AN E-LEARNING SYSTEM TO PREPARE NEGOTIATIONS

Sergio A. Rodrigues¹, Yann Duzert², Jano M. de Souza¹,³

¹COPPE/UFRJ – Computer Science Department, Graduate School of Engineering, Federal University of Rio de Janeiro, Brazil
²EBAPE/FGV – School of Public and Business Administration, Getulio Vargas Foundation, Rio de Janeiro, Brazil
³DCC-IM/UFRJ – Computer Science Department, Mathematics Institute, Federal University of Rio de Janeiro, Brazil

ABSTRACT
The goal of this article is to propose an environment for negotiation e-learning courses using a workflow approach to help learners to prepare the negotiation. This environment is based on a matrix of complex negotiations and uses modern technologies such as Mining and Visualization Methods. The proposed environment is developed to be used on the web and has mechanisms to connect users’ experiences in order to prepare cooperatively the negotiation. The implementation also regards reliability and usability aspects, aiming to have negotiators comfortable to place their negotiation data on the software. This work will also show that the use of negotiation software in e-learning courses can accelerate the students’ comprehension of negotiation concepts.

KEYWORDS
Negotiation, E-negotiation Tutoring, E-learning, Visualization Methods

1. INTRODUCTION

Web environments are potential forum for supporting negotiations. Though experienced negotiators are not so familiar with web-tools to support their decision making, negotiation students feel comfortable to use tools built on web, especially because of the usability that internet concerns. This article presents one way of introducing negotiation support systems for students. Particularly, this work focus on facilitating the negotiation preparation stage through the use of a computational system based on a group of steps.

Some contemporary studies have demonstrated possibilities of using computers to familiarize negotiation skills for negotiation students and group decisions (Ehtamo et al, 2002; Köszegi and Kersten 2003; Saunders and Lewicki 2000; Shakun, 1990). According to these authors, computer systems can provide mechanisms to test, to evaluate and to emphasize knowledge on negotiations.

The software lets students practice the use of a negotiation support system in practical interfaces and, thus, they gain insight in how it could be applied in their negotiations. The workflow proposed provides possibilities for learning by doing, whose concept was originally introduced by Dewey (1938). Susskind and Corburn (2000) complements that learning by doing is an useful way of learning negotiation skills once the nature of the negotiations is very dynamic and the best way to visualize option in negotiation is to prepare it.

In this context, this work proposes a tool to support students in negotiation preparation process. The tool aims to facilitate students’ knowledge acquisition through a group of suggestive interfaces and synthetic reports, based on a matrix of complex negotiation and the use of visualization methods in its development.

1.1 Negotiation Process

Overall, negotiation is an activity that requires training, practice, coaching, strategy, preparation and allows the execution of agreements that are mutually acceptable for counterparts, even though different conflicts may occur and external help may be needed (Fisher et al, 2002).
It is important to emphasize that the negotiations can be divided into phases. In a negotiation process, four stages can be identified: preparation, value creation, value division and execution (Duzert, 2007; Susskind and Cruikshank, 1987).

Preparation is the most important stage once it provides enough information to facilitate the agreement defines the issue to be resolved and clearly situates counterparts’ interests (Fisher and Ury, 1981). Besides, in the preparation step, negotiation should define the ZOPA (Zone of Possible Agreement), or simply zone of potential agreements, which involves the counterparts’ satisfaction range (Harvard, 2003; Raiffa, 2002). The ZOPA must also consider cultural aspects (Faure and Rubin, 1993) and elaboration of mutual gain suggestions (Susskind and Cruikshank, 2006).

In the Value Creation step, it is important to continue exploring the counterpart’s interests and generating alternatives that extend mutual gains (Bazerman, 2002). At this stage, it is important to avoid criticism and encourage the use of neutrality both to facilitate the relationships and to enable the creation without prior commitments.

The Value Division is a step to propose brainstorms on contingent options and to project future agreements (Duzert, 2007). At this stage, it is necessary the use of neutrality to suggest possible ways of distribution and discuss standards and criteria for distributing the generated value (Rawls, 1971; Bazerman, 2002).

Finally, the Execution must establish arrangements to keep track or check adopted decisions and facilitate the commitments maintenance. At this stage, incentives and organizational controls must be aligned and it is essential to work continuously to improve relationships as well as neutrality to facilitate the relationships and to enable the creation without prior commitments.

Therefore, it is important to highlight that there are similarities in the best practices used by the major negotiators (Lewicki et al, 1999), so it is possible to imagine a group of negotiation interfaces and reports, based on best practices, which supports students to become great negotiators.

