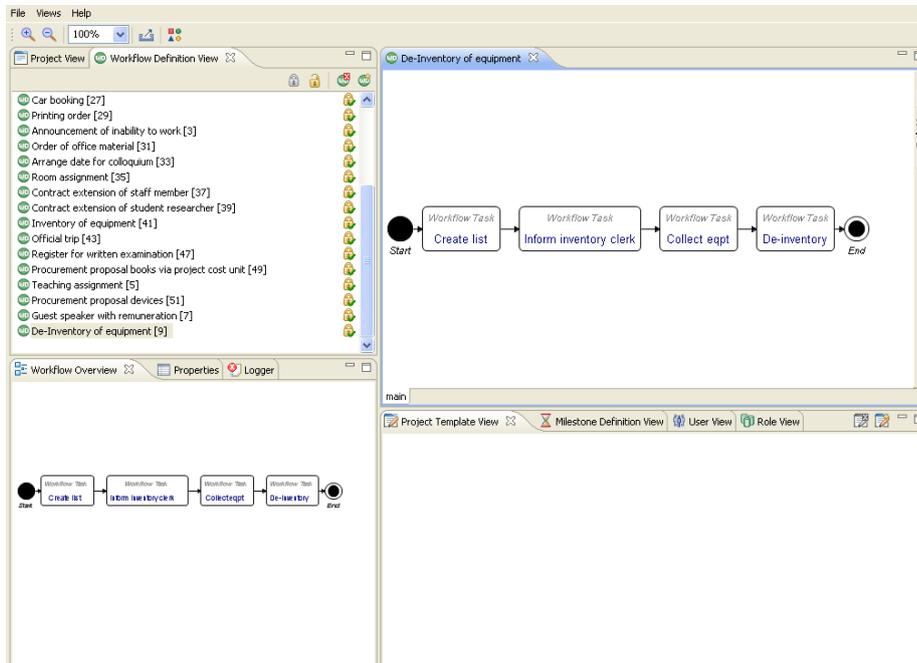


Fig. 1. Snapshot of the CAKE modeling tool with a sample workflow template.

extremely large process models [4], to processes in the banking sector, and to the office domain. Those real-world scenarios have in common that they benefit from agile workflow technology concerning the following issues: adaptability to changes, transparency of the state of execution and evolution (that is the adaptations that have been carried out) for the other workflow participants, and automated documentation including deviations from the standard processes.

This demonstration uses samples from the office domain in order to give insight in CAKE's modeling GUI, its workflow enactment service, and the Web-based worklist GUI. For a more detailed presentation of CAKE's system architecture, we refer to the literature [3].

2 Content of the workflow repository

The workflow repository [1] that serves as a basis for this demonstration consists of office workflows in three different representation forms:

- Textual description of the office process
- Graphical representation of the workflow according to a control-flow oriented modeling language (see [4] for a detailed description)
- Tree representation of the workflow that can be transformed automatically to and from the graphical representation (see [2] for a detailed description)

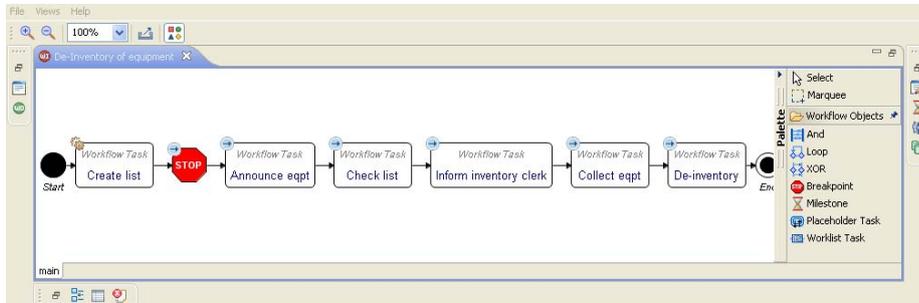


Fig. 2. Snapshot of the CAKE modeling tool with a sample of an adapted instance.

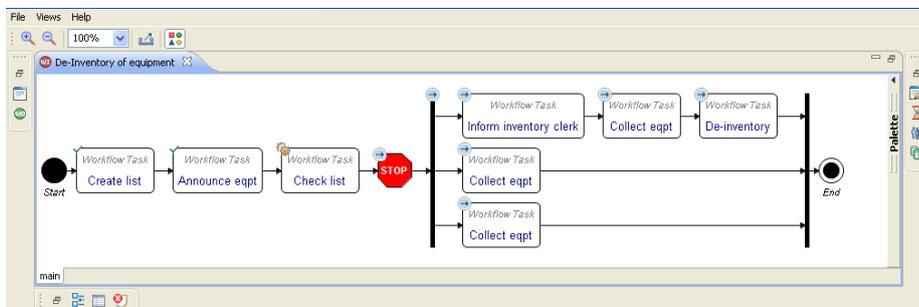


Fig. 3. Snapshot of the CAKE modeling tool with a sample instance adapted a second time.

