: What is a negotiation support system?

Negotiation Support Systems (NSS) are designed to assist negotiators in reaching mutually satisfactory decisions by providing a means of communication and through the analysis of available information (cf., Bui and Shakun, 2004). Negotiation support may involve using a model-driven, data-driven, communications-driven, document-driven or a knowledge-driven DSS. This sub-category of computerized decision support systems is defined by the purpose of the system.

Negotiations involve multiple interdependent, sequential decisions by at least 2 parties to the negotiation. There is some disagreement or conflict of interest among these parties that may be subject to resolution. The parties both perceive a need to bargain or negotiate rather than accept what the other party would voluntarily give them.

Kersten and Lo (2001) describe Negotiation Support Systems as "designed to help and advise negotiators; they are used to structure and analyse the problem, elicit preferences and use them to construct a utility function, determine feasible and efficient alternatives, visualise different aspects of the problem and the process, and facilitate communication."

Some negotiation support systems focus on improving the negotiation process, i.e., process-oriented NSS, and others provide tools to try to improve the outcomes of the negotiation, i.e., outcome-oriented NSS. The outcome-oriented NSS have tools to help decide upon offers and to help evaluate the offers received. Outcome-oriented Negotiation Support Systems may be standalone systems used by the bargainer or negotiator, bilateral systems used by both parties, or multilateral, used by many parties to the negotiation. In general, there are general purpose and special purpose NSS. A number of researchers suggest the more the NSS "is tailored to a specific negotiation the more support the system can provide for the negotiators."

In a 1998 paper, Kersten noted "Negotiation support systems (NSS) cover a wide range of individual and group decision support technologies. Many NSS have been developed and used in training and research but they have been rarely used in practice." This is changing ... NSS are being used in some actual negotiation situations.

Kersten's InterNeg project developed a Web-based NSS called INSPIRE that has been used by people around the world. Negotiation Support Systems now often have flexible tools that can be used in different configurations and applied to different problems. Systems exist for bilateral negotiation support based on multiple attribute utility theory and game theory; and there are specialized systems for auction negotiations, contract negotiations, e-commerce and purchasing.

In general, eight major goals have been discussed for using information technology to support

negotiations. These goals include: enabling asynchronous negotiations, offering advice, providing checklists, reducing transaction costs, providing a rationale for bargaining positions, structuring offers, managing negotiation data, and prescribing a negotiation process or protocol. To meet all of these goals it is necessary to create multiple subsystems in a Negotiation Support System.

According to SmartSettle.com, "new negotiation support systems built with powerful optimization algorithms and enhanced by a maturing cyberspace, are now providing a real alternative to conventional negotiation, in business arrangements as well as the settlement of litigation. These new systems reduce negotiating time and cost for decision-makers in simple or complex cases, by putting them in control of a process that quickly clarifies tradeoffs, recognizes party satisfaction on all types of negotiation issues, and generates optimal solutions. Internet connectivity now makes communication possible at a distance, facilitating the exchange of offers and counteroffers while simultaneously managing confidential information at a neutral site."

Mareike Schoop (2004) argues "electronic negotiations have focused on automation of processes. Recently, it was argued that a communication perspective on electronic negotiations needs to be supported in order to achieve the aim of enabling even complex negotiations electronically." She identified three different approaches to negotiation support: automation-oriented to find an economic best solution; communication-oriented supporting the communication processes; and document-oriented enabling document exchange and document management.

According to Arnott and Pervan (2005), Negotiation Support Systems are one of the seven major areas of DSS research. They identify two approaches to constructing systems that support negotiation, problem oriented and process oriented. Pioneering "problem-oriented NSS products include Co-oP (Bui and Jarke, 1986), DECISION MAKER (Fraser and Hippel, 1984), GDSI (Kersten, 1987) and MEDIATOR (Jarke et al , 1987). These problem-oriented systems focus on providing support to support negotiation for specific problem types. On the other hand, process-oriented NSS focus on providing general support of the give-and-take process of negotiation (Chaudhury, 1995; Kersten and Szapiro, 1986)."

Negotiation Support Systems is not a new subfield related to decision support. There has been a Negotiation Support Systems minitrack at the Hawaii International Conference on System Sciences (HICSS) since 1991. Articles on this type of system began appearing in the literature in 1986.

As always, your comments, suggestions and feedback are appreciated.

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