Conflict Management Support in Electronic Negotiations

Alexander Dannenmann and Mareike Schoop

Information Systems I, University of Hohenheim, Germany
{Alexander.Dannenmann, M.Schoop}@uni-hohenheim.de

Abstract. Negotiation Support Systems (NSSs) offer a multidimensional support of negotiations through the internet. Different kind of conflicts – apart from the initial conflict – can occur during this process. This paper will give an overview of the current state-of-the-art in managing electronic negotiations with the help of NSSs and it introduces an advanced conflict management concept to resolve escalated conflicts during the negotiation.

Keywords: Conflict management, mediation, consultation, moderation, electronic negotiation, negotiation support systems.

1 Introduction

Through the fast developing information and communication technologies the software for supporting and automating electronic business negotiations has reached a point where a multidimensional support of negotiators is provided [1]. These so-called *electronic negotiation systems* allow parties to use internet-based systems to carry out their transactions. *Negotiation Support Systems (NSSs)* aim to support the users in their decisions and arguments and do not automate the negotiation process.

Especially in the B2B field, parties negotiate in an iterative communication and decision making process. They want to reach a goal that they cannot achieve alone [2]. As a consequence, a certain *initial* conflict is the basis for every negotiation [3]. The negotiation process is complex: negotiators exchange messages with arguments for their positions, formal offers or counteroffers and informal questions, clarifications, greetings, etc. with the goals of creating a common background and of building a relationship between them [4]. During this process, different types of *dynamic* conflicts (apart from the initial conflict) can occur and escalate. In turn, this can lead to a rejection of the negotiation and as a consequence to additional costs for the parties [3, 5]. Therefore, the negotiators try to minimize conflict in order to reach an agreement. The question is whether NSSs can offer conflict management support, i.e. to help parties resolve their dynamic conflicts during the process.

The purpose of this paper is to discuss the potential of NSSs for conflict management. Section 2 will discuss the specifics of conflict in electronic negotiations. Section 3 will introduce a conceptual framework of advanced conflict management support in electronic negotiations.

2 Research Context

2.1 Electronic Negotiations and Conflicts

Electronic negotiations in the context of this paper are negotiations between two parties, who "cannot achieve their objectives through unilateral actions, exchange information compromising offers, counter-offers and arguments; deal with interdependent tasks; and search for a consensus which is a compromise decision" [2]. Additionally, the negotiation process is restricted by at least one rule which "affects the decision-making, the communication process or the document management" [4]. This rule has to be enforced by the electronic medium [6]. In such a process is it very important, that negotiators can present arguments for their positions, objectives and/or beliefs [7]. This process can help to identify critical issues and to find a solution. There is an initial conflict (the reason for the negotiation) and with it a given conflict intensity. Inherently, conflicts do not have to be destructive. Different authors distinguish constructive and destructive conflicts [8] or functional and dysfunctional conflicts [9]. Within a certain level, they can motivate parties to have a constructive dispute and to argue with the other position. But conflicts can also develop dynamically and a profitable outcome is no longer possible. This escalation can be due to different interests, conflict attitude and abilities, norms and values of the society/culture or just different objectives [10]. If we want to be able to decide whether a conflict is constructive or destructive, we have to create a common understanding of what conflicts in B2B negotiations are.

Conflicts are in the focus of several different research disciplines [11, 12]. Each discipline focuses on different aspects, which is why no single definition or theory exists. Glasl argues that conflicts can be caused by different actions, can be examined systematically in different ways, and can be distinguished by the characteristics of the parties, their positions and the affiliated mutual relations [3].To provide a frame of reference for initial conflicts, we will focus on the characteristics of the parties involved. Along this line, conflicts can be intrapersonal, interpersonal, intra-organisational, inter-organisational and international [3, 13, 14]. As we focus on electronic negotiations in a B2B context, we will only consider conflicts, which are intra- or inter-organisational. Tries and Reinhardt define conflicts as a given interdependence of actors who want to achieve a common goal through coordinated activities. This goal cannot be reached due to one or more obstacles which prevent the common activities (the so-called "target divergence") and the actors do not have an attractive alternative [15]. This definition applies to our understanding of an initial conflict as a reason for a negotiation. But it also implies that the actors are aware of their target divergence which might not always be the case. Glasl [3] combines a variety of definitions in a separate - very concise - definition of conflicts. His definition will be the basis for our understanding of dynamic conflicts occurring during the negotiation process:

> Conflict is an interaction between individuals, groups or organisations in which at least one party has a different perception, thinking, feeling and will than the counterpart. This difference in feeling, thinking and will leads to an interference with the other party.

