A Timing Management Banner for Supporting Group Decision Making

Guy Camilleri
IRIT
Toulouse University, Université Paul Sabatier
Toulouse, France
camiller@irit.fr

Pascale Zaraté
IRIT
Toulouse University, Université Toulouse 1 Capitole
Toulouse, France
zarate@irit.fr

Philippe Viguié
IRIT
Toulouse University
Toulouse, France
viguie@irit.fr

Abstract—Time Management stays a major problem to be considered in group decision making processes. In this paper we propose a prototype banner in order support the facilitator involved in a group decision making processes. This prototype has for objective to advertise members of the group of the time consuming.

Keywords: Group Decision Making, GDSS, Facilitator, Time Consuming.

I. INTRODUCTION

Group Decision Making processes are generally time consuming and are generally supported by Group Decision Support Systems and by human facilitators. Adla in [1] proposes to cut the group decision making processes in several steps. These phases are group together in three main steps: 1. Predecision; 2. Decision; 3. Post-decision. Each of them is decomposed in several other steps. Adla’s idea is to develop a framework composed by several tools in order to support not only the decision makers but also the facilitator in each steps of the decision making process.

Nevertheless the time management still continues to be critical in all group meetings. In this paper we present a prototype that we developed in order to support group and facilitators for time management.

In the first section we present a state of the art on Group Decision Support Systems and Facilitations. In the section two we present a particular study for supporting group decision making processes that we used for developing the presented software. In the next section, section three, based on the literature we show how the time consuming still stays a critical point in group meetings. In the section 4 the developed prototype is described. In the section five based on a case study we show how the system could be used. Finally in the last section we conclude and draw some perspectives of this work.

II. GROUP DECISION SUPPORT SYSTEMS AND FACILITATION

Group Decision Support Systems (GDSS) are a widely used collaborative technology that has proven to increase user participation in and the quality of decision-making. They are intended to provide computational support to collaborative decision-making processes [2]. Thus the facilitation activities must accompany such movement and the facilitator’s interest is also kept.

From a virtual organization perspective, facilitators are in a critical position monitoring efficiency, quality and commitment to solutions, and reporting results to the organization. In this sense, he is considered as the most crucial element of a GDSS [3]. Indeed, a GDSS does not address areas of group functioning, such as meeting design or managing verbal communications. These and other facilitation activities must come from people. An integration of good computer tools with effective human facilitation can lead to a more effective meeting than either by itself. A significant question is how to effectively plan, coordinate, and direct – to “facilitate” – the work of group members who are using a GDSS.

With the recent advances in GDSS, many group facilitation tasks can be automated, at least partially to increase the bandwidth of group communication and the ability of the facilitator to monitor and control the meeting process. An effective system would reduce the need for developing technical competence and would make any individual who so desired an effective facilitator in aiding the group members. Hence an automated process to aid even the most inexperienced facilitator must include tools to monitor group and individual behaviours, indicators to know when to offer or integrate information, as well as know when to employ particular techniques to move the group towards congruence.

Group facilitation is defined as a process in which a person who is acceptable to all members of the group intervenes to help improving the way it identifies and solves problems, and makes decision [4]. Facilitation, on the other hand, is a dynamic process that involves managing relationships between people, tasks, and technology, as well as structuring tasks and contributing to the effective accomplishment of the meeting’s outcomes.
Ackermann and Eden in [5] found that facilitation helped groups to contribute freely to the discussion, to concentrate on the task, to sustain interest and motivation to solve the problem, to review progress and to address complicated issues rather than ignore them. A further task of facilitation is to engage the group in creativity and problem formulation techniques to help the group bring structure to the issues facing them [6]. Facilitators attend to the process of decision making, while the decision makers concentrate on the issues themselves.

Group decision facilitation adopts a variety of forms.

Human facilitation has been identified as a group of activities that the facilitator carries out before, during, and after a meeting in order to help a group along the decision making process [7]. It is a key to successful usage of the GDSS. Previous studies found that group performance is improved when individuals participate in the facilitated discussion and receive cognitive feedback [8].

Automated facilitation is the enrichment of a GDSS with cues that guide decision makers towards successful structuring and execution of the decision making process [9]. According to Nunamaker et al. [3], an electronic facilitator should execute four functions: (1) provides technical support by initiating and terminating specific software tools; (2) chairs the meeting, maintaining and updating the agenda; (3) assists in agenda planning; and finally (4) provides organizational continuity, setting rules and maintaining an organizational repository. One more complex function considered by Schwarz [4] concerns improving the future group performance, which requires focussing the group on the specific problem at hand and simultaneously on the process.