Besides, initiatives without adequate preparation can unexpectedly lead a promising business to failure. It is not rare to find, even among experienced negotiators, failures caused by the lack of preparation and by negligence of risks. In the middle of students, preparation is almost a challenge. Often, these disregards result in gaps of negotiation information and, in each round, the volume of information to be understood becomes an attenuating, especially to inexperienced negotiators.

It has long been known that people’s cognitive abilities are limited in the simultaneous processing of a high amount of information (Miller, 1956). As a result, it is the negotiator’s responsibility to determine what the most important information to be used on negotiation table is once it is impossible to memorize all negotiation variables. The most difficult task for negotiation students is to know which information is important; thus, the proposed software aids these students to prioritize information through reports supported by visualization methods.

Accordingly, this work aims at presenting an e-negotiation tutorial which structures the preparation stage for negotiation students. In this context, the system intends to facilitate the students’ knowledge acquisition through a group of suggestive interfaces and synthetic reports, based on a matrix of complex negotiation and the use of visualization methods.

1.2 Matrix of Complex Negotiations

The matrix of complex negotiation was applied in order to support the e-learning software development. Proposed by Duzert (2007), the matrix is a technique which permits to conduct negotiations through the use of a schema with important concepts related to the negotiation process. As correlated in Table 1, four steps (preparation, value creation, value division and execution) can be associated to ten elements: Interests, Options, Power, Concessions, Context, Relationship, Criterion, Cognition, Compliance and Time.
Table 1. Matrix of Complex Negotiations (Duzert, 2007)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Preparation</th>
<th>Value Creation</th>
<th>Value Division</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interests</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concessions</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Criterion</td>
<td>X</td>
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<tr>
<td>Cognition</td>
<td>X</td>
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<tr>
<td>Compliance</td>
<td>X</td>
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<td></td>
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<td>Time</td>
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<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The interest management increases the probability of the agreement because it facilitates the creation of suggestions for mutual gains (Bazerman, 2002). If it was necessary to offer options to mutual gains, negotiators should, together, create scenarios without previous commitment (Lempereur, 2004).

The power established in the negotiations is related to different aspects, such as alternatives (Fisher and Ury, 1981), coalition, the power of reward or threat, psychological issues, and even the dependence degree or need established between negotiator and agreement. According to Zartman and Rubin (1999), power is the factor considered to have the greatest influence on negotiating.

Concessions are generally provided as a way of cooperation and strategy changing to increase the chances of agreement (Axelrod, 1984). An interesting tactic is to adopt the Zeuthen approach, which demonstrates that through mutual concessions, negotiators obtain significantly higher earnings when they are cooperative (Zeuthen, 1930). In cases of asymmetries, the ideal is the presence of a mediator to help the negotiators positions to converge to agreement, which is called Pareto’s equilibrium or cooperative Nash equilibrium (Nash, 1950; Harsanyi, 1977).

The discussion of criterion represents an opportunity to facilitate the deal through the rules and standards flexibility (Fisher et al, 1996). Compliance emphasizes the importance of the perception of justice and the legal validity of the agreement on the proposals and represents an opportunity to facilitate the achievement of the agreement through the relaxation of rules and standards (Rawls, 1971).

The relationship is highlighted as a product of the adopted strategy. Indeed, Susskind and Cruikshank (1987) maintain that a consensual approach is reached when the agreement is viewed by the counterparts as the best deal, considering the context. Consequently, there is an improvement in counterparts’ relationship.

Cognition is represented as a great influential element on preparation stage because it introduces questioning and avoids negotiators dogmatism, although it implicates in the transparency and trusty paradox, limited rationality and the predisposing of joint search data. The appropriate communication should be used to clarify the negotiator’s interests and improve counterparts’ collaboration (Mnookin and Susskind, 1999).

Besides, time is an element which influences not only decisions but also relationships. It is important to emphasize that negotiation productivity can be inversely proportional to the possibility of earnings multiples, since time is the crucial element to evaluate decision and relationship indicators (Stuhlmacher, 2000).

Finally, the context is the element which provides enough information to understand negotiation environment.

The ten elements of complex negotiations can be viewed in different moments during the whole negotiation. As observed by experienced negotiators (Duzert, 2007; Susskind and Cruikshank, 1987), the negotiation process can be divided in four stages: preparation, value creation, value division and execution, as illustrated in Table 1. Besides, tools whose objectives are to support complex negotiations must, mainly, take a well-done information management to help preparation stage and subsidize other stages through qualitative inferences and statistics reports.

