

## THE EQUIPMENT ACQUISITION PROCESS: ANALYSIS FOR NEGOTIATION

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### Abstract

The analysis for negotiation results in a prescriptive negotiation procedure that improves the decision making process by increasing the understanding of the decision situation and by the explaining rationale for decision. This prescriptive procedure is used for the evaluation of stakeholders who negotiate, for guidance when there are tensions between various stakeholders, and for the change in the stakeholders' perceptions when considering the creation of additional value and possible agreement(s). The procedure is divided into five specific steps, based on the standard acquisition procedure. The procedure is applied to the case of acquiring Armored Wheeled Vehicles 8x8 (AWV) for the Croatian Armed Forces (CAF), according to the Croatian procurement regulations.

**Key words:** *negotiation, analysis, value creation, agreement, acquisition*

## 1. INTRODUCTION

### 1.1. Decision situation: Military procurement

Negotiation is one of the crucial steps during the equipment acquisition process, where there is a client and a number of suppliers at the table, trying to define all the details of a final version of contract. In the paper, analysis for more successful negotiation is considered, resulting in a prescriptive approach in the decision situation for military equipment procurement. The goal is to select the tender that represents the economically most advantageous proposal, based on the Croatian procurement law (Procurement Law, NN br. 110/07 and 125/08).

Military procurement of a large military equipment system could be characterized as a complex problem. Therefore, the negotiations with the suppliers are complex too. This type of problem is also characterized as uncertain, due to various matters that could go wrong: from the operability of vehicle, to the success of the offset problem in Croatia, in addition to different financial and logistical issues concerning equipment procurement (Peharda, I., 2010).

Since there are different approaches on solving the military procurement problem, there could be different solutions that make the specific decision situation even more complex. Last but not the least, the numerous noncommensurate conflictive objectives must be fulfilled. If the consequences of one of the objectives are improved, it implies that another's consequences of another objective are diminished.

Once we establish the required characteristics for possible assortments, based on the organizational values and strategic objectives, and as we select the procurement strategy, the negotiation phase begins with the opening of the Proposals. Analysis for negotiation begins before the actual start of the negotiation.

Based on the scenario presented in this paper, in 2006 the Croatian Ministry of Defence admitted two tenderers: Austrian "Steyer-Daimler-Puch Spezialfahrzeug AG&CoKG" and Finish "Patria Vehicles OY". To demonstrate the analysis for negotiation, these two proposals are taken as examples for negotiation.

Patria won, and the contract was signed in 2007. Since then, some parts of the contract were renegotiated and in July 2010 Patria and the Croatian DoD signed an Amendment related to the manufacturing due to the financial reasons. According to the new version of the contract, a €182 million offset program is defined. The consortium "Patria-Đuro Đaković Specijalna Vozila (DDSV)" will manufacture the vehicles in Croatia (Complete Guide, 2009). The agreement is to produce 126 AWV until the first quarter of 2013 (Army Guide, 2010).

The described case is used as a general example in this paper in order to demonstrate how analysis for negotiation could be used.

## **1.2. Analysis for negotiation**

Negotiations could be defined as a joint decision making process. Analysis for negotiation bridges decision analysis and game theory. Therefore, it provides a prescriptive advice on how parties should and could make joint, collaborative decisions (Sebenius, J.K., 2007).

Based on current research, prescriptive advice for an established group, such as a group from the DoD that negotiates with more than one equipment supplier, could be given. Differences of group decision making, compared to an individual making decisions, are numerous: more resources, more people, more flexibility, wish to excel in the group, as well as the fact that when people contribute to decision making process, they tend to support a final decision. However, there are other numerous problems: loss of time on trivial things compared to crucial issues, one meeting could easily turn out into more parallel submeetings, and proper documentation of the meeting is often inappropriate. Reasons of the problems mentioned are complexity of the problem, loss of coordination, communication overload between group members, conflicts between members, and member disengagement since not everyone is willing to work equally (Raiffa, H., Richardson, J., and Metcalfe, D., 2002).

Below is the general prescriptive procedure on how the members of party in an organization *could* and *should* act when they negotiate in the negotiation phase of equipment procurement.

