THE MEETING REPORT PROCESS: BRIDGING EMS WITH PDA

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Abstract: Personal Digital Assistants (PDA) are important tools to support personal processes. However, their contribution to co-operative processes, like meetings, is reduced. On the other hand, the link between meetings and other processes existent in organizations is also a problem. This paper discusses the integration of results produced during meeting sessions supported by Electronic Meeting Systems (EMS) with other processes, especially the ones supported by scheduling tools implemented by PDA. The paper develops a framework linking "personal data" and "meeting data." The framework originated a combined PDA-EMS system. The system was experimented by an organisation in order to evaluate the concept.

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1.   INTRODUCTION

Researchers and practitioners have for long given significant importance to team performance. One complex aspect of team performance concerns meetings, a very common and frequent mechanism intended to coordinate groups, disseminate information and increase synergy.

In what concerns meetings, technology support, human facilitation and process structuration are just some few areas of current investigation (Nunamaker, et. al, 1997, Pinsonneault and Kraemer, 1989 and Tung and Turban 1998). In this paper we will be concerned with the technology aspect, focussing on Electronic Meeting Systems (EMS).

Considering that meetings are just one of the many different coordination mechanisms used by organizations, it is somewhat surprising to realize that the linkage between meetings and the organization is sometimes neglected, in a context that emphasises the noble task of supporting the decision process. But this is an important problem: meeting results may have good quality content but may not be "formatted" with the right shape to be transmitted to other systems and understood by other agents (human or not), resulting in organizational inefficiencies.

Meanwhile, Personal Digital Assistants (PDA) are appearing more in meetings.

PDA are mainly personal. Tools like "to do lists" and calendars are the most widely used. However, PDA may also be seen as valuable tools to support organisational processes and may play an even more important role in the organisation of the future (Lewis, 1997).

For instance, among the projects extending PDA from personal to group usage, there is the Pebbles project developed by a team from Carnegie Mellon University (Myers et al, 2000a, Myers, 2000b). Many different ways of using PDA are explored in that project, but the perspective considers that the connection between the devices is in real-time and the PDA serves as prime interface with users (Myers et al, 2000c).

In the situation discussed in this paper, we attempt to combine PDA and EMS systems in order to support and explore the linkage between meetings and the organization.

In the next section we analyse the linkage problem in more detail. Then we present a framework that approaches the combination of PDA

and EMS systems. Finally we present the system that was implemented according to the framework. The system was used by an organisation, allowing us to draw some preliminary conclusions about the proposed solutions.

2.   THE LINKAGE PROBLEM

Not surprisingly, the traditional way of linking meeting sessions with other organisational processes is through meeting reports, specially meeting minutes.

Taking a broad view, the production of reports is composed by three major lifecycle activities:
- Preparation;
- Taking notes;
- Producing the final report.

The first activity deals with the preparation of data to help the subsequent process of taking notes. This may include the definition of rules, creation of an agenda or even the specification of a report template to be filled in, usually by a secretary, during the meeting.

The second activity concerns the process of coding the important items discussed during meetings. This process may be more or less complex according to the level of analysis required by the coding used. Nevertheless, this is the most important task concerning meeting reports, given that it defines the quality and granularity of the information that will appear in the reports. Finally, the last activity consists in the production of the report.

The agents that may be involved in this process are:
- The team, i.e. all the participants considered as a group;
- A designated person, either a secretary, facilitator, chairman or a participant;
- Each participant individually, if there is no designated person.

We will now use activity diagrams to describe three different cases of report production (Fig. 1-3):
- Traditional report process;
- EMS report process;
- PDA report process.

The traditional report process consists in a process heavily based on a designated person: the secretary. It is the secretary that prepares the meeting, takes notes and produces the report. The whole process is described in secretary manuals.

The EMS report process depends on the EMS functionality to produce meeting reports (Nunamaker, et al., 1991).

One advantage of EMS like GroupSystems, Meeting Works, Smart Meeting or M-Path is that they produce reports in an automatic way. The information collaboratively introduced by users in the EMS during the meeting is automatically compiled and structured in a report. Frequently, this report must be post-produced, since EMS tend to assemble either too little or too much information.
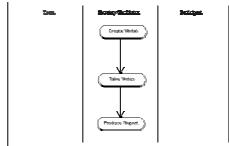

Figure 1- Traditional report process

Considering this problem, several research works attempted to improve the EMS functionality. One issue is tailoring the meeting results during the meeting. For instance, the Enterprise Analyser (Nunamaker, et al., 1991) structures group information using a variety of techniques and tools, one such tool is the Group Dictionary, which enables the group to develop and store formal definitions for use in current or subsequent meetings. Research made in this area also has important impact on collaborative development (Nunamaker, et al., 1990, Vreede, et al., 1997, Money et al., 1999).

Considering the quantity of information that may enter the report process, as well as the possibility to manage that information, the EMS report process has the potential to generate more sophisticated meeting reports than the traditional report process.

