Structured Negotiation using GroupSystems Electronic Meetings.

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Abstract

This paper proposes a set of agenda for the use of a specific Group Support System (GSS) in preparing and conducting structured negotiations. Previous work in this area has established the feasibility of this approach, and indeed the increasing use of GSS’s in many different business processes suggests that it would be surprising if GSS’s could not effectively be used in negotiation.

Recent developments in the computer technology used in GSS’s offer significant new functions that can be very valuable in negotiation.

Much of the literature on the subject of negotiation deals with one-on-one, face to face individual negotiation, where a computerized approach is less likely to make a useful contribution. However, structured approaches to negotiation have been defined and these can be susceptible to computerized techniques. In this context a structured negotiation is a negotiation where a group of people are involved for each party, so that there needs to be agreement within each of these groups and then agreement between the groups to reach a final settlement. To be suitable for the approach described in this paper, both parties should have the opportunity to introduce new options and ideas to help reach agreement. Based upon discussion of a worked example, this paper develops electronic agenda for such negotiation. Conclusions are drawn about the strengths and weaknesses of this approach.

1. Introduction

Many books and articles on negotiation deal with face to face negotiations on fairly quick and defined issues, such as salary, commission or price (Fleming [10], Kennedy [12], Karrass [11]). While such books contain much useful advice they do not usually deal with the complex negotiations where computerization can assist, nor do they in general provide a structured process.

Computers have been used as tools for negotiation based on mathematical techniques such as Utility Curves, where the protagonists ascribe relative values or weights to the issues involved. The computer then arithmetically calculates a solution that can be described as optimal in the sense that it represents an intermediate position between extreme requirements, and thus might be acceptable to all parties. Such techniques appear to assume that the list of issues is fixed, for example the apportionment of possessions in a divorce case.

However, some authors do offer methodologies for negotiating that can fit to GSS techniques. A GSS approach to negotiation is relevant in a situation where a group of people is involved for each of the parties. This means that, prior to negotiation, each group needs to come to agreement on its own position and to consider what might be the position and expectations of the other parties. During the actual negotiation the parties have the opportunity to create together new options that might help the parties come to agreement. Thus, the negotiation process itself typically involves both joint work between parties and separate work as the parties evaluate new options.

Typically the issues involved in such negotiation will be such that a high value is placed on securing an early and satisfactory settlement.

Thus there are two major phases-- the preparation and the negotiation itself. The paper will develop agenda for these two stages. The benefit of using one particular GSS is that the paper can develop more detailed and specific agenda.

2. Group Support Systems

A GSS is generally considered to be a computer system that supports a group of people working together by enabling them to enter and share data. GSS’s have
been widely used to improve the effectiveness of face to face meetings (such as take place during negotiation). In these 'electronic' meetings, normal discussion is supplemented by enabling participants to enter facts, opinions, questions, votes and commitments onto a computer, each participant usually having their own computer.

Recent developments in networking technologies make it practical to run Electronic Meetings across organizational networks and also across the Internet. Thus participants in negotiating teams can be sitting in their own offices, at home or on the other side of the world, connected to the meeting by a direct phone line or via the Internet.

GroupSystems, the software used in this paper, was developed at the University of Arizona in the 1980’s and is the leading commercial GSS.

For a general description of Electronic Meetings see Weatherall and Nunamaker [22], and Nunamaker, Dennis, Valacich, Vogel and George [18].

2.1 GSS features that are valuable in negotiating

GSS’s have already been used in negotiations. In a comprehensive review of GSS’s and the principals of negotiation, Lewis and Spich [14] have summarized the features of GSS tools that they see as benefiting negotiation. These include:

- Generating ideas
- Organizing ideas
- Evaluating and voting
- Cross-impact analysis
- Multiple criteria analysis
- Problem versus personal focus
- Anonymity
- Meeting structure
- Parallel input
- Documentation.

To this comprehensive and persuasive list one can add the following features, based on current technology:

- Removing anonymity when required
- Defining hierarchical data structures
- Running separate sessions during one meeting
- Remote participants in the meeting
- Integration with videoconferencing

Hence the issue is not whether computers can be useful in negotiation, but how exactly can we make best use of them. Essentially, computers require a formalized, structured, approach as a basis.