This definition integrates the fact, that conflicts can be perceived differently. Therefore, only interactions, in which all conditions are met, are conflict situations. Interactions, in which this is not the case, can be described as incompatibilities in the cognitive domain, feeling, willing and conflictive behaviour [3].

Within electronic negotiations, the conflict behaviour is different compared to face-to-face negotiations. Through the restrictions of the electronic medium, the negotiators focus on selected aspects. Normally, gestures, tone of the voice and mimics can increase or decrease the perceived level of conflict during the communication process. These visual and acoustic attractions are missing. The negotiators have to rely on the written messages and the information provided by the NSS [16]. For this, we have to understand the current state of the art of NSS and their involvement in the negotiation process.

2.2 Classification of Negotiation Support Systems

A negotiation support system (NSS) is a software system which implements models and procedures, has communication and coordination facilities, and is designed to support two or more parties and/or a third party in their negotiation activities [17]. In contrast to, for example, email, the system supports the parties in different ways, namely by means of communication support, decision support and document management [18–21]. The level of involvement an NSS can offer has different levels. Kersten et al. [17] introduced the following three stages:

- 1st stage, passive involvement:
  The NSS supports the interaction between the negotiators located in different places. Additionally it offers calculation support to help the negotiators to make a decision (utility functions). Different visualizations of the negotiation data help the negotiators to keep the process transparent.
- 2nd stage, active involvement:
  This so called facilitation-mediation systems help parties to create offers. Advices for e.g. formulations of messages or possible new concession help to find solutions for the given problem.
- 3rd stage, pro-active involvement:
  This class of NSS has the same functions than active systems but provides the possibility of proactive mediation intervention. The system has a certain artificial intelligence and monitors the whole negotiation process. It can evaluate the current status of the negotiation and provide specific advices, e.g. if a negotiator should accept an offer or criticize their activities.

The main difference between active and pro-active systems is that the negotiator asks in active systems for an advice. Pro-active NSS make “suggestions and critiques without any request” [17] based on an expert system or an artificial intelligence component.

Electronic negotiations realized with NSSs can allow on the one hand better outcomes than face-to-face negotiations and improve the exchange of multi-issue offers, but on the other hand they might need more time and can often end with impasses between the negotiators[1, 4]. Existing systems such as *Negoisst* [19], *SmartSettle* [22] and *Inspire* [23, 24] have their main focus on different components.

SmartSettle and *Inspire* belong to the so called decision support school. They focus on quantitative support with the objective to push the negotiators to a more Pareto optimal agreement. *Negoisst* provides a more holistic support for all relevant phases of the negotiation process. Especially the communication process is supported in several stages which is a key aspect in conflict management. Ambiguous communication can influence the conflict level (and with it the decision-making process) in negative ways. As a consequence, *Negoisst* provides the most sophisticated support and will be the focus in the following discussion. It is thus necessary to discuss the three components of *Negoisst* and the support of all three negotiation phases (pre-negotiation, negotiation and post-settlement) as to what their current contribution is to reduce initial and dynamic conflicts.