Therefore, based on matrix complex negotiation attributes, this work proposes a computational tool to manage the preparation stage knowledge for negotiations’ students. The e-learning approach is justified due to the number of steps that orientates inexperienced negotiators to better visualize the negotiations’ elements.
2. **SYSNEG – E-LEARNING SYSTEM TO GUIDE NEGOTIATIONS**

SysNeg was designed for the use of negotiation’s students during the preparation stage. As previously mentioned, the expectation is that computational tools functions as a checklist of the student, guiding the negotiation techniques based on elements of the matrix of complex negotiation and performance indicators.

The System is composed of a set of interfaces that are developed to make the preparation stage more intuitive, especially for inexperienced negotiators, although the possibility of conducting the negotiation knowledge management also represents an attractive to experienced negotiators to use the system.

Figure 1. E-learning Negotiation Preparation

The group of steps can be dynamic, but the suggestive orientation is to fill the forms in a sequence, as illustrated in Figure 1. Figure 2 shows the initial step to prepare the negotiation. In this interface, the student must define the negotiation context.

The process starts with the storage of basic information in the negotiation. This interface aims to capture the context data for future understanding. Several factors motivate the record of these data, such as the need to redeem similar negotiations, the formalization of negotiation players and the possibility of generating more concise reports on the end of negotiation case. Moreover, this step is used to show the student that the changing of professionals during negotiations is not rare and the quick context comprehension is essential to ensure continuity and productivity of existing negotiation.

The student is still questioned to think of the necessity to manage organizations’ knowledge once negotiators should have easy mechanisms to store information so that this process is as intuitive as possible. As a result, SysNeg presents a number of features aimed at increasing the software usability and there is an aid interface to fill the step for each of the five basic interfaces.

Figure 2. Definition of Negotiation Context

Figure 3, for example, presents the interface of interests’ alignment and options’ identification. These alternatives can be compared to the BATNA concept (Best Alternative To a Negotiated Agreement) which is used to assist negotiators to keep the focus on the objective and to present different ways of achieving the planned interests (Fisher et al, 2002).

Figure 3. Identification of Interests and Options
In this interface (Figure 3), the student has two ways of registration: i) free text, in the so-called basic interface, ii) enabling the aid interface, which, in this case, presents the convergent and divergent interests points of negotiation.

Each of the five basic interfaces has the correspondent aid interface. Once it is used, the aid interface exports stored information to the basic interface software, which provides a free and direct reading. Figure 4 illustrates the third step, in which the major established relationships and involved power aspects are catalogued. While Figure 4 shows free texts, this information could be stored directly (free text) or collected from the aid interface. In this case, the negotiation student can simply click on the interrogative icon for help.

For students and inexperienced negotiators, the register of information on free text (basic interface) may seem both difficult and laborious. This difficulty is justified due to the lack of experience in negotiations, which hinders the quick identification of what is considered predominant for each negotiation element. Although the current elements’ disposition helps the guidance to prepare negotiations, this may be insufficient for the aspiring negotiator. So, the aid interface becomes a good way to stimulate the students to think about each negotiation element.

In this sense, Figure 5 illustrates the aid interface via checklist, which is a quite usual way to put in the tool user’s view if the completeness of parameters is in line with the storage expectation.

Figure 4. Mainly Relationships and involved Power aspects
Figure 5. Cognition and Communication aspects; Criteria, standards and Compliance factors

An important fact to observe is the alternative to maintain stored information in secret or to share them with negotiation counterparts. This decision, illustrated in Figure 5, not only exemplifies the importance of confidential information but also is used as an input to generate negotiation reports for the students use on case studies.

The negotiation student has private and public reports available. Private reports promote a preparation diagnosis and are exclusive to the tool user point of view, while the public reports are shared with counterparties to be observed and evaluated collaboratively. The public reports are brought to the negotiating table during classes to simulate real negotiation cases and are used to promote debates between counterparties. Private reports are composed of exclusive data and should not be revealed to counterparties.

The public reports are widely used when negotiators want to check whether all counterparties agree with the variables established during the negotiation. Besides, this interaction shows students the importance of interests’ alignment between the parties.

Following, Figure 6 presents the registration of items of concession and the influence of time in the involved negotiation. In the respective aid interface, not only is a checklist used but also a group of graphic reports developed through visualization methods technology. Consequently, the use of SysNeg favored students’ agreement once the negotiators had the visualization of possible threats and opportunities at hand.

This step ends the collection of negotiation information for the preparation stage, guided by the 10 elements introduced by Duzert (2007).