3. Frameworks for structured negotiations

There does not seem to be an agreed definition that clearly distinguishes negotiation from a conventional business meeting, it being evident that most significant business meetings involve some degree of negotiation. One distinction may be that there are clear sides in negotiation, in contrast to a business meeting where although there will be temporary alliances and agreements, these will shift without difficulty during the meeting as different subjects are discussed.

Another distinction may be that negotiation is often specifically oriented towards the development of a document to record any agreement, whilst business meetings are usually focussed on actions, with any output document regarded as a regrettable necessity, rather than a goal of itself. Any document that is the outcome of a negotiation is likely to be more important and more carefully studied than the minutes of a business meeting.

Another distinguishing characteristic of negotiations may be that the participants have the option to withdraw from the discussions by getting up and leaving the table. In contrast, in the shared responsibility of a business meeting one cannot simply walk out of a meeting with colleagues, however difficult the situation.

Based on extensive experience in the Harvard Negotiation Project, Fisher and Ury [8] propose a structure for “principled negotiation”. Their method in outline has four underlying principles:

1. Separate the people from the problem
2. Focus on interest, not positions
3. Invent options for mutual gain
4. Insist on using objective criteria.

These four points are ideally suited to a GSS approach. The anonymity features of a GSS help with Principles 1 and 2, that is separating people from the problems and allowing participants to focus on interests, without being limited to any particular position they may have adopted during the course of the negotiations. There are a number of very effective approaches using GroupSystems to encourage the creativity required for Principle 3. Weatherall [22] has described some of these. Principle 4 is enabled by the process of recording the discussion on the computer, by the frank anonymous discussion and by voting to meaningfully implement the objective criteria, once they are agreed.

Fisher and Ury [8], and other authors, emphasize the need to think about the other party’s positions, not just your own. Particularly there is value in exploring the
other party’s BATNA (Best Alternative to a Negotiated Agreement).

A different framework, Evolutionary Systems Design, has been developed by Shakun [20]. It is a formal modeling framework for negotiation. Evolutionary Systems Design sees a negotiation as defined by the relationships among six sets of elements, as illustrated in Figures 1 and 2.

Figure 1. Evolutionary Systems Design, relation between control variables, goal variables and values

Figure 2. Evolutionary Systems Design, relation between controls, goals, criteria, individual preferences and coalition preferences (Shakun [20]).

Figure 2 represents a general framework for developing a negotiated solution satisfying individual and group preferences in relation to decisions about specific goals. This framework allows the problems to be restructured when satisfactory solutions cannot be otherwise achieved.

A different framework is given by Andriole [1], who defines the process steps within negotiation as:

- Problem/opportunity definition
- Option generation
- Options analysis
- Option proposal development
- Implementation
- Feedback/assessment
- Option (re-)generation
- Option (re-)analysis

4. Computerized negotiations

Carmel, Herniter and Nunamaker [4] have described maybe the earliest examples of using a GSS in a live negotiating process. This was a labor-management contract situation. The organization’s management and union representatives spent a total of 75 hours in 13 sessions in Electronic Meetings. Both sides ratified the resulting contract. This established the feasibility of GSS systems in the negotiation process (called at that time an NSS system – Negotiation Support System).

Carmel, Herniter and Nunamaker described their negotiation process in the stages:

1. Strategy sessions
2. Issues sessions

The strategy session is illustrated in Figure 3, each side working separately.

Figure 3. Strategy sessions in negotiation process (Carmel, Herniter and Nunamaker [4]).

When the issues and interests have been separately identified and ranked, joint work on the issues begins, as in Figure 4. (T) and (S) in Figure 4 indicate whether the sessions were held with both parties together or held separately.
Rule setting (T)
Role preparation (S)
Role presentation (T)
Issue and reason ID (S)
Issue consolidation (T)
Ranking (S)
Create joint standards (T)

Figure 4. Issues sessions in negotiation process (Carmel, Herniter and Nunamaker [4]).

The bargaining sessions can now begin, as illustrated in Figure 5, the process of which is repeated as required.

Proposal presentation
Give and take
Agreement wording

Figure 5. Bargaining sessions in negotiation process (Carmel, Herniter and Nunamaker [4]).

