Opponent review on dissertation thesis

Tittle: ***Query-driven context-aware workflow***

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Opponent: ***doc. Ing. Ivana Rábová, Ph.D.***

On the basis of the letter of appointment of the dissertation work „Query-driven context-aware workflow" I present the following opponent`s review, that is structured into several parts which cover the main features of the thesis.

The whole thesis can be considered as interesting, inspirational and useful for following research. It includes theoretical as well as own analytical and practical parts and brings forward original and stimulating findings and discussions.

Relevancy of the topic

Companies need to better share resource which can influence overall productivity and to adapt to rapid changing environment in order to maintain agility at a competitive level. Standardized, measured and optimized business processes have to be subjected to frequent changes and they can be helpful if a system could be more adaptive on context-related changes. It is helpful to have architecture which supports multiple modelling options and to find a way on how to make orchestration of different modelling approaches.

From this perspective, I consider the selected topic as actual, relevant and useful not only for scientific examination but also for business practice. The presented results are not realized in current business process management systems, I think the issues are original.

Objective and methods for its fulfilment

The author sets as the main goal of description on *how to add context-aware adaptability to process-aware systems, which is not well as supported by current systems.* The aim as a complex research area includes several other objectives and issues however in the Chapter 8 Summary of State of the Art and Setting Goals of the Thesis they are not exactly specified. I would appreciate the specification of particular objectives in more details. Process orchestration, process performing, business process modelling approaches and nature combination of a declarative and imperative modelling way, the architecture design that enables a fault tolerant mechanism, these are other issues that author elaborates in his work.

Even so all methods for the general aim fulfilment are well chosen and correctly used.

The overall concept of the dissertation

Dissertation thesis has 90 pages including bibliography. 60 up to date literature sources were used to build a literature rewiev (I lack the ISBN, ISSN in bibliography). The presented text is carefully prepared, is logically structured and appropriately meets the required standards.

The introduction in Chapter 1 gives background of the thesis. Next chapters (2 – 8) can be evaluated as a starting point for the solution. There is complex theoretical foundation for the research in business process management area and there is described the need of some "intelligent, open and agile" approach for business process management. This part is well presented with some subtle mistakes (Figure 3.1 – empty item, Figure 6.3 – absented orange area, Figure 7.1. – there is not relation between B and C states, I lack reference to this figure). Interesting part of case study in the manufacture company can be explained in more detail. Strong side of State of art can be seen in a wide and complex conception to Business Process Management research area.

The following chapters (9-13) stated verification and results. Here I rate the description of suggested architecture which is based on WfMC reference model. The new concept, architecture which supports multiple modelling options for business process optimization and which introduces a way of orchestration of different modelling approaches, is sufficiently explained and in realization part of work (Chapter 13) is well completed. All concepts as are dynamic objects, dynamic profile of user experience and of processes, optimizing business processes, using of product dependence tree and others are used in final results. In addition, I find the human factor that has a large impact on overal results of proces as well as the dynamic profiles for selecting the optimal business goals extension as very interesting.

The Chapter 13 includes fundamental conceptual model (Figure 13.1.) of context-adaptable business process along with its realization and implementation. There is complex finding, well considered and comprehensibly presented. However in my opinion it could have the product dependency tree in one element. In this chapter I find very interesting also model of context and implementation adaptability in Figure 13.3. But in my opinion it could be better to create the hierarchy of business processes along with resources, goals, rules (Eriksson-Penker approach).

Summary of research and conclusion with some recommendations for future work are in final Chapter 14.

Findings and results

As the main result of the dissertation work, a formalized model for the context adaptable business processes and their implementation as service oriented architecture is presented. The solutions of all particular objectives (in new components in WfMC reference model and their content) are original and are beneficial.

The whole solution contributes to creating context sensitive and flexible business process management style. This management style is very useful in up to date business environment.

The main goal of the thesis was completed.

The partial results were published in 9 papers (student is the first author in 6 of them) on Czech conferences and abroad (in 2013 he gained the Best Paper Award). Academic activities of student are at appropriate level.

Formal standards of dissertation

The work is comprehensibly written. The thesis is clearly presented; the material is organized in logical sequence and the overall quality of the presentation.

Question for the discussion

1. On page 73 of the dissertation work you presented the conceptual model. What should then – according to your opinion – be the Product dependency tree?
2. Is your main result "query-driven context-aware workflow" or "query-driven context-aware management system"?
3. Where is the place of ERP systems in your solution (model)?
4. How long did case study described in your work take? What were the results (several millions of record …)? What was the context of process?

Conclusion

The presented dissertation work concerns questions of relevancy and importance for further development of the business process management area. The Ph.D. student Vojtěch Mates fulfilled and met the defined goal in satisfactory way. In dealing with it he demonstrated his ability to use scientific methods of research to apply them in a constructive way and to work in a comprehensive way with professional literature. His results are exploitable both in theory and in practice.

On the basis of the above stated facts I give a positive assessment to the dissertation work and recommend it for defending in before the expert's commission in the study branch „Computer Science and Engineering" and after a successful presentation I propose Ing. et Ing. Vojtěch Mates to be awarded by the academic grade and title

„Doctor abbreviated as Ph.D."

Brno, Jule, 2016   doc. Ing. Ivana Rábová, Ph.D.