The third perspective consists in passing to the participants the burden of producing their own reports. This is what frequently happens in informal meetings. In this case individual tools, notably PDA, support the whole lifecycle activities of report production. PDA present some real advantages accomplishing this task: portability, un-obtrusiveness, pervasiveness, individual tailorability and integration with other tools, e.g. scheduling.

An interesting example is the Meeting Minute Manager, a system that runs on a Windows CE PDA that allows defining an agenda, recording meeting topics and producing reports.

Compared to the other cases described above, the PDA report process presents gains and losses. Compared to the traditional process, gains come from the computational support to the report process. Compared to the EMS support, losses come from lack of group data management.
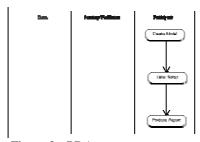
Figure 2 - PDA report process

One final perspective to ponder concerns the integration of the EMS and PDA report processes. Such an integrated view highlights the support to the combined role of managing meeting and personal data.

An ideal situation would be to develop EMS for PDA and then require all meeting participants to carry one. We have not attempted to accomplish this enormous task. What we have attempted is a hybrid situation where a current EMS, running on Personal Computers, may be connected with PDA. This hybrid situation endows a proof of concept experimentation, which may lead to a full PDA implementation of the system in the future.

3.   FRAMEWORK

The alternative presented above, combining EMS and PDA, demands an integrated management of individual and group information. Not all information manipulated by the EMS but only the information that should be part of the meeting report. The issue of discriminating what information is important and what is not is one central aspect of the combined approach.

The abstract depiction of the problem is presented in Figure 3. The picture identifies C_t and C_{t+1} as collections of data available in two particular instances of time, linked by some unknown data reduction mechanism. This mechanism is unknown because it depends on the intentions of the community of people using the system.

Figure 3 Problem

One approach to turn the report process more concrete consists in drawing the concept of communication genre from the literature field.

A communication genre categorizes large quantities of data according to their fundamental purpose, similarities in structure and conventions, and recurrence in use (e.g. memo, report, resume, enquiry, letter, meeting, announcement, expense form, training seminar).

The concept of communication genre has already been successfully used to analyse organizational communication (Orlikowski and Yates, 1994, Orlikowski and Yates 1998). It has also been recently used to examine persistent conversations (Crowston and Williams,1999) and patterns of thinking.
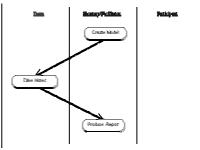
Figure 4 - EMS report process

An important derivative concept is the concept of genre system. Genre systems bring together several genres, explaining the complex patterns of group work based on the artefacts that are habitually communicated between group members.

In Figure 5 we introduce genres in our abstract depiction of the report production process. The role of genres G_t and G_{t+1} is to explain C_t and C_{t+1} in terms of purpose, structure and convention. Furthermore, genres G_t and G_{t+1} belong to a genre system (S_i). This genre system may be more complex, having other genres (for instance G_c).

At this moment it is possible to assert that genre systems help to clarify the data reduction mechanism applied to the production of meeting reports.
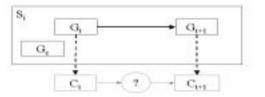
Figure 5 Genres explain collections of data

In fact, genres supply a set of clues that allow us to explain the linkage between C_t and C_{t+1} (Figure 6).

The genre system explains the purpose, structure and conventions associated to the collections of data, as well as highlights the patterns of usage linking both collections of data.

Note that the notion of genre system allows analysing a particular community of work and capturing existing work patterns (Orlikowski and Yates 1998) to that community. Thus, it does not provide a generic solution to the report process but, instead, it is a mechanism to capture the details of the report process in context.
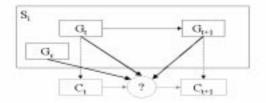

Figure 6 Genre system explains the report process

In conclusion, the framework proposed here defines how the report process may be specified, provided a concrete community of users.

4.   USING THE FRAMEWORK

In this section we will describe how the framework was used on a real organization.

The selected community of users consists of a small financial consulting and accountancy organization. This organization is accustomed to coordinate through Face-to-Face and, less frequently, EMS meetings (mostly using Web Chat or Net-Meeting, although GroupSystems was also used on an experimental basis).

The structure of the meetings held by this organization (an analysed by the research team) may be characterized as:
- Informal;
- Processes are described using timetables;
- The community uses personal agendas as the main support to organisational processes;
- Any disagreements about processes are negotiated and resolved during meetings.

The organization has assessed the possibility of using workflow tools to improve team performance, but concluded against that approach considering the restrictions that it imposes to the informal structure, marginal benefits and high investment needed.

This organization has also important cultural restrictions concerning meetings. The employees, especially accountants, analysts and consultants, considered the boundaries imposed by detailed agendas an important restriction to their work. Resistance to change was also a very important cultural factor. Finally, many employees are frequently unavailable – the consultants must visit their clients – which is a strong force shaping the current meeting structure.

Based on our framework, the analysis of this community allowed identifying three different genre systems (Figs. 7-9):
- Process definition meeting (PDM);
- Planning meeting (PM);
- Ordinary meeting (OM).

PDM deal with the informal analysis of some organizational processes that must be explicitly defined, usually because they are too complex or not known by every employee.