An activity called “give and take” as shown in Figure seems to assume that there is a relatively fixed ‘cake’. However, Carmel, Herniter and Nunamaker with many other authors, particularly Fisher and Ury, emphasize the potential benefits of being creative in developing new options that can satisfy participants’ interests.

4.1 Mathematical approaches to negotiation

A number of approaches to using computers in negotiating relate to the use of Utility Curves or other mathematical expressions of value. For example Bui and Shakun [3] have illustrated the application of NEGOTIATOR, a multi-attribute utility negotiation support system to a labor-management contract negotiation process. Based on Shakun’s Evolutionary Systems Design, NEGOTIATOR allows participants to enter values for ‘initial starting offers’ for each issue (e.g. salary raise, vacations and productivity in the case of a labor-management negotiation). The software develops different possible solutions, based upon highest joint utility, midpoints and other analysis.

These solutions form “the basis for evolutive exploration of new and hopefully better solutions”.

NEGOTIATOR provides a valuable illustration of how voting in negotiation can be used to find common ground and expose the issues where there are significant differences.

Chatterjee [5] explores the application of game theory to bargaining and concludes, “There is nothing that can replace careful study and preparation for a negotiation”. This conclusion reinforces many of the authors who have written on the general subject of negotiation. Chatterjee’s conclusion points to a real strength of using a GSS for negotiation, particularly the potential of distributed meetings, where people with specific knowledge can be included in the discussion without the cost and time of travel.

Mumpower and Rohrbaugh [16] have applied utility scores to the negotiation process, developing in some depth the importance of considering the weights that participants apply to issues, as well as the numeric objectives that they have for each issue. In negotiations between a Board of Education and a local union of school administrators, Mumpower and Rohrbaugh identify fourteen different issues and show the different weights attached to these issues by the two parties.

Eden and Ackermann [7] also point out the need to take into account the different interests of different stakeholders.

Lewis and Shakun [14] have taken the process of fleet buying of automobiles as an example of negotiating. Using a GSS called MeetingWorks™, they were able to ascribe numerical values to goals such as:

- Adequate space for hauling the sample equipment around (cubic feet)
- Comfortable transportation for sales reps and customers (subjective)
- Low initial costs (purchase price)
- Passenger safety (Consumer Report and EPA ratings)
- Low gas consumption (miles/gal)
- Reliable cars (Consumer Reports reliability estimates)
- The cars should represent our company image (subjective)

A voting matrix was then set up to allow individual participants to relate these goals to the values they have developed (relating ‘interests’ to ‘positions’ in Fisher and Ury terminology). Values in the case of choosing a fleet vehicle would include fast travel, efficient, reliable, safety, beauty and comfort. Weights can then be applied to identify the optimum vehicle. However,
this is tending towards a mathematical optimization issue rather than a negotiation.

Bellucci and Zeleznikow [2] have developed a number of models to support negotiation in the context of Australian Family Law. Family_Negotiator allows users to enter their positions, and the interests behind them, based on the Principled Negotiation approach of Fisher and Ury [8]. AdjustWinner enables the parties to allocate their own weightings, expressed in points, to the issues on which there is disagreement, and then calculates the division of issues or items based on these weightings. This calculation can form the basis of an equitable allocation, though human negotiation is likely to be also involved to finalize the agreement or if the calculation suggests dividing issues that are indivisible, such as custody of the children or a business.

Chung and Pak [6] have applied the concepts of QFD (Quality Function Deployment) as a negotiation tool. QFD is a matrix-based process used particularly in manufacturing industry to relate customer requirements to design features of automobiles, for example, and then hierarchically to relate the design features to manufacturing processes.

There is an apparent divergence between the “how to negotiate” books with their emphasis on personality, timing and an exact choice of words, and the mathematical emphasis of some of the GSS negotiating examples.

5. Other aspects of negotiation

Negotiation has many aspects apart from those where computerization is directly suitable and it would be inappropriate to imply that such a personal and subjective activity can be fully ‘automated’. These aspects include those discussed below.

5.1 The process of negotiation

The mechanics of negotiation are not covered closely in the literature. There seem to be no easy answers to such fundamental questions as who puts their position first, the sequence in which different subjects are broached, whether to try to take issues one at a time or collectively.

It is a strength of a GroupSystems based negotiation process that these questions can be decided as required and to the individual requirements of the negotiating teams.