2.3 Current Conflict Management Concepts of *Negoisst*

Following again Schoop [4], there are three different schools of negotiation support: communication management, document management and decision support. An integrated and holistic approach combines all three schools. The following matrix will give an overview of the negotiation phases, the three different support approaches and selected functions which *Negoisst* offers to reduce initial and dynamic conflicts:

Table 1. *Negoisst* conflict management components in the context of the different negotiation phases

		Negotiation phases		
		1) Pre-Negotiation	2) Negotiation	3) Post-Settlement
Support Components	Decision Support	-Model Guide -Preference Elicitation	- Analytical Support - Dynamic Preference Elicitation	
	Communication Support	-Ontology Integration	-Ontology Integration -Explicit Intentions -Negotiation protocols	
	Document Management	-Contract Templates	-Automatic generation of contract versions	-Contracting Support

Decision Support:
Concepts for supporting the decision-making process are essential in supporting electronic negotiations. The main objective is not only to offer the negotiators individual or joint advices to evaluate offers during the process. Additionally, the negotiators' preference structures can be measured. *Negoisst* supports parties offering different negotiation protocols such as auctions, combined auctions, reverse auctions, bilateral negotiations etc [4, 5, 17, 24]. In context of B2B negotiations, the question is which kind of model should be used to solve the initial conflict in the context of the current business situation. Choosing the wrong model could lead to a higher initial level of conflict. The model guide helps negotiators on basis of a recommender system to choose the right one.

Before negotiations start, parties have to be sure about their preferences. Complete preferences are unrealistic. With different concepts of preference elicitations

(compositional and de-compositional), *Negoisst* tries to reduce a lack of clarity and helps parties to explicate their preferences. As a consequence, this leads on the one hand to an awareness of negotiators for the more or less relevant conflict issues before the negotiation starts and on the other hand it can reduce dynamic conflicts during the negotiation. Already, negotiating parties can use methods of dynamic preference elicitation to redefine their preferences within the process, e.g. when new information is available, when their preferences change etc [25].

A valid preference model is the basic for the analytical support during the process. It offers numerical indicators like the utility range of received offers or suggestions for possible new offers. Additionally a graphical representation of the negotiation history can display the progress of the negotiation and the integrative activities on negotiators side. All this functions allow to disclose concessions (as a sign of cooperation) and to evaluate the dynamic conflict behaviour.

Communication Support:
Communication is an essential part in the bargaining process. Communication problems can be caused by missing cues due to the medium used for the negotiation.

The objective is to reduce these possible dynamic conflict aspects to a minimum. Communication does not just describe something; it can also have a performative role [18, 20, 26]. As a consequence, *Negoisst* supports communication on three different levels with the objective to 1) structure the negotiation process, 2) create a joint understanding and 3) show the intentions of messages. All three aspects have in common, that they should prevent misunderstandings and in turn frustration (=level of conflict). The so-called syntactic support declares signs and rules for the communication process. A strictly alternating negotiation protocol prohibits belated changes or deletion of messages. The negotiation process becomes more transparent and future steps are clear. The semantic support reduces possible misunderstandings through the definition of the meaning of negotiation issues. Semantic enrichment - based on an ontology - connects the written communication with the agenda items and their values. The pragmatic support transmits intention to make clear how a message is meant to be understood.

Document Management:
To build up trust between the negotiators and provide traceability is indispensable to reduce the level of conflict within the process. Document Management in *Negoisst* links messages and documents by automatically creating a new contract version from each message. No modifications are possible, thereby enhancing trust in the system and in the partner [27].

2.4 Summary

In general, different methods exist to support negotiators in resolving their conflicts. We distinguish between initial conflicts and dynamic conflicts which occur and escalate during the interaction process. These dynamic conflicts are influenced by different aspects. Currently, most NSSs are more or less active systems but do not offer a holistic support. *Negoisst* is the only NSS supporting the communication

process, offering decision support and providing document management. However, based on the introduced definition of conflict, negotiations can also escalate due to different perceptions. As a consequence, qualitative aspects have to be considered in a holistic conflict management support, as the different aspects influencing the level of conflict show.

