Report on the 1st International Workshop on the Interrelations between Requirements Engineering & Business Process Management (REBPM) (August, the 25th2014 at IEEE RE'14 in Karlskrona, Sweden)

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Background of the Workshop

While Requirements Engineering (RE) is concerned with eliciting and managing requirements related to a particular (software) system, Business Process Management (BPM) deals with modeling and managing organizational processes and business objectives. Information technology is an enabler of business change [1] and business processes are often a starting point of software requirements elicitation. Thus, both domains are strongly interrelated (cf. [2]). The interrelation between both domains is underpinned by overlapping use of concepts and artifacts. Business processes modeling, for example, serves as an interface between both domains since the models combine knowledge about the business and the involved (software) systems.

However, the methods and processes concerned with the business people, while trying to achieve similar goals, differ from those concerned with the software/requirements engineers.

The 1st International REBPM workshop has been organized by the working group "Requirements Engineering and Business Process Management" and succeeded two German workshops on the same topic (REBPM 2009 and 2010). The working group "Requirements Engineering and Business Process Management" was founded in autumn 2013 as a subgroup of the "Requirements Engineering" group within the German Informatics Society. The aim of the group is to identify and integrate common methods, artifacts and processes in order to addresses the interrelations between RE and BPM. Currently, the group consists of about ten members from research and industry.

Concept of the Workshop

The goals of the REBPM workshop were:

- Presenting and discussing research and experience reports concerning the combination of RE and BPM, shared methods between them, and interface definition (development processes and artifacts) between them.
- Discussion of commonalities and differences in RE and BPM.
- Exchange of ideas and problem statements between researchers and practitioners.

- Identification of open problems in practice, possibilities for better exchange of development artifacts, and integrated development processes between both domains.

The workshop was structured in two parts: In the first part, research papers were presented and discussed. In the second part, workshop participants worked together in teams for discussing special aspects of the interrelations between RE and BPM.

As the first international workshop on this topic, we target community building. Therefore, we put high emphasis on the inclusion of various research topics and directions and diversity of the presented papers. Next, we give a summary of the two phases of the workshop.

Paper Presentation Phase

During the workshop, six papers published in the workshop proceedings [3] were presented. Masahiro Ide et al. present *An IT-Driven Business Model Design Methodology and Its Evaluation*. This methodology comprises methods to visualize and analyze the business architecture as well as the system architecture and a mapping method between both.

A similar context has been addressed by Christian Erfurth and Ivonne Erfurth in their paper *Towards Business Alignment of IT Services in Universities, Challenges in Elicitations of Requirements for IT Services* in the specific environment of universities that differs from an economic organization.

The cultural difference is also a matter in the case study of Jiyoung Jung et al. on *Requirements Process Improvement in a big electronic company in Korea*. The authors analyze the impact of organizational culture on the RE process, which is originally a "western" type of process.

Two author teams work on the analysis of requirements in the context of Business Process Modeling. Banu Aysolmaz and Onur Demirörs describe a case study on *Deriving User Requirements from Business Process Models for Automation*. The paper of Michael Heß et al., *On the Requirements Analysis Process for Domain-Specific Languages in the Realm of Multi-Perspective Hospital Modelling*, discusses a meta-level in modeling: They report about the development of a

Domain-Specific Modeling Language in a specific hospital context.

In contrast to these papers, Richard Braun and Hannes Schlieter focus on modeling and describing the *Requirements-based Development of BPMN Extensions in a domain-specific context*, using a procedure model.

The diversity of these papers submitted to our workshop shows different aspects of the interrelationship between RE and BPM.

Results of the Breakout Phase

After the paper presentations, the about 25 participants discussed the interrelations between RE and BPM. The plenum was split into three teams with the focus on topics roles, artifacts and processes as important parts of RE as well as of BPM: RE and BPM are human performed tasks in which the relationships between the actors are influenced by roles. People working in roles are performing processes and producing artifacts. The objective was to identify similarities and differences between RE and BPM in these fields and later to derive an overall picture of the interrelations between RE and BPM. Most of the workshop participants were experienced professionals with an industry and partly with an additional research background. Therefore the following results can be interpreted as the results of an expert workshop.

The team working on "roles in RE / BPM" identified roles in RE and BPM and divided them in three groups: roles belonging to the customer side, to analyst side, and to architect (Figure 1).The role groups were defined and discussed among experts in RE and BPM and provide the first idea, that later has to be developed further and connected to the literature.

The team agreed that the customer roles group possesses the domain knowledge and has demands toward a future solution. While domain experts can be found in both RE and BPM, requirements owners are found in RE projects and process owners in BPM projects. These roles have a lot of domain knowledge, but are less experienced in a formal description of software requirements or their working processes. The analyst role group is responsible to describe the intended software or process in the form of a high level model. They have little domain knowledge, but are experienced in formal descriptions. The interviewer role, therefore, bridges the gap between the customer and the analyst role group.

