W-NEG: A WORKFLOW NEGOTIATION SYSTEM

Melise M. M. V. Paula[1], Danilo B. Lima[1], Luís Theodoro O. Camargo[1]

[1]*UNIFAL-MG - Exact Sciences Departament, Federal University of Alfenas, Alfenas-MG, Brazil*

Sergio Assis Rodrigues[2], Jano M. Souza[2,3]

[2]*COPPE/UFRJ - Computer Science Department, Graduate School of Engineering*
Federal University of Rio de Janeiro, Brazil
[3]*DCC-IM/UFRJ - Computer Science Department, Mathematics Institute, Federal University of Rio de Janeiro, Brazil*

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Abstract: It has been claimed that there are different methods for solving conflict; however, the main one is to solve conflicts through negotiations. This paper addresses one of the Negotiation Support Systems developed, namely NK-Sys and a workflow approach titled W-Neg. Negotiators often attempt to resolve their conflict through the use of intrinsic activities and their own skills. In W-Neg, we suggest a set of workflow models to tackle issues that may be conflicting during the negotiation table. As any decision-making process, negotiations arise from some well known steps. Therefore, the management of activities realized from these steps can be considered an alternative to improve negotiator's preparation. In this proposal, workflow's technology is aligned with this alternative once the main goal of workflow systems is to provide better business processes management.

1 INTRODUCTION

Overall, the word "conflict" is considered a divergent phenomenon that results in damages or injuries. However, conflict is a natural event present in people's lives and organizations and, if well managed, can also produce benefits to society. Diversity and opinion exposition engender an ideal environment to suggest new ideas and innovative solutions.

Negotiation is one of the best ways to solve a conflict. During negotiations, even informally, the negotiator can follow different strategies and methodologies. However, as a decision-making process, the negotiation requires a well-done planning and a special summarization. These artifacts, allied to strategies to find agreements, result in better argumentations and facilitate decisions.

As any decision-making process, negotiations arise from some steps execution. The management of activities realized from these steps can be considered an alternative to improve future decisions. In this context, workflow's technology is aligned with this alternative once the main goal of workflow systems is to provide better business processes management.

Therefore, this work aims to present negotiation activity as a process composed of different "ways of agreements" which can be managed through a proposed workflow system, named W-Neg. The article is organized as the following: section 2 describes the negotiation process considering the proposed approach; section 3 shows the W-Neg architecture as well as its descriptions of interfaces and functionalities. Then, some considerations, the conclusion and further works are presented.

2 NEGOTIATION PROCESS

Negotiation is an interactive process among two or more counterparts whose goal is to hold a distributive agreement, in which each counterpart's interests are mutually acceptable (Zlatev and Eck, 2003). In this case, a process can be considered a set of activities that, when appropriately realized, obtain certain work's objective (Araujo and Borges, 2001).

Analyzing the negotiation's literature, it is possible to identify several approaches about negotiation process schematization (Duzert et al, 2005, Fisher and Ury, 1981, Kersten and Noronha, 1999, Mills, 2000, Lima, Camargo and Paula, 2008).

In this work, negotiation scheme is mapped into workflows. Every workflow must specify its activities and how immersed in the negotiation process the activities are.

Lima, Camargo and Paula (2008) show negotiation as a process with four basic workflows: preparation, development, execution and evaluation, as shown in Figure 1.
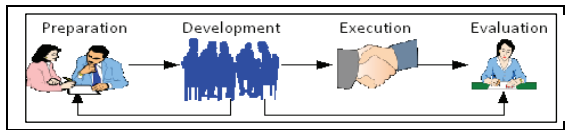

Figure 1: Principal Negotiation's Workflow (Lima, Camargo and Paula).

The first negotiation workflow is the Preparation. In this step, it is unnecessary that the counterpart be present once this phase concerns initial negotiation researches. As said by Mills (2000), usually, the difference between success and fail in negotiations is just correlated with how well the preparation step was done.