The analysis for negotiation is based on work of Sebenius (Sebenius, J.K., 2007). The field of analysis for negotiation is conceptually located between decision analysis and game theory. There are five elements of the *Negotiation Analytic Approach*:

1. *Parties* – in the first step of negotiation analysis, the full set of all relevant parties is determined. First, there are parties who will negotiate and be present during the negotiation. Then, there are parties who may not be present during the actual negotiations, but who may influence them indirectly, by blocking or enabling them.
2. *Interests* – in the second step of negotiation analysis, each relevant party's interests are defined. Here, it is important to distinguish between the parties' underlying interests and their issues under negotiations, on which *positions* or *stands* are taken during negotiations (Fisher, R., Ury, W., and Patton, B., 1991). Confusion between interest and positions may hold the negotiation process.

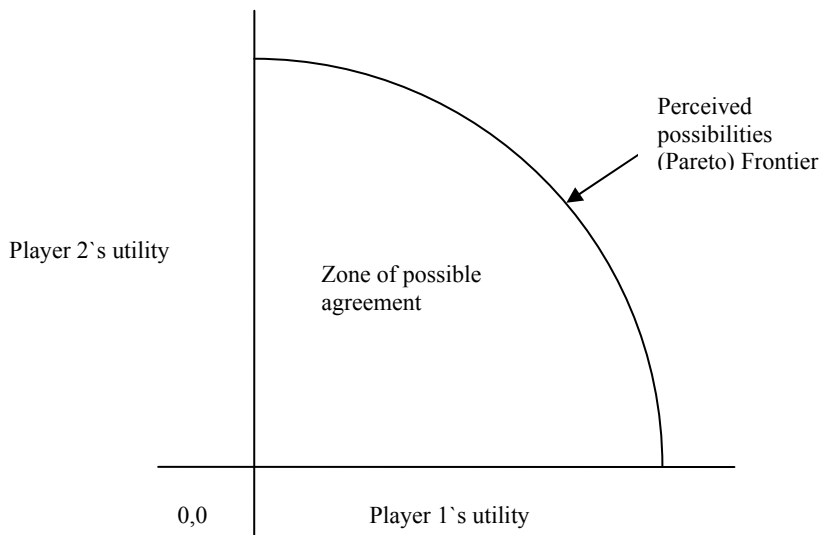
Interest assessment includes determination of *crucial issues* for each party and determination of tradeoffs among interests. The parties' interests can be "soft", such as fairness and image, and "hard", such as costs, technical characteristics and logistical requirements. One of the assumptions is that parties' interests are equal to stakeholders' values (Peharda, I., 2010). Part of this step is also assessment of another parties interests, and in case of military equipment procurement, it is the assessment of equipment producers' interests.

On the other side, positions are stands taken during the negotiation. For example, while acquiring the AWV 8x8, it is determined how many vehicles per month will be produced or how different variations of the ordered vehicles will be specified. Based on their values or interests, each party takes various positions in different possible settlements.

3. *Alternatives to Negotiated Agreement* – is the third step of analysis for negotiation, where each party's alternatives to negotiated agreement are determined. For example, a certain price amount is one possibility for an alternative to negotiated agreement for an armored wheeled vehicle. No-agreement alternative, in the case of military equipment procurement, may include different threats for the deployed armed forces or the necessity to keep negotiating indefinitely, so for the majority of cases it is not an adequate alternative.

In case when there are just two parties, alternatives to agreement are important because of their tactical roles. Adding another party increases the competitive pressures and eventually increases the standard of value that proposed agreements must have.

4. *Structure representation* – is the fourth step in analysis for negotiation, where an analyst has knowledge of some or all the elements mentioned in the first three steps: parties, interests, tradeoffs and alternatives to negotiated agreement. Based on these, *Figure 1* depicts the graphical representation of a general decision situation when two players are negotiating.



*Figure 1: Graphical representation for the fourth step of analysis for negotiation: Pareto frontier for two players (Sebenius, J.K., 2010)*

The point (0,0) represents the situation when there is no agreement or each side's best alternative to negotiated agreement. 'The Zone of Possible Agreement' represents possible results of a negotiation, where everything outside the Zone represents solutions where one of the parties would be harmed. The two axes are each players utilities.