3 Advanced Conflict Management in Electronic Negotiations

As mentioned before, conflicts can be constructive and destructive. Additionally we distinguish between the initial conflict and the conflicts occurring within the negotiation process. It is necessary to divide between these two different aspects. In our understanding, the initial conflict exhibits the characteristics of a business negotiation scenario. Two parties already figured out that an electronic negotiation would fit their needs and could lead to a possible solution. They know the issues and in turn their agenda items. The dynamic conflict occurs during the dyadic written message exchange. Through the low media richness the level of conflict is influenced by 5 different aspects [3]:

1. The parties and their relationship and positions
2. The characteristics of each party
3. Their attitude concerning the initial conflict and the dynamic conflict
4. The conflict issues
5. The escalation process by itself

All mentioned aspects are necessary for a diagnosis and analysis of the conflict. A holistic concept starts with the recognition of the initial conflict and its consequences on the escalation process. The level of escalation can be divided into 9 stages [3]: 1) hardening, 2) debate, 3) action instead of words, 4) images and coalition, 5) loss of face, 6) threats, 7) partial destruction, 8) fragmentation and 9) elimination. There is a polarization and debate between the negotiators in the first stages. During the next stages, the conflict gets more intensive and the actors start to make threats. During these phase, conflicts can be constructive. As discussed, even in successful negotiations there are different positions and opinions. The parties have to exchange information to achieve a mutual understanding. With rising escalation, the conflicts are getting destructive and after stage 5 to 6, they cannot be resolved without the help of a third party any more.

A diagnosis can be of different levels of details. A very detailed diagnosis cannot be guaranteed due to lack of time or missing, distorted, or masked information. On the other hand, it is also not always relevant to include all aspects. In the context of electronic negotiations, the access to interpersonal factors is particularly difficult. The negotiators act in offset locations and communicate over time. For a possible third party, it is far harder to make a complete conflict diagnosis or to influence relevant aspects.

Concerning the introduced escalation model, there are different conflict resolution methods which can help de-escalation. We will introduce three of them briefly and

discuss them in the context of already given NSSs components.[1] Later we will connect them to the overall framework for conflict management support:

Moderation:
Moderation can be used on level 1-3 of the escalation scale [3]. The objective is to help participants to solve instantly problems of interaction and questions concerning the content and the process. This type of intervention is useful on lower escalation levels. Moderation can offer support to explain unclear terms and definitions. The creation of awareness for the joint objective can be forced by moderation. In turn, behaviour-oriented interventions or advices concerning tasks, roles and functions take center stage. Passiveness and restriction as an adviser are essential elements of moderation. Moderation does not have the force to push parties to accept an advice.

Similarities to the introduced components of NSSs are obvious. For example, the communication support (section 2.3) has the same objectives than the main ideas of moderation. Misunderstandings should be reduced (semantic and pragmatic enrichment) and the process structured (negotiation protocol). As a consequence we can summarise that the main components of *Negoisst* already fulfill the requirements of moderation. Dynamic conflicts on a low level of escalation are already handled in a common way.

Consultation:
On levels 3 to 5 of the escalation scale, consultation can be an option to resolve conflicts [3]. Consultation is active (the consultant helps negotiators to deal with their problems) and constructive (the negotiators understand the dynamic of the conflict and its influence). Negotiators ask for an advice, this advice should be perceived as motivating, helpful and not judging. Interventions of a consultant also focus on socio-psychological aspects. Parties have to control their emotions, thoughts and intentions and break out of the spiral of escalation. Consultation should prevent negotiation deadlocks and increase the flexibility. Additionally, the parties should create self-perception and reflect their situation. A consultant will not start a bilateral interaction between the negotiators at the same time.

To offer consultation, *Negoisst* and NSSs in general will need to be more active. The consultation process can be divided in three steps: 1) diagnosis, 2) analysis and 3) advice. *Negoisst* offers decision and communication support and advice but does not yet help the negotiators to reflect their positions and their self-perception compared to the image the counterpart have of them.

Mediation:
On conflict levels 5 to 7, negotiators cannot resolve the dispute without the help of a third party [3]. One or both negotiators are willing to reject the negotiation. Mediation can be defined as assisted negotiation through a third party [28]. It is used to assist the parties in their negotiation, not to negotiate with the parties. It is a communicative process between all parties with the objective for the parties to generate a solution themselves.

[1] “Arbitration“ and „Authority“ are not discussed in the context of this paper as the negotiators have no choice to accept or reject a final advice given by the third party.

Mediation has 5 different principles which are essential [28]: 1) voluntary participation 2) no bindingness 3) neutrality of the mediator 4) disclosure of all information and 5) awareness of the mediation process.