It should be noted that a distinction exists between ‘technical facilitation’ and ‘group process facilitation’ [10]; [11]. Technical facilitation is aimed at assisting the participants with the technology and is often executed by a chauffeur. Chauffeur interventions manipulate the technology but not the process. In general, this sort of facilitation avoids adding communication and goal oriented direction to the working group. Coaching the users about how to use the group system tools is needed in order to alleviate the lack of user friendliness of meeting tools. The group process facilitation moderates participants and their interactions regarding stated and emergent tasks toward creating meeting outcomes.

On another point of view for facilitation tasks may focus on meeting process or meeting content [12]. Process facilitation is defined as the provision of procedural structure and general support to groups through the meeting process. Process facilitation focuses on assisting with task structuring. Content facilitation involves interventions that relate directly to the problem being discussed. Content facilitation focuses on the content of the meeting, on analyzing the data, and displaying relevant issues.

Nevertheless, facilitations and group decision making processes must be supported by any kind of tools or methodologies.

III. GROUP DECISION PROCESSES

Adla in [1] proposes a framework to develop skills necessary to design and conduct an effective and productive facilitated distributed meeting. The framework tools are integrated as embedded facilitation, illuminating the effect of the intelligent management tools reducing, but not eliminating intervention from the facilitator. To reach this goal, he explores how to model the group facilitation process and to manage the monitoring and control activities among human and software tools.

A range of interpersonal, time management and group dynamics skills required by a facilitator are described in the literature [13]; [11]; [14].

According to Adla’s approach, the facilitator’s involvement in group meeting is conceptually divided into a three phases: Pre-meeting, During-meeting and Post meeting (see Table 1).
Adla emphasises that having a model of the decision making process built into the system enables decisional guidance. It enables the facilitator to appropriately choose and use the system’s functional capabilities in the group decision-making processes (see Fig. 1). An intelligent guidance system monitors group’s behaviour and provides cues and customized explanations accordingly.

For the particular facilitation techniques, the facilitator should focus on at various times depending on the particular stage of the meeting process (see Table 2).

### Table I. The Three Phases of Group Decision Making Process

<table>
<thead>
<tr>
<th>Pre-meeting</th>
<th>During meeting</th>
<th>Post-meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Instructing the group on the use of a decision model;</td>
<td>- Manage group processes and promote effective tasks behaviours;</td>
<td>- Summarizing the meeting, detailing each point that requires future action;</td>
</tr>
<tr>
<td>- Planning the session and definition of an agenda of the topics and activities to be undertaken;</td>
<td>- Keep the participants focused on the agenda;</td>
<td>- Evaluating the meeting and suggesting changes for meetings;</td>
</tr>
<tr>
<td>- Selection of participants, definition of the roles of the participants and negotiating a contract;</td>
<td>- Skillfully and unobtrusively steer the group toward the desired outcomes;</td>
<td>- Generating post-meeting reports.</td>
</tr>
<tr>
<td>- Identifying and formulating the problem;</td>
<td>- Help the group adapting and executing the agenda to accomplish the task outcomes;</td>
<td></td>
</tr>
<tr>
<td>- Defining the ground rules for the process;</td>
<td>- Chairing the meeting, enrolling participants and tracking accomplishments;</td>
<td></td>
</tr>
<tr>
<td>- Clarifying and getting agreement on outcomes to be addressed;</td>
<td>- Defining a list of criteria the group wanted to use;</td>
<td></td>
</tr>
<tr>
<td>- Reviewing previous meetings;</td>
<td>- Clarifying the meaning of criteria, eliminating any duplicates;</td>
<td></td>
</tr>
<tr>
<td>- Defining time limits.</td>
<td>- Weighting the criteria in order of importance;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Reaching agreement on the criteria weights listed by the group;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Determining the proper moment of transiting to the stage of evaluating the key issues;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Selecting the alternatives for evaluation;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Evaluating the alternatives against the criteria;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Calculating scoring based on the criteria weights and ratings;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Examining the ranges in the alternative ratings;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ranking the alternatives and providing comparisons data;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Explaining the scoring process;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Determining the agreement conditions;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Identifying and selecting group decision;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Structuring decisions as collections of lower-level tasks.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Functionalities for each step
<table>
<thead>
<tr>
<th>Stage</th>
<th>Tools and Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generating alternatives</td>
<td>Electronic Brainstorming</td>
</tr>
<tr>
<td></td>
<td>CI-DSS</td>
</tr>
<tr>
<td>Organizing alternatives</td>
<td>Categorizer</td>
</tr>
<tr>
<td></td>
<td>Conceptual sort</td>
</tr>
<tr>
<td></td>
<td>Clustering</td>
</tr>
<tr>
<td>Evaluating alternatives</td>
<td>Rating</td>
</tr>
<tr>
<td></td>
<td>Ranking</td>
</tr>
<tr>
<td></td>
<td>Voting</td>
</tr>
<tr>
<td></td>
<td>Multi-criteria analysis</td>
</tr>
<tr>
<td></td>
<td>Preference aggregation</td>
</tr>
<tr>
<td>Choosing a solution</td>
<td>Selection</td>
</tr>
</tbody>
</table>

Nevertheless, even if facilitation is supported by intelligent tools, time management still stays a problem for group management.