5. *Negotiation restructuring* – process of *value creation* or *value claiming* includes actions to increase (*create*) what is possible through a joint agreement, or to allocate (*claim*) the value of an agreement.

The value creation is possible when parties desire the same settlement, while exploiting scale economies, collective goods and alliances, or when differences among negotiators exist. Claiming value means that increased value for one party implies less for other negotiators.

Balancing between creating and claiming value is the key during negotiation, because a value claiming stance limits the ability of value creation, and that should be one of the objectives.

Behavioral insights must be taken into consideration during negotiation restructuring. In a complex organization, such as the DoD, social behavior in negotiation is more important than individual aspects. Social behavior, in groups of two or more members, involves pressures for conformity,

bandwagon effect, and changed behavior of an individual who is a representative before an “audience” or form of behavior when an individual takes actions for which he or she is getting others’ approval (Sebenius, J.K., 2007).

The ultimate negotiation goal is to *change the structure of decision situation*, called “*negotiation design*”, in order to create a desired outcome. Some of the possibilities include adding or subtracting parties, or change in the perception, called “attitudinal restructuring” (Brandenburg, A.M., and Nalebuff, B.J., 1996). When a decision situation involves a hierarchical company, reshaping the institutional and regulatory context may be suitable.

In conclusion, there are several actions that could be used for negotiation restructuring to achieve a desired agreement. This article provides a prescriptive approach when dealing with decision situations involving military equipment procurement.

## **2. THE EQUIPMENT ACQUISITION PROCESS**

### **2.1. The Croatian Procurement Legislation**

According to the Procurement Legislation, and in relation to the decision situation of selecting the most adequate military equipment, the organization, the Department of the Defence, is named a *public client* or a *demanding party*, while the producer of an equipment set is named a *supplier*.

In the selection phase, or the procurement strategy selection, a public client must decide among the following strategies (Procurement Law, Article 2, 15.(a), 15.(b), 15.(c), 15.(d), and 15. (e), NN br. 110/07 and 125/08):

- a) *Open strategy* – when every supplier can submit a bid in a procurement procedure;
- b) *Limited strategy* – when a demanding party sends invitations for bidding to a specific set of suppliers;
- c) *Competitive dialogue* – when a demanding party and suppliers lead dialogue to develop one or more adequate solutions;
- d) *Negotiation procedure* – when a client selects suppliers according to client’s choice;
- e) Procedure for getting a plan or project approval – not applicable to the military equipment requirement;

Considering the procurement of the AWV, the condition for selecting negotiation procedure as an appropriate strategy would be the following (Procurement Law, Article 15, (2).2, NN br. 110/07 and 125/08): a procurement contract, due to technical or artistic reasons, can be executed only by specific suppliers. Then, the condition for selecting competitive dialogue as a strategy is the equipment complexity, condition that is satisfied due to AWV's technical specifications (Procurement Law, Article 20, NN br. 110/07 and 125/08). Using any other strategy, from a) to d), will result in negotiations where a certain number of suppliers negotiate with a public client.

In practice, the application of the Croatian Procurement Law since 2007 showed that there are various perplexities or difficulties (Hunjak, T., Kolar, T., Loboja, A., Matokanović, M, and Pavličević, V., 2010). One of them is the concept of the economically most advantageous tender (EMAT), where the public client must evaluate financial and non-financial aspects before signing a final contract. The EMAT criteria are defined as the criteria related to the subject of a procurement contract, such as quality, price, technical achievement, aesthetic, functional and ecological characteristics, operative cost, economical characteristics, service and technical help after product selling, delivery schedule or the delivery deadlines etc. (Procurement Law, Article 58, NN. br. 110/07 and 125/08). The next example describes the EMAT selection steps.

## **2.2. Procurement of the AWV 8x8 for the CAF: Analysis for negotiation**

In this paper, the case of acquiring the AWV for the CAF is applied. The procurement was concluded in 2007, but is taken as the case to demonstrate the analysis for negotiation. Negotiation phase starts after proposal selection phase, and after the information about the AWVs is collected based on the vehicle testing and eventual visits to producers, as needed.

First, the CAF demanded 13 basic AWV configurations, but because of limited financial resources, the final contract specified only 6. Also, one of the main requirements for the supplier was the production of the AWV in the Croatian factory DDSV, so at the end, 70% of the vehicles production is localized in Croatia (Army Guide, 2010).