The mediation process is similar to the negotiation and has the same sequences. The focus of mediation is on the negotiation outcome. A negotiation problem should be transferred into a successful and integrative agreement. The aim is not only to stop a "fight" but also to secure an agreement [29].

Negoisst does not offer mediation but has been combined with the mediating system Negotiator Assistant [30, 31]. To offer mediation components, the system needs to become pro-active. Mediation support would require the negotiators to reveal their preferences and goals to the partner as the mediator will try to find solutions that are acceptable to both parties. Such support must be an integrative support of decision making and communication/argumentation.

4 Conclusion and Future Research

Existing NSSs offer a multidimensional support for electronic negotiations. Most of them have a more or less active character and use different components, namely communication support, decision support and document management, to support B2B negotiations. Within this negotiation process, different types of conflict can occur, which are different to the initial conflict. Current conflict management theory argues that depending on the escalation level of a conflict, different conflict resolution methods exist.

In case of an advanced conflict management, we introduced a 3-stage intervention model for a holistic conflict management framework. It includes current existing functions up to the concept offering negotiators the help of a neutral third party, called a mediator. Between the two extremes of normal negotiations with a moderate level of conflict and assisted negotiations with the help of a negotiator at a totally escalated level, we suggest integrating a two-phase consultant. This consultant would firstly include a diagnosis and analysis component, helping the negotiators to reflect the process to the present point. Within this phase, the focus would be on issue aspects, e.g. reflecting the concession behaviour and give verbal suggestions e.g. redefining the preferences. In the second consultation phase, negotiators ask directly for a proper advice. To generate this advice, both negotiators have to agree to disclose their preferences. As a consequence, conflict awareness on both sides will be created and a proper advice for future offers is available for both sides.

We have discussed the three levels of intervention are reflected in electronic negotiation and in *Negoisst* as the system to support such negotiations. Moderation is already provided and consultation is implemented to a large extent already. We are currently developing the mediation component which will lead to an even more powerful system.

One of the overall objectives for future research is the creation of a conflict intensity measurement within electronic negotiations. It is essential to combine the individual perceived conflict level of a negotiator with his/her written communication (qualitative) and his/her concession behaviour (quantitative). Afterwards we can

define whether advanced support is necessary and, if so, in which way, i.e. quantitative, qualitative or both. Furthermore, the necessary consulting and mediation components have to been integrated into *Negoisst* and evaluated. This evaluation will focus on acceptance of such advanced conflict management and its added value to the final agreement.