5.2 Preparation

Many books on negotiating emphasize the importance of careful preparation. This involves not only thinking out ones own position but also that of the other parties. Questions to be included in this analysis are:

- Who are the decision maker(s)?
- What choices do the decision maker(s) have?
- What are the consequences to the decision maker(s) of saying ‘no’?
- What are the consequences to the decision maker(s) of saying ‘yes’?
- Is it easy for the decision maker(s) to simply delay?
- How will the decision maker(s) ‘sell’ the decision within their organization?
- What criticisms might the decision maker(s) receive from their organization?
- How can these criticisms be answered?

If the situation is sufficiently important, each group may do this analysis for their own situation and also for what they believe to be the situation of the other parties. This area is one of real strength for a GSS based approach, particularly because experts can contribute via ‘distributed meetings’ without the need to travel.

5.3 Interests and positions

As discussed above, many authors emphasize the difference between ‘interest’ and ‘positions’, i.e. that the parties might have wider interests that can be satisfied even if the immediate requirements on the table cannot be.

An example where the difference between positions and interests might be important is in negotiations with a supplier. The customer’s ‘position’ might be to require a percentage price cut year on year. The ‘interest’ corresponding to this position might be expressed as ‘improved value for money’. The customer’s position might be very difficult for the supplier to satisfy, but the interest might be achieved by a different approach, such as the supplier holding the stock and delivering as required, based on, say, a daily call off. This might be as valuable to the customer as a price cut but would not directly show on the invoice as a price cut.

Knowing the other party’s interests does not necessarily help in the negotiation. For example the common dispute between parents and teenagers about the benefits of early nights and hard work does not resolve itself when parents explain the interest of long term health and career prospects, nor are parents totally convinced by the teenager explaining the importance of peer group pressure.
5.4 The role of a mediator

The role of a mediator is not fully covered in the negotiating models, although in practice the role can often be vital. The mediator’s role is in part to allow participants to express thoughts that they do not want directly to put to the other side, which can in part be satisfied by the anonymity features of a GSS. However, anonymity in the GSS has limitations if there are only two parties to the negotiation.

Another role for the mediator is to show the extent of external interest in the issue – an important mediator shows that the outside world cares. It is unlikely that this role can ever be taken over by a computer!

A mediator has of course a very personal role in helping negotiations proceed, in terms of developing relationships with both sides and it might at first seem that this is an area where computers cannot help. However, Lindsay [15] for example has shown how GroupSystems can be effective in bringing closer together two groups that are in something of a conflict situation.

6. Multi-stage negotiation with GroupSystems

Let us consider an example of two organizations, a prospective customer and a vendor, negotiating the sale and installation of Group Support software that would enable the prospective customer to run Electronic Meetings. Thus there are two teams negotiating, with the likelihood of different viewpoints within each team. For the prospective customer the following people might be involved:

- The sponsor, a senior executive who sees the long term value of the project in terms of a more flexible and responsive organization
- The IT Department, who are concerned about the computer related issues, such as security, reliability, network loads and response times.
- The Skills Manager, who is concerned about skills required across the organization to get best value from the system at all stages of implementation.
- The HR Department, looking at possible effects on the organization. Computerized meetings may save money and lead to quicker and better decisions, but a faster pace of decision within the organization will not make everyone comfortable. More delegation will be required, so that participants at meetings are well briefed and able to give meaningful opinions. Objectives of meetings will need to be much clearer, thus putting pressure on the organization to have better defined processes. More specific activities will be required in the generic area of teamwork as meetings become shorter and more distributed.

The ‘opposing’ team from the vendor’s organization is likely to include:

- The sales representative, very concerned to ensure that the customer gets the best value for money
- Representative(s) of the suppliers technical support people, concerned to ensure that the customer gets the technical infrastructure right
- Representative(s) of the suppliers training department, concerned that an appropriate communication and training program be set in place across the customers organization, and that high levels of skills be continually maintained
- Representative(s) of the suppliers support services department, able to offer services to fill any gaps in the customers organization.

For both sides, legal and contract people would be on call if required.