## **3. ANALYSIS FOR NEGOTIATION: ARMORED WHEELED VEHICLE 8x8 FOR THE CAF**

Based on prescriptive advice from the analysis for negotiation, and taking the case of 8x8 AWV procurement, the five elements are considered. In practice, most negotiators are not clear about their interests or positions, and they haven't considered the supplier's best alternative to negotiated agreement (BATNA) or their respective tradeoffs.

According to listed elements for analysis, the advices for each are listed. These advices are a checklist for negotiation preparation, and are intended as advice for a public client. This partisan advice would be applicable to the supplier's side, if the advice would be given jointly or profitably shared. The procurement project entails a complex negotiation on various issues, such as finance, production issues, offset program, logistical issues, technical requirements, training, maintenance etc.

### **3.1. Parties**

The definition of parties who participate in actual negotiations starts with the determination of the number of people who will negotiate with the AWV suppliers. Therefore, the participation reasons must be determined. All the reasons could be categorized in two groups: a) the parties are experts, they have information about negotiation topics or they know how to negotiate, or b) the parties are decision makers. Not all people who

have clear reasons should participate, but they could be indirectly involved. This is where documentation of negotiations becomes crucial, since all the parties through proper exchange of information could influence the course of the negotiation, by blocking or enabling it. The number of parties can change during negotiations, as needed. The three main groups in the decision situation of military procurement are the stakeholders described in *Table 1*. However, parties who negotiate on the DoD side differ significantly.

*Table 1: Stakeholders in the military procurement of the AWW.*

<b>Stakeholders</b>	<b>Description</b>
<b>Users</b>	<i>Soldiers and other personnel who will use the AWW; training personnel;</i>
<b>Experts</b>	<i>Technical experts on various aspects of the military armoured vehicles; lawyers in the DoD; finance personnel; maintenance personnel;</i>
<b>Decision maker(s)</b>	<i>Leadership and management personnel who make decisions about military procurement on different levels in the DoD; the final decision maker or the person who signs a final contract;</i>

*Source: Working doctoral thesis (Peharda, 2010).*

*The prescriptive advice that follows from the first element of the analysis for negotiation is: determine the number of negotiation participants before each negotiation session, based on the clear and logical reasons for their participation, and conduct separate meetings for crucial issues of the decision situation: finance, legal issues, maintenance, logistics and training. For indirectly involved parties, insure a proper documentation of each negotiation session.*

### **3.2. Interests**

Parties' interests are built-in from the practical value model (PVM) of the AWW. The main reason for the PVM selection is the concept of values, defined as something that is important to the stakeholders, included in the model (Keeney, R.L., and von Winterfeldt, D., 2007). These value judgments, that can influence a decision, are used for defining a set of fundamental objectives and associated attributes, or objectives hierarchy.

Building the PVM for an equipment set leads to parties' interests. Defining the lower and upper (either minimum or maximum) attribute boundaries results in the most adequate equipment set. The practical value model, if it is good enough to gain all the important insights for a decision, reflects the interests in the analysis for negotiation.

Parties' positions are stands taken during the negotiation and must be clearly distinguished from their interest. The key point is not allowing parties' positions to drive out their interest, because the final results will affect the interests, not positions.

In this step, the key uncertainties and associated risks must be considered. If there are uncertainties, each possible alternative military equipment set has profile risk that exhibits possible outcomes, the likelihoods of these outcomes, and resulting consequences associated with these outcomes. As with the positions and interests, uncertainty analysis and value analysis must be separated (Sebenius, J.K., 2007).

*The prescriptive advice that follows from the second element of the analysis for negotiation is: clarify the nature of negotiation problem by articulating the respective values and objectives. Understanding the military procurement problem also means understanding the problems the suppliers are facing. Values and objectives are best represented in practical value model (PVM) of an equipment set. Attribute definition in the PVM provides the most adequate military system or a baseline for the economically most advantageous tender (EMAT). The EMAT balances 'values for money'. Even if uncertainties are built-in the model, a separate risk management must be performed before making a final decision. Therefore, the PVM is stochastic by nature.*

### **3.3. Alternatives to Negotiated Agreement**

Before the negotiations begin, party should determine the best alternative to negotiated agreement (BATNA) (Raiffa, H., Richardson, J., and Metcalfe, D., 2002). The purpose of the military procurement is to equip the armed forces with an adequate military system. If negotiations fail, the process must be repeated, and that requires more time and other resources. Not buying a military equipment could diminish the army's combat readiness. The question is what a public client minimally needs to sign a contract with a supplier.