After a high level model is designed, the work is handed over to the architect role group to design a technical model and implement the solution. Because software as well as processes undergo a constant change, the role of change manager is required in all three role groups. As shown in figure 1, some roles are the same for RE as well as for BPM, while other roles are different. In Figure 1, roles equal in RE and BPM are displayed in black boxes.
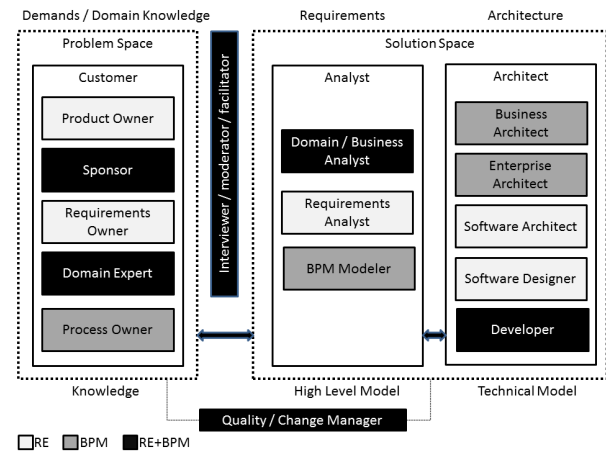

Figure 1: Roles in RE and BPM

The second team of workshop participants worked on the interaction of processes between RE and BPM. The participants described the processes as a sequence of smaller steps (not of "phases") of which some are used for RE as well as for BPM (Figure 2).

A first group of steps treats the preparation of the work. That means gathering ideas respectively the selection of a methodology and - for both areas of expertise – the "social preparation" (validating assumptions, considering cultural differences, planning interviews and manifesting "social security" in the processes).

A second group of steps is modeling. It starts with the elicitation of requirements and the development of taxonomies. In the following steps, RE and BPM methods are used collaboratively. The requirements are the base for becoming aware of constraints. Then the
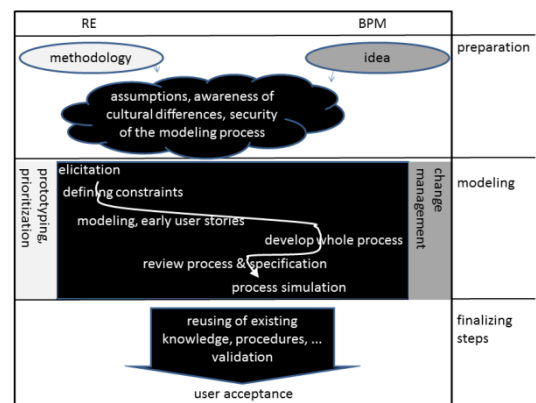

Figure 2: Process Continuum in RE and BPM

modeling process starts with the definition of early user stories. Based on these stories, the whole process will be developed and reviewed. This process on the other hand is the base to define (more concrete) user stories and for the specification review. This group of steps ends with the simulation of the process. In this context RE is "preparing" the BPM steps and BPM without RE is not possible. This group of steps is accompanied by the creation of prototypes and the reprioritization (with

RE origin) and by change management (with BPM origin).

A third group shows the finalizing steps, which are neither specific to RE nor to BPM. Existing knowledge or procedures could be reused and the whole change is validated. The user acceptance is the overall success criterion.

Figure 2 shows the strong relationship between RE and BPM as perceived by the participants of the workshop. Simplified, the RE methods help to elicit and to define the constraints and the basic assumptions to be worked out for the process context with BPM methods.

In the artifacts team, the third team of participants, tangible products from RE and BPM were discussed and compared. In Figure 3, artifacts resulting from RE are shown on the right site, while BPM artifacts are depicted on the left site. Artifacts are developed during the whole RE/BPM life cycle. As for RE the first artifact is a requirement specification, that is further translated into more detailed requirement models until a first graphical prototype is ready. Although RE and BPM have their own artifacts, a common basis could be found in the workshop. For both, common domain ontology is necessary for representing the knowledge.
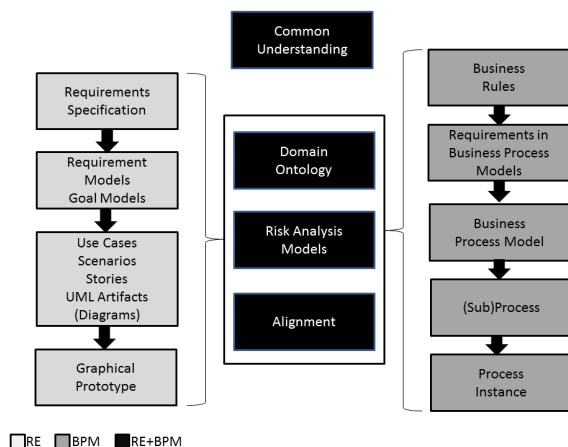

Figure 3: Artifacts in RE and BPM

Furthermore, possible risks have to be analyzed and an alignment of all artifacts needs to be done.
Nevertheless, we identified differences in artifacts of RE and BPM. Although both, RE and BPM, deliver models and documents as artifacts, the nature of the artifacts of both fields varies. In contrast, the other two working teams found that roles as well as processes are quite similar in RE as well as in BPM.

Summary and Further Work
The 1st international REBPM workshop brought together researchers and practitioners from different countries with diverse experiences in RE and / or BPM. Within the first part of paper presentation, we created a broad view on the interrelations between RE and BPM from different perspectives. In the breakout phase, three pictures displaying the roles, processes and arti-

facts in RE and BPM as well as their interrelations were developed.

The plan to develop an overview picture based on the partial pictures was not achieved at the workshop due to time constraints - the discussion process was more complex than excepted. Therefore, the development of such an overview picture will be one of the next steps in our work. A second task for the extension of our work is an intensive literature study to integrate diverse (and inter-disciplinary) research on this topic.

In order to develop an overall picture of the interrelations of RE and BPM based on the results of the first workshop, we plan a second international workshop on REBPM in 2015.

Reference
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