Each team would like to come to agreement, but each side has significant concerns that need to be addressed and each side is able to walk away from the table. The prospective customer clearly will not buy unless satisfied, but it is also possible that the supplier may withdraw if the customer is not willing to make appropriate investment. The individual participants on each side needs to be able to ‘sell’ the resulting contract to their own organization.

6.1 The preparation stage

Each team needs to come to a common view of its position. Preparation can cover two aspects, firstly to agree what are the substantive issues for negotiation and secondly to plan how the negotiation is likely to proceed. The issues for negotiation in this case could include:

- Price of the software
- Technology decisions regarding the implementation, e.g. how to interface the prospective customer’s Intranet with outside world for interactive meetings, when to introduce wireless LAN’s, etc.
- What Help Desk support would be provided for people running Electronic Meetings, the hours of availability and the speed of response time that would be committed.
- Training of facilitators
- Training of participants
- Training of problem owners to decide how best they personally can use the GSS
- Measuring the benefits
• Maintaining skills and exchanging knowledge within the organization
• Managing the implementation.

We assume for the purposes of this paper that each side prepares for this negotiation by using a GSS, in this case GroupSystems. Each side would therefore hold its own separate meeting. These meetings would be likely to involve distributed participants, who would enter their thoughts and ideas from their computer wherever they happened to be in the world. The participants would build up a list of issues such as that above by entering their ideas. In practice there would be a starter list of ideas that have occurred in similar situations. The potential customer will have purchased and installed software before, but maybe not dealing with something as integral to the business and complex as meetings. From the perspective of the would-be supplier each potential customer is of course different.

A possible agenda for this preparatory phase of the negotiation is shown in Figure 6. It shows the meeting participants adding to the list of issues, making their comments and suggestions on the issues and then voting to establish priorities for the issues. These priorities could be expressed in terms of relative importance of issues, setting go/no go measures or other numeric measures of limitations of cost or resources to be allocated. Disagreements about priorities does not necessarily need to be resolved at this stage, it can be very valuable for the team to be aware of divergences of opinion.

The Appendix gives a brief description of the GroupSystems tools used in the agenda below.

Figure 6. Possible agenda – preparing issues for negotiation

<table>
<thead>
<tr>
<th>Introduction/Presentation to define the task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team leader’s presentation and definition of task</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What are the issues? (Categorizer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each participant adds to the list of issues.</td>
</tr>
<tr>
<td>Each issue can be carefully discussed and defined.</td>
</tr>
<tr>
<td>All contributions are evaluated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discussion of issues (Categorizer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each participant adds their comments to the list of issues, based on knowledge of the issue, any personal experience of the account, creative ideas for improvement.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prioritizing of issues (Vote, scale 1 - 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants vote to give their priority to each issue.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Any other comments and input (Categorizer)</th>
</tr>
</thead>
</table>

In planning how the negotiation is to proceed, a further stage is to explore what might be the opposition’s game plan. Some suggested headings are given in Figure 7.

Figure 7. Possible agenda – preparing for negotiation

<table>
<thead>
<tr>
<th>Know the opposition (Group Outliner)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- who will take the decisions?</td>
</tr>
<tr>
<td>- who will recommend and approve?</td>
</tr>
<tr>
<td>- what other alternative does the decision-maker have?</td>
</tr>
<tr>
<td>- what actions does the decision maker have to take after a positive decision and can we help?</td>
</tr>
<tr>
<td>- can the decision-maker delay?</td>
</tr>
<tr>
<td>- how will the decision-maker explain the decision within the organization?</td>
</tr>
<tr>
<td>- what criticisms might be made of the decision-maker?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Any other comments and input (Categorizer)</th>
</tr>
</thead>
</table>
6.2 Negotiating proper – giving, taking and being creative

This is the heart of the matter. The previous sessions have, in Electronic Meeting terms, been conventional – few people with experience of the techniques of Electronic Meetings would take exception to the idea that they can be an effective aid in preparing for negotiations. However, many people may question whether a GSS can assist in the quick fire, cut and thrust of face to face negotiation, with all the emphasis on personal skills, personality and relationships.

The particular strengths of Electronic Meetings include:

- A creativity tool to generate new options
- A voting tool to quickly identify divergences and agreement
- A recording tool to keep a continuous, up-to-date record of what has been discussed and agreed
- A means of quickly and easily involving people who are not physically present at the negotiating table for expert opinion, for their agreement or even for their detached comments precisely because they are not there in the heat of the discussion.
- A tool that easily enables each party to get into private discussion, or issues to be delegated to the people best able to deal with them.