Figure 1 presents on the upper left hand side an overview of some typical office processes that have been reported during interviews. The textual description of the process “De-inventory of equipment”, for instance, has been the following [A. Jacoby, personal interview, December 11, 2008, own translation]:

“A list of equipment to be de-inventoried is created and the inventory clerk is directed for collection. The inventory clerk collects the equipment and deletes it from the University’s inventory list.”

The graphical representation of the workflow template that has been derived from this text is illustrated on the right hand side of Figure 1. The usual sequence of activities is ‘Create list’ of equipment that is to be sorted out like computers or printers, ‘Inform inventory clerk’ who sends somebody to collect the quipment in ‘Collect eqpt’, and finally to perform the ‘De-inventory’, i.e. to deactivate the inventory numbers of the concerned items of equipment.

Figures 2 and 3 show two sample adaptations of an ongoing workflow instance. Figure 2 depicts a sample for an ad-hoc change namely making an announcement via the staff mailing list on the equipment to be de-inventoried. Interested persons can inherit parts of the equipment. This happens quite often with pieces of furniture. The description of the ‘Check list’ activity that is to appear on the user’s worklist indicates that there might be required further changes of the workflow in case of replies from the colleagues. Figure 3 presents a sample for the actual late modeling that follows

some weeks later to the changes in Figure 2. While the 'Check list' activity is performed, the office manager knows about two parties that are interested in different parts of the equipment. The office manager adapts the workflow instance by two additional, parallel branches to let the colleagues collect those pieces of equipment. The inventory numbers of the reused pieces are not scheduled to be deactivated any more, which is documented within the checked list that is passed to the inventory clerk in the upper branch.

Further samples of adapting this workflow are imaginable, for instance an additional activity 'Find interim storage facility' when the date for collecting the equipment in one of the parallel branches has to be delayed significantly. For this, the stop sign has to be moved to the concerned branch while the uninvolved, parallel branches can continue the execution.

The repository including 24 workflow templates (see Table 1) and 24 sample adaptations of instances is available to the public via the Internet [1]. The free use of the repository data is granted for noncommercial and academic use only.

3 Conclusion

This demo is for both practitioners and researchers in the field of business process modeling. It contributes to modern business process management as it highlights the relevance and applicability of the novel methods of agile workflow technology by means of real world sample processes. A discussion of related, adaptive approaches can be found in the literature [4]. The occurrence of so many agile workflow instances in a rather straightforward area like the office domain in conjunction with the ability of the office people to deal with the adaptation methods with ease have proven that flexibility is an issue that vendors of commercial process-oriented information systems should pay attention for.

References

1. Department of Business Information Systems of the University of Trier: CAKE.Officeworkflows, <http://www.uni-trier.de/index.php?id=26836>
2. Minor, M., Schmalen, D., Bergmann, R.: Xml-based representation of agile workflows. In: Bichler, M., Hess, T., Krcmar, H., Lechner, U., Matthes, F., Picot, A., Speitkamp, B., Wolf, P. (eds.) Multikonferenz Wirtschaftsinformatik 2008. pp. 439--440. GITO-Verlag, Berlin (2008)
3. Minor, M., Schmalen, D., Weidlich, J., Koldehoff, A.: Introspection into an agile workflow engine for long-term processes. In: Reddy, S.M. (ed.) Proceedings of the 17th IEEE International Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises, WETICE 2008, pp. 241--246. IEEE Computer Society, Los Alamitos, California (2008)
4. Minor, M., Tartakovski, A., Schmalen, D., Bergmann, R.: Agile Workflow Technology and Case-Based Change Reuse for Long-Term Processes. International Journal on Intelligent Information Technologies 4(1), 80--98 (2008)

Table 1. Office processes resulting from interviews.

No.	Process name
1	Announcement of commencement of duties
2	Announcement of inability to work
3	Announcement of lost transponder
4	Arrange date for colloquium
5	Car booking
6	Contract extension of staff member
7	Contract extension of student researcher
8	Contract of employment new staff member
9	Contract of employment student researcher
10	Control of accounting entries
11	Create schedule
12	De-inventory of equipment
13	Guest speaker with remuneration
14	Inventory of equipment
15	Invoice to a company
16	Official trip
17	Order of office material
18	Printing order
19	Procurement proposal books via project cost unit
20	Procurement proposal devices
21	Proposal for new telephone connection
22	Proposal for transponder
23	Register for written examination
24	Room assignment
25	Teaching assignment