The PDM has typically two phases: a first one where tasks are identified; and a second phase, where the group organises tasks.

Figure 7 - Process definition meeting

The PDM produces a process description (Figure 7, right side) from the following data collections: the list of tasks, a list of syntactic expressions and a glossary. The list of syntactic expressions comprehends task dependencies (<task> follows <task>), time constraints (<task> is performed at <date>) as well as allocated resources (<task> is performed by <person>). The glossary includes explanatory information about tasks.

The PM is dedicated to instantiate and schedule processes, committing the participants and other employees to execute tasks and produce results. Thus, the PM generates personal calendars and to do lists (Figure 8, right side).
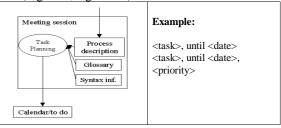

Figure 8 - Planning meeting

Every week this organization has one OM where the performance of the group is assessed. The group assesses which tasks were not performed and discusses their problems. Other comments may also be produced during these meetings. In the end, the OM produces new calendars and re-schedules tasks (Figure 9). Sometimes, the group modifies the process description.
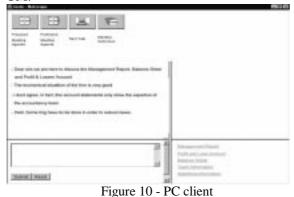
Figure 9 - Ordinary meeting

As illustrated above, we used the proposed framework to analyse in detail the report production tasks recurrently executed by a particular community of people. In the next section we will describe how these results were used to implement a combined PDA-EMS system to serve that community.

5. SYSTEM DESIGN AND IMPLEMENTATION

In this section we will describe an information system that allows the community to define and schedule tasks during their EMS meetings, according to the behaviours previously described.

The first design issue to consider involves analysing data, which can be inferred from the communication genres used by the community (see Figure 5). As we have previously described, our target organization uses the following genres: task list, glossary, syntax information, process description, and calendar. Furthermore, these genres are organized in three genre systems: PDM, PM and OM.

Figure 10 - PC client

To support genres, their links and organization in genre systems, we specified a database. Then, we developed two types of clients to access the above database, a PC client and a Palm Pilot client. Figs. 10-11 illustrate these clients. The PC client is based on a standard Web browser to access the database while the Palm Pilot client uses Jfile.

A core functionality of the system, the translation between PDA and PC data, was implemented with Perl scripts. These scripts execute the following tasks:

- Identification of the genre and genre system being used;
- Very simplified parsing of the syntactical information, according to the genre and genre system being used;
- Conversion of data to the appropriate type used by the PDA or PC.

Figure 11 - PDA client (implementation of the calendar genre is shown, having the following fields: Task, Due Date, Fixed Date, Complete, State, Notes, Responsible)

6. PRELIMINARY EVALUATION

As we have stressed in this paper, the developed solution was tailored to the particular needs of the organization where the study was conducted. No formal evaluation was performed yet, although some feedback was obtained from the users to evaluate the concept, i.e. integration between EMS and PDA functionality.

First of all, the notions of communication genre and genre system granted two major advantages: 1) allowed us to represent the data exchanged by the community of users, as well as patterns of usage; and 2) genres use a language very close to the user, thus simplifying the analysis of the problem.

Another aspect of communication genres, that kept the users enthusiastic, is that genres preserve the flexibility of the team. Users suggested expanding the use of communication genres to other facets of the EMS functionality, such as categorising electronic discussions.

Although many technical aspects associated to genres were oversimplified, users were satisfied with the proposed solution. For instance, the implemented syntax and parser are extremely simple; yet, some users criticized any attempt to increase functionality.

Another case was text editing, which was surprisingly considered sufficient.

This attitude should be further analysed in the future, but it hints that this kind of system should be kept simple and focussed on the process.

Though, the group suggested some minor improvements to the system, for instance syntactic validation while scribbling on the PDA.

Since this community of users has experimented other EMS, a comparison with our system was also informally discussed. Two different groups of users were identified: 1) a group enthusiastic with our system, considering simplicity and Web support as major advantages; and 2) a group of people noting that EMS provide significantly more functionality. The inclusion of voting tools in the current system was a suggestion presented by this group.

7. CONCLUSION

PDA support personal data and processes. But their support to co-operative processes, like meetings, is still scarce.

On the other hand, EMS present a linkage problem, lacking integration between the meeting and the other processes. This linkage problem is primarily reflected in the production and dissemination of meeting reports.

This paper analyses the integration of EMS and PDA aiming at improving the production of meeting reports, taking advantage of the capabilities to manage group and personal data given respectively by EMS and PDA systems.

The framework presented in this paper links group and personal data based on a conceptual mechanism that uses the notions of genre and genre system. Communication genres characterize the collections of data recurrently exchanged by a community of people to accomplish work. Genre systems allow identifying complex patterns of work.

Provided these conceptual mechanisms, one can then characterize what and how people may exchange information across group, individual and organizational processes.

In this paper we show how we have applied the proposed framework to a community of people and how we designed a report system to facilitate the work activities of this particular community.

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