Figure 2 shows the activities designated to this stream. As observed, these activities do not need a specific order. All of them were defined based on theoretical instruments proposed in the literature about the preparation process.
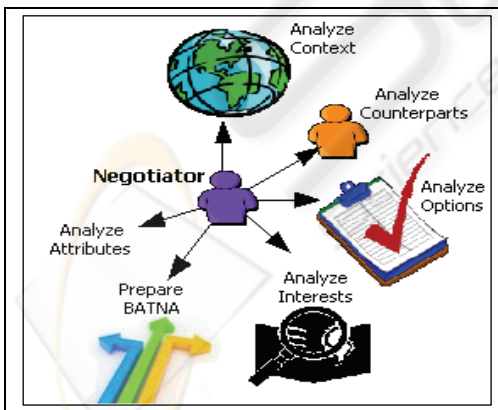

Figure 2: Preparation Workflow.

The development workflow represents activities executed when negotiator is already prepared to interact with other counterparts. Figure 3 depicts these types of activities.

Negotiation rounds reflect appointments, discussions and meetings in which negotiators have to interact to improve the changes of a real agreement. All information analyzed during the preparation's workflow must be considered as an input to decision making processes
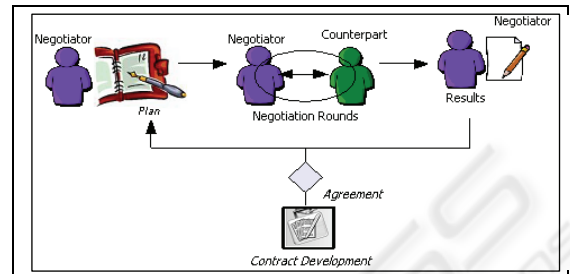

Figure 3: Negotiation Development Workflow.

The agreement can be reached or not depending on how counterparts proceed in the deal. The existence or not of a possible agreement depends on the reserve values and the pretended values of each negotiable attribute. Thus, negotiator should thoroughly analyse these values before any negotiation round.

Once agreement is reached, it is necessary to formalize the terms settled. According to Figure 3, this activity is named Contract Development and its execution is conditioned to the existence of a possible agreement between involved parts.

The Execution workflow can represent two lines of different actions: in case of holding an agreement, it is necessary to verify what was settled and take the enough decisions to assemble what was negotiated.

On the other hand, if there were no agreements, the execution step concerns the planning to obtain gains which were not hold from the actual negotiation.

Regardless whether or not the agreement was reached, this workflow corresponds to the plan of actions to be followed from the negotiations' results. In this context, it is import to determine the tasks which must be executed, the responsible, the rules, date estimations for beginning and deadline.

During the Evaluation, with or without agreement, the involved counterparts shall evaluate the process, starting the activities belonged by Negotiation's Evaluation, in which negotiators introduces their perceptions and judgments about the finished deal. The activities in this phase are composed of the evaluation of the obtained agreement (if does it work), counterparts' analysis and the negotiation strategy validation.

3 W-NEG ARCHITECTURE

W-Neg is a module inserted in the NK-Sys Software, which is a Negotiation Support System. In such environment, the W-Neg objective is to facilitate the management of activities executed during negotiations and share this information to improve quality during future decision making processes. This functionality represents ease as it aids in the organization of the tasks and stimulates the execution of still incomplete tasks. (Lima, Camargo and Paula, 2008).

W-Neg is structured in two modules: the workflow model and the workflow's instances (Figure 4). In the model, the negotiator can find information about such activities, as depicted in Figures 5 and 6.
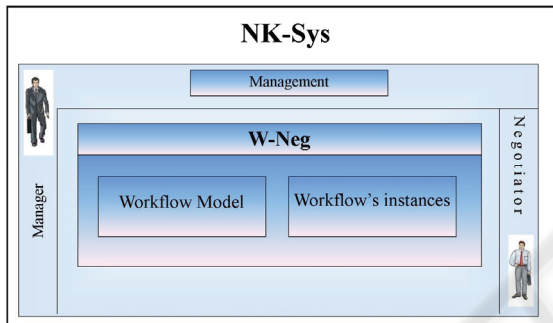

Figure 4: NK-Sys Architecture.

Figure 5 represents the negotiation model defined in the W-Neg. The negotiator can consult information about any activities defined in the model, as show in Figure 6.
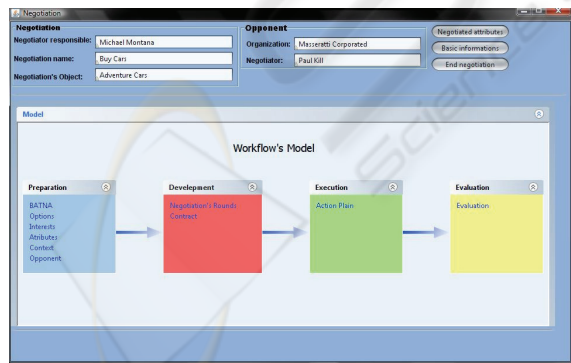

Figure 5: A W-Neg's Workflow Model.