References

1. Kersten, G., Lai, H.: Electronic Negotiations: Foundations, Systems and Processes. In: Kilgour, D.M., Eden, C. (eds.) Handbook of Group Decision and Negotiation, pp. 361–392. Springer Science+Business Media B.V, Dordrecht (2010)
2. Bichler, M., Kersten, G., Strecker, S.: Towards a Structured Design of Electronic Negotiations. Group Decision and Negotiation 12, 311–335 (2003)
3. Glasl, F.: Konfliktmanagement. Ein Handbuch für Führungskräfte, Beraterinnen und Berater Haupt [u.a.], Bern (2004)
4. Schoop, M.: Support of Complex Electronic Negotiations. In: Kilgour, D.M., Eden, C. (eds.) Handbook of Group Decision and Negotiation, pp. 409–424. Springer Science+Business Media B.V, Dordrecht (2010)
5. Köhne, F.: Electronic Negotiation Support Systems and Their Role in Business Communication Vdm Verlag Dr. Müller, Saarbrücken (2007)
6. Ströbel, M., Weinhardt, C.: The Montreal Taxonomy for Electronic Negotiations. Group Decision and Negotiation 12, 143–164 (2003)
7. Chang, M.K., Woo, C.: A Speech-Act-Based Negotiation Protocol: Design, implementation, and Test Use. ACM Transactions on Information Systems 12, 360–382 (1994)
8. DeFleur, M., Kearney, P., Plax, T., DeFleur, M., DeFleur, M.H., DeFleur, M.L.1.: Fundamentals of Human Communication. Social science in everyday life McGraw-Hill; McGraw Hill, Boston (2005)
9. Lewicki, R.J., Barry, B., Saunders, D.M.: Negotiation McGraw-Hill/Irwin, Boston (2010)
10. Rahim, M.A.: Managing conflict in organizations Praeger, Westport, Conn. [u.a.] (1992)
11. Schoen, T.: Konfliktmanagementsysteme für Wirtschaftsunternehmen. Aus deutscher und US-amerikanischer Sicht Centrale für Mediation, Köln (2003)
12. Dorow, W.: Unternehmungskonflikte als Gegenstand unternehmungspolitischer Forschung Duncker & Humblot, Berlin (1978)
13. Schwarz, G.: Konfliktmanagement. Konflikte erkennen, analysieren, lösen Gabler, Wiesbaden (2005)
14. Kollmannsperger, M.: Erfolgskriterien des Konfliktmanagements. Eine empirische Untersuchung Lang, Frankfurt am Main (2001)
15. Tries, J. and Reinhardt, R.: Konflikt- und Verhandlungsmanagement. Konflikte konstruktiv nutzen, http://www.dandelon.com/intelligentSEARCH.nsf/alldocs/7B6DA78FC5CE6D48C1257143003EF98A/
16. Pesendorfer, E.-M., Graf, A., Koeszegi, S.: Relationship in electronic negotiations: Tracking behavior over time. Zeitschrift für Betriebswirtschaft 77, 1315–1338 (2007)
17. Kersten, G., Lai, H.: Negotiation Support and E-negotiation Systems: An Overview. Group Decision and Negotiation 16, 553–586 (2007)
18. Schoop, M.: A Language-Action Approach to Electronic Negotiations. Journal of Systems, Signs and Action 1, 62–79 (2005)

19. Schoop, M., Jertila, A., List, T.: A Negotiation Support System for Electronic Business-to-Business Negotiations in E-Commerce. Data and Knowledge Engineering 47, 371–401 (2003)
20. Schoop, M., Köhne, F., Staskiewicz, D.: An Integrated Decision and Communication Perspective on Electronic Negotiation Support Systems: Challenges and Solutions. Decision Systems 13, 375–398 (2004)
21. Schoop, M., Köhne, F., Ostertag, K.: Communication Quality in Business Negotiations. Group Decision and Negotiation 19, 193–209 (2010)
22. Thiessen, E., Soberg, E.: Smartsettle described with the Montreal Taxonomy. Group Decision and Negotiation 12, 165–170 (2003)
23. Kersten, G.: The Science and Engineering of E-negotiation: Review of the Emerging Field. InterNeg Research Papers (2002)
24. Kersten, G.: E-negotiation systems: Interaction of people and technologies to resolve conflicts. InterNeg Research Papers (2004)
25. Reiser, A., Schoop, M.: The Use of Dynamic Preference Elicitation for Negotiations with Incomplete or Missing Information The Center of Collaboration Science, Omaha (2010)
26. Duckek, K.: Ökonomische Relevanz von Kommunikationsqualität in elektronischen Verhandlungen Betriebswirtschaftlicher Verlag Gabler; Gabler, Wiesbaden (2010)
27. Staskiewicz, D.: Document-centred electronic negotiations Verl. Dr. Hut, München (2009)
28. Hauser, C.: Eine ökonomische Theorie der Mediation Rüegger, Chur (2002)
29. Kim, N.H., Wall, J., Sohn, D.-W., Kim, J.: Community and Industrial Mediation in South Korea. Journal of Conflict Resolution 37, 361–381 (1993)
30. Druckman, D., Koeszegi, S., Schoop, M., van der Wijst, P., Vetschera, R., Dannenmann, A., Duckek, K., Filzmoser, M., Gettinger, J., MItterhofer, R., et al.: Acceptance and Evaluation of Automated Mediation in e-Negotiation The Center of Collaboration Science, Omaha (2010)
31. Druckman, D., Druckman, J., Arai, T.: e-Mediation: Evaluating the Impacts of an Electronic Mediator on Negotiating Behavior. Group Decision and Negotiation 13, 481–511 (2004)