Although the disposition of SysNeg interfaces suggests a step-by-step recording, it is possible to note that sometimes the nature of negotiations denies the information catalogue in the system suggestive order. Therefore, the user can decide to fill the negotiation elements in a sequence or at random. The resolution to
develop a sequence workflow was motivated because of the inexperience of negotiation students who need mechanisms to guide them.

Figure 6. Items of Concession and the influence of Time

There are some expectations about the future use of SysNeg. The prior objective is to provide mechanisms to facilitate the preparation stage for negotiation students who usually misunderstand most of negotiation techniques due to their rawness. On the other hand, SysNeg can be useful for organization negotiators to reinforce the knowledge management process during the deals. It is a great opportunity to externalize preponderant information through an easy web-tool.

Besides, both type of users, students or experienced negotiators, can use SysNeg reports to further analysis. One of the principal reports is the so-called negotiation boarding. As exemplified in Figure 7, in this board, the preparation stage is synthesized by the mapping of each negotiation element, counterparts identified items and a few measures which suggest the thermometer of rationality, satisfaction and emotion. Naturally, these statistics are generated based on what was freely stored, aid interfaces and checklists answered, reflecting the perception of trading by the user of the tool.

SysNeg also uses text mining technology to manipulate old negotiations and attempt to discover similarities among them. The database employs XML to store and to do the interoperability among negotiations. Finally, visualization methods are applied to increase the usability and stimulate negotiators to fill the interfaces and, subsequently, to obtain the reports.

Figure 7. Negotiation Boarding

In Figure 7, the graph in radar is mounted from the incidence of each element stored data. The radar takes into account the number of variables and items extracted from the mining of each filled element as well as if there were contents via checklist. The volume of collected information is compared to each element and the software calculates the average value to shape the graph.
With regard to the items already identified, the system uses a simple mechanism to show students what was corroborated by the counterparties. When a student states that an item may be available for viewing (the example of Figure 7), the system generates reports of common understanding. These public reports are used to confirm counterparties agreements and the approved artifacts are then posted on the drawing board.

The thermometers of rationality, emotion and satisfaction reflect the student’s point of view allied to statistics formed by checklists answered by counterparties. In the preparation stage, these indicators may seem subjective but should be focused because they reflect the negotiator’s perception related to common sense.

SysNeg reports, as well as the guidance in steps, provide for negotiation students mechanisms for storage and inference. Although the context presented is concentrated in the preparation stage, the possibility of extending to remaining stages is quite feasible and it is also possible to manage feedback information from previous negotiations. Since SysNeg is a negotiation e-learning environment, some adjustments on metrics and variables of analysis need to done to reflect other real negotiation contexts.

3. CONCLUSION

The introduction of a tool that supports the negotiation process, mainly to reinforce the preparation stage, provides students a great domain of negotiation uncertainties, increasing the likelihood of reaching the planned results.

This work showed how the negotiation theories and concepts can be used in an e-learning environment and why the preparation stage is crucial to the success of the agreement. The prospect of a proper planning itself is a huge advantage to negotiators; however, based on the background discussed in this work, even experienced negotiators may obtain benefits from an e-negotiation tutorial that supports the preparation stage.

Naturally, the use of the suggested steps may not fully guarantee the success of real negotiations, but it allows better preparation once the software is based on negotiation elements (Duzert, 2007). The ten elements (Interests, Options, Power, Concessions, Context, Relationship, Criterion, Cognition, Compliance and Time) are consistently conceived and distributed in the software interfaces. SysNeg also provides mechanisms for students to externalize negotiation data through checklists and visualization methods interfaces, which ensure the appropriate degree of usability of this tool.

Some limitations were established during the development of this work. The first one was to ensure the security of information, restricting the use of the tool for negotiation students. Thus, when there are groups of students, each group needs to choose the facilitator. The idea is to pass to e-facilitator (SysNeg user) the responsibility to provide or not information to be stored and to represent the group. The second restriction concerns the chosen negotiation stage, by choosing to explore the preparation. Preparation is known as the most important phase for experienced authors (Baker, 2006; Kennedy, 2004; Tardy, 2004; Adams and Hicks, 2001) and it represents a great opportunity to start learning negotiation concepts. Finally, the third limitation was the exclusion of online interaction functionalities of the parties involved. The tool’s aim is not to simulate negotiation tables or to deal with offer/counter-offer on line but exemplifies how to manage the preparation knowledge.

In this context, possible advances in the software proposed can be obtained through the expansion of the visualization and mining reports and the increase of the user access control, divided into profiles. In addition, the case study results can be emphasized with large scale real negotiation experiments. Moreover, another technological expansion may be the implementation for Palms and Handhelds.

REFERENCES