IV. TIMING MANAGEMENT PROBLEM

In majority of organizations, groups work under time constraints. These constraints often materialize themselves in the form of deadlines [15], [16], [17]. The presence of deadlines motivates groups to pay more attention to time which mostly encourages them to accomplish their tasks within the time allotted [17].

Temporal planning in work groups was identified as important for effective coordination and task performance [18]; [19]. In addition, the Janick and Bartel study ([19]) showed that high levels of initial temporal planning facilitate the formation of time awareness norms which in turn help the coordination and the task performance.

In Gervers et al. work [20] we can see that when groups agreed on the temporal aspects of their tasks (called shared temporal cognitions) they were better able to respect the established deadlines. They also exhibited a positive influence between shared temporal cognitions and temporal reminders.

In essence, working meetings are special types of group works. It is therefore not surprising that time management is also a very important aspect of meetings success. This meetings feature has also been identified as crucial by many practitioners [21]; [22].

In order to support the time management problems for the groups but also for the facilitator we propose a temporal banner able to show the time consuming to the group.

V. A FACILITATOR SUPPORT TOOL FOR TIMING MANAGEMENT

In this paper we present a tool able to support a human facilitator for group decision making processes in the time management task. Nevertheless the developed tool is sufficiently generic to be used in any kind of group activities. The facilitator has for first task to define any steps of the process, i.e. Decision Making, associating to each step a time deadline.

The developed system shows a temporal banner in the high right corner of the screen presenting the meeting. The banner presents the different steps of the meeting (Brainstorming, Choice, Reporting) including the time consummation.

The Fig. 2 illustrates the use of our temporal banner for a PowerPoint presentation. The banner is displayed in the foreground in slightly transparent.

![PowerPoint presentation with our temporal banner](image)

In addition, the facilitator can control the banner and thus to some extend the meeting through the graphical user interface shown in Fig. 3.
Furthermore the system generates an automatic report in a pdf file including the tracks of the meeting progress.

The aim of this banner is to support the facilitator in the respect of time. Another objective is to share the time and steps constraints among all participants. The system is also developed to generate an automatic report in a pdf file send with moderation to the participants at the end of the meeting. The system also offers the possibility to keep the tracks of the meeting progress.

The banner is an executable system through which several applications could accessible, like for example Excel or PowerPoint.

The banner is written thanks to the Java language with the Windows operating system. The Human/Machine Interface is written in French and in English through Java API. Information about the participants is storage in a text file. It is also possible to register the information participants in an external Data Base.

The banner offers the possibility to automatically change from one step to another when the time related to the first step is sold out.

The prototype is developed in order to facilitate the print out of the banner. Several other functionalities are developed in this sense: 1. Zoom and un-zoom of the banner; 2. Mask and un-mask the banner; 3. Print out the banner by transparency.

Nevertheless the banner is specified for Group Decision Making but could also be used for any kind of presentations or tasks requiring time management.

VI. A CASE STUDY

In order to illustrate the banner usability we defined the following case study. Several decision makers are meeting in a face to face way in order to make a decision. A facilitator is appointed. In accordance with the decision makers he defines three steps for the decision making problem: 1. Brainstorming; 2. sorting; 3. voting.

In a first step the facilitator seizes each participant. Each of them will receive at the end of the meeting the automatic report including all logs (see Fig. 4).

In a second step the facilitator seizes each step including the time devoted to each of them (see Fig. 5).
In next step the facilitator could begin the first phase: the brainstorming phase (see Fig. 6).

The next figure (Fig. 7) shows the system reacting to an overtaking time in one step.

In the next screen we show how the facilitator can stop a phase (Fig. 8).

VII. CONCLUSION

In this paper we show a software tool developed for supporting group in time management during any kind of meetings. We show the developed banner on a case study. The next step of our study is to test and to validate the system in real decision meetings. The banner is devoted for decision making meetings but it could be used in any kind of meetings: time management for presentation for example.

The main interest of this system is the collective visualization of time consuming. This could have benefits for deadline respects but it could also have negative effects like for example forced blocking in the brainstorming phase or for tasks requiring creativity. Participants could have the reaction to think: I don’t have the time to express myself so I let my idea in my mind.

This system is the first prototype of time management banner. It will certainly be improved after several real experimentations.

ACKNOWLEDGMENT
We gratefully acknowledge the students Marija Vesic, Haiyun Wang and Barthélemy Haba who develop the prototype of the system.

REFERENCES