The negotiations would open, as one would expect, with self-introductions and agreement on the objectives. Both these steps would take place electronically, thus formally recording the agreement on objectives and storing electronically personal information about who is participating and the skills that each person brings to the party.

The stage is now set for the participants to reveal and discuss the substantive issues. In a negotiation such as we are discussing in this section, participants would probably quickly share the list of issues that each side has prepared. It would then perhaps be appropriate to vote on the priority of these issues. A vote where only two parties are voting will seem unusual, but it is still likely to be valuable in setting priorities and expectations. Multiple criteria voting will allow the parties to consider aspects such as:

- Importance of the issue
- Anticipated ease of resolution
- Whether the issue is to be dealt with on a stand-alone basis or to be grouped with other issues
- Whether the issue should be discussed by the full meeting or can be delegated to a sub group of the participants.

Getting a consensus on such points, in relation to each issue, or bringing into the open that there is no consensus, will help the meeting proceed quickly.

A possible agenda for this phase of the negotiation is shown in Figure 8.

<table>
<thead>
<tr>
<th>Introductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- individuals present themselves and their skills (electronically and verbally), including remote participants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agreement on objectives (Vote, Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- parties vote to confirm their understanding and agreement on the objectives of the negotiations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What are the issues? (Categorizer – private list)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- each party submits their list of issues. Each issue can be carefully discussed and defined. All contributions are evaluated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prioritizing of issues (Alternative Analysis, scale 1 - 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- parties vote to give their priority to each issue, based on prior discussion.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Any other comments and input (Categorizer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What is the interest behind this issue?</td>
</tr>
<tr>
<td>- What suggestions are there for dealing with it?</td>
</tr>
</tbody>
</table>

Using Electronic Meetings techniques, the meeting can easily split into sub-groups to deal with particular issues, and then reconvene for the whole group to review the work done.

Matrix voting can be used to relate issues to interests, if the relationship is sufficiently complex.
7. What are the business benefits?

The business benefits that can be expected from using a GSS for negotiations are those that have been found with many Electronic Meetings. These include reduction in meeting time as compared with equivalent conventional meetings, a more open and fuller discussion based on the use of anonymous input where appropriate, the development of solutions that are more creative than can be expected from conventional meetings and the immediate documentation of the discussion. This detailed self-documentation is particularly important if the participants to the negotiation need to sell the resulting agreement to their peers in the organization.

In addition, and particularly important for critical negotiations, the ability to bring experts into the discussion by allowing them to participate remotely, will ensure a more considered and robust conclusion to the negotiation.

8. Summary

This paper has suggested that GroupSystems Electronic Meetings have exceptional capability for improving the affectivity of negotiations. Outline agenda for such sessions have been presented and described.

The strengths of this approach are its ability to deal with complex issues involving defined numeric target (for example of cost, response time, lead times) and numbers of people, not all of whom can be available at the same time for face-to-face discussions. Where the negotiation is more personal, and more based on relationships than commitment to specific numeric targets, this approach is less likely to add value.

Appendix

The functions of GSS’s, GDS’s (Group Decision Support) or Electronic Meeting software (to give a few common titles) will now be familiar to many people.

A simplified and brief description of the GroupSystems tools used in the suggested meeting agenda in this paper follow:

- **Categorizer**: allow participants to enter their ideas and comments. Has a particular feature called private list’, that enables ideas to be entered and reviewed one by one. Comments can be added to ideas, either anonymously or not. Ideas can be categorized (i.e. grouped together) if appropriate.
- **Group Outliner**: allows participants to add a structure of sub topics to each topic, up to 15 levels if required. This enables very clear and detailed group discussions.
- **Vote**: a choice of single criterion voting methods, including yes/no, true/false, strongly in favor to strongly against and a scale of 1 to 10.
- **Electronic Brainstorming**: a tool to allow creative and ‘off the wall’ ideas to be entered and developed.
- **Alternative Analysis**: a choice of multiple criteria voting methods, including numeric votes, allocation of a fixed amount across multiple options and those described under Vote above.
References