General advice in many negotiations is to convert a two-party setup into an active auction with more bidders (Bulow, J., and Klemperer, P., 1996). In that case, the public client could simultaneously negotiate with more suppliers, playing each off against the other. The BATNA could be defined as a certain price amount for an AWV. If the supplier requires more for the base AWV, and the organizational financial resources are planned and therefore restricted, there will be no agreement. As stated, no-agreement alternative may include different threats for the deployed armed forces or the necessity to keep negotiating indefinitely. Finding BATNA is a complex problem that could be solved with various analytical tools. In practice, most of the time, parties don't determine the BATNA at all. When you know other parties, it is very useful to think about their BATNAs.

*The prescriptive advice that follows from the third element of the analysis for negotiation is: specify your best alternative to the negotiated agreement (BATNA). Based on all available knowledge, also specify other suppliers' BATNAs, and reassess them periodically.*

### **3.4. Structure representation**

After the negotiation preparatory phase (pre-negotiation), constructing a template or framework to guide further negotiations is one of the possible structure representation. This template should include the issues to



be negotiated and possible resolutions for each issue (Sebenius, J.K., 2007). For the case of the AWV procurement, the issues listed should be grouped under headings such as financial issues, technical issues, offset, technical characteristics, and logistical requirements. These could be separated and delegated to subcommittees. After issued identification, for each one, possible resolutions are specified. Compared to a public client, suppliers will have a significantly different template.

In practice, doing quantitative analysis and scoring each issue is often impossible. Still, qualitative analysis of issues listed in the template is highly recommended. General advice is to divide all the issues into three clusters of low-, medium-, and high- importance levels. For high-importance levels that are often monetary issues, evaluations are often done in monetary equivalences (Raiffa, H., Richardson, J., and Metcalfe, D., 2002).

*The prescriptive advice that follows from the fourth element of the analysis for negotiation is: template design and evaluation (scoring) template. Even if evaluation of all the parts of the template will not be easy and possible, qualitative analysis, and delegating specific parts to experts, will enable parties to make judgments before negotiations, instead of deciding during negotiations.*

### **3.4. Negotiation restructuring**

All prior steps of analysis for negotiation helped to understand the concept of analysis to better understand the problem and to justify particular decisions during negotiations. Negotiation restructuring is about conducting negotiations so that parties are satisfied with the consequences.

First possibility is adding or subtracting parties. That creates joint gains, extra values are extracted, and one party's no-agreement alternatives are improved. Changing the zone of possible agreement, as depicted in *Figure 1*, by shifting no-agreement alternatives or axes, changes the possibilities for agreement. Since no-agreement is often not acceptable, conditional openness and "win-win" options are an adequate approach to optimize negotiations (Lax, D.A., and Sebenius, J.K., 2006). The case of AWV procurement for the CAF presents such a solution, since the consortium Patria and DDSV are considering joint project in the Middle East area in the near future, as the consequence of the offset program established based on signed agreement (Army Guide, 2010). The element of negotiation restructuring doesn't focus on the other concepts crucial to negotiation: atmosphere, logistics, presentation styles, cultural aspects, interpersonal techniques, communication styles etc., which can shape the zone of possible agreement significantly.

*The prescriptive advice which follows from the fifth element of the analysis for negotiation is: change the zone of possible agreement by changing elements of analysis for negotiation, adopting "win-win" situation to create joint values.*

#### 4. CONCLUSION AND FUTURE RESEARCH

This article provides a general overview of the analysis for negotiation for the military procurement. It is one part of the methodology which objective is to align equipment characteristics and strategic organizational goals in the beginning of an acquisition process. Analysis for negotiation provides prescriptive advice, based on the five elements of negotiation analysis: parties, interests, the BATNA, structure representation and negotiation restructuring. The key point of analysis for negotiation is to focus on preparation for negotiations.

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