Figure 6: Activity description to develop the BATNA (Fisher and Ury, 1981).

From the model, negotiator can instance a specific activity. The actual negotiation workflow is created, or updated, automatically. Activities are defined in different colours to indicate which workflow is correlated. However, activities are presented following a temporal order, as illustrated in Figure 7.
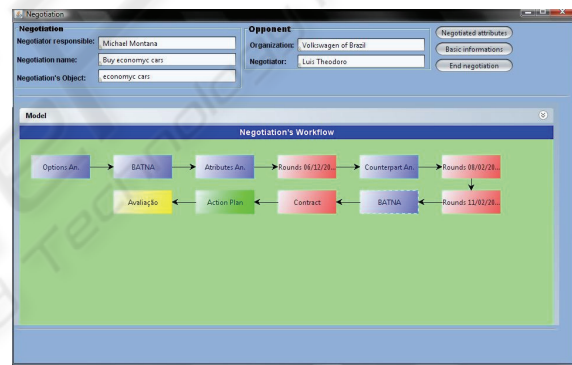

Figure 7: An example of Negotiation's Workflow.

During the activity selection, the negotiator can fill forms with the enough information to prepare the negotiation execution, as show in Figure 8.

In the course of the negotiation, some defined activities are instantiated whenever negotiator considers necessary. In Figure 7, for example, during the BATNA examination, negotiator can create an instance of this activity. However, during the negotiation, if there is a need to examine this information again, it is imperative to create a new instance in the workflow. It is important to emphasize that the new instance is related to the previous instance of BATNA. This property reflects the time perspective of execution of the activities described above.

From the functionalities described the W-Neg can be considered as a way to stimulate negotiators

to prepare their negotiations as well as decrease the chances to negotiator neglects important activities.
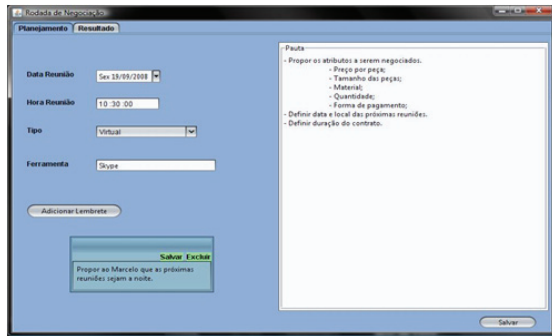

Figure 8: An example of negotiation's round activity.

4 CONCLUSIONS

During this work, several negotiation aspects were analysed, such as: the preponderant elements to negotiate, the steps to reach an agreement and workflows to support these phases. From this point of view, it was possible to identify two basic requisites to create a negotiation's environment: the support do decision making and the support to the negotiation process.

The first requisite points to the necessity to elaborate a decision model which is able to capture the logic used and the knowledge associated with the decision-making during negotiations. This procedure allows the future recovery of these elements. The decision model proposed in this work is based on the perspective oriented by the Prescriptive/Descriptive perception proposed by Raiffa (1982). This approach suggests that all prescription must be based on the best possible description of the negotiation environment.

The article shows that, in the NK-Sys software, knowledge management is used to prescript the negotiator's behaviour through the capture and reutilization of the knowledge acquired during the deal. This information capture and organization is realized from negotiators interactions with functional mechanisms offered by W-Neg.

The second requirement reflects the necessity to define a model to support the process that includes all components needed to support negotiators during the implementation of negotiation inherent activities. In this aspect, functionalities described in W-Neg lead negotiators to take deals based on the problem solution approach, analysing their interests, alternatives and options. Besides, the activities are formally documented ensuring that the process can

be executed according to what was planned, satisfying the imposed requisites.

At the present time, NK-Sys has been extended to increase the attraction of cooperation between bilateral negotiators through tools that support synchronous and asynchronous written communication.

It is important to point that the NK-Sys is still undergoing development. As future work, the proposal is to extend the functionalities from the use of other approaches such as the simulation of negotiation environments to enable negotiators that use this environment streamline their negotiation skills.

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