

Development of RAPAT: Asynchronous GSS at the Pre-meeting Stages of Strategy Formulation for Indonesian Culture

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Abstract

Research about Group Support Systems and the design of these group support technologies is mainly based on western culture and takes little explicit account of other cultures. While the research reveals promising results on the effectiveness of these technologies, the research results and the technologies themselves may be less effective when applied directly to different cultures or cross-cultural situations. These cultures may require different forms or styles of group support. This paper presents the prototype development of RAPAT (Replicable Asynchronous Pre-meeting Application Templates), an asynchronous GSS for groups engaged in strategy formulation in Indonesia. Indonesian culture has relatively high power distance, low individualism, and weak uncertainty avoidance (Hofstede, 1980), and high context (Hall and Hall, 1990). The development of RAPAT is based on Lotus TeamRoom templates and can be reconfigured and used by groups with similar culture to Indonesia and the same tasks. This paper presents the requirement and architecture of RAPAT as well as a discussion of aspects of its implementation.

Keywords

Group Support Systems, asynchronous communication, meeting, culture, strategy formulation.

INTRODUCTION

In the era of widespread use of collaborative technology, including team and small group activities, significant work is done in meetings. Most of the research and development of collaborative technology has been conducted by North American organisations and universities using North American subjects. Basing this technology on the needs of western culture may lead to resistance and ineffectiveness when it is used in other national cultures.

GSS meeting designers need to be culturally sensitive, they have to match the tools and communication configuration of a GSS while at the same time meeting goals and cultural norms (Watson et al., 1994). Based on observation of Singaporean groups they suggest that, "harmony might be enhanced by using a GSS to create a distributed meeting in which group members are physically separated and information exchange is asynchronous. In this case members can carefully assess others opinions and weigh their thoughts before making a statement".

DeSanctis and Gallupe (1987) suggest three approaches of GSS to support group decision making, referred to as Level 1, 2 and 3. Level 1 GSS focus on facilitating information exchange among members, providing a communication medium only. Level 2 GSS might provide automated planning tools or other aids commonly found in individual decision support systems, and group structuring techniques. Level 3 GSS are characterised by machine-induced group communication pattern and can include expert advice in the selecting

and arranging of rules to be applied during a meeting. Johansen (1988) discuss approaches to categorising groupware and classify them by time and space dimensions, namely synchronous versus asynchronous, and face-to-face versus dispersed.

Most of the GSS tools that have been used for research are in synchronous and face-to-face mode, and most of them are belong to Level 1 or Level 2. Fjermestad and Hiltz (1999) who analysed more than 200 GSS experiments and found that there have been no published experiments using “anytime/any-place” systems. So far, there have only been a few available GSS to support asynchronous group work, including EIES, GroupSystems for Web (GS_{web}) and Lotus Notes[®].

EIES (Electronic Information Exchange Systems) is a distributed asynchronous GSS. It was developed at New Jersey Institute of Technology. It is commercially available and has been used for some case study research (Turoff et al., 1993). GS_{web} was developed at University of Arizona. GS_{web} is the evolution from GroupSystems which is commercially available and has been used for lab experiments, field and case studies for more than 10 years (Romano et al., 1998). While both EIES and GS_{web} are ready made asynchronous GSS, they are not a groupware development environment. Lotus Notes[®] (currently known as Domino[®]) is one of the commercial groupware products, and can be used to develop specific groupware applications for specific needs. There has been some case study research based on Lotus Notes[®] applications in organizations (Orlikowski, 1993; Darr, 1996; Lloyd and Whitehead, 1996).

After exploration of the initial requirements for asynchronous pre-meetings (Abdat and Pervan, 1999) and evaluation of the available tools and development environments, Domino[®] was chosen as the development environment for RAPAT (Replicable Asynchronous Pre-meeting Application Templates). Features of Domino[®] include email, calendaring, discussion databases, document-databases, workflow and web integration. Application development can be undertaken making use of templates, a scripting language and programming languages such as Java. Comprehensive security is provided via authentication, database access control lists and field protection. Domino[®] operates in a client server environment and works on all of the common networks and operating systems. Support for mobile computing allows end users to work off-line and synchronise or replicate databases with servers when required. It is thus particularly suited to support participants who collaborate at different times and in different places during asynchronous pre-meetings.

RAPAT is designed as an asynchronous GSS based on Indonesian cultural requirements to support the pre-meeting stage of strategy formulation. It will be used during the pre-meeting stage of strategy formulation for some case studies in Indonesian organisations. The principal sub-activities of strategy formulation as a logical activity include brainstorming, generating ideas, identifying opportunities and threats in the organization’s environment and attaching some estimate or risk to the visible alternatives. Before choice can be made, the organization’s strengths and weaknesses should be appraised together with the resource on hand and available (Mintzberg and Quinn, 1991). To achieve the desired task outcome, often organisations set up a team composed of several members of different background or expertise. A meeting is one method commonly used for sharing information or making decisions related to the task

This paper discusses the development of RAPAT as an asynchronous GSS at the pre-meeting stages of strategy formulation for Indonesian culture. Some of the tools available in RAPAT may be valuable in other cultures also, but our focus is on the Indonesian culture. The paper defines what the “pre-meeting” is, why it is important in the Indonesian culture, the requirements for supporting asynchronous pre-meetings, and the architecture as well as some implementation aspects of RAPAT.

TYPICAL INDONESIAN MEETINGS

There are some key studies about national culture dimensions that are believed to be stable over time. The culture dimensions that will be used in this research are *power distance*, *individualism*, *uncertainty avoidance* and *context*. *Power distance* is the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally (Hofstede, 1991). In low power distance countries, status differences among individuals are less significant, and people believe in the legitimate use of power and equal right. In high power distance countries, status differences among individuals are very pronounced. *Individualism* pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty (Hofstede, 1991). *Uncertainty avoidance* can be defined as the extent to which the member of a culture feels threatened by uncertain or unknown situations. This feeling is, among other things, expressed through nervous stress and in a need for predictability: a need for written and unwritten rules (Hofstede, 1991). Weak *uncertainty avoidance* countries are characterised by people who are comfortable in ambiguous situations and with unfamiliar risks. *Context* is the information that surrounds an event; it is inextricably bound up with the meaning of that event (Hall 1976; Hall & Hall 1990). The elements that combine to produce a given meaning, event and context are in different proportions depending on the culture. The cultures of the world can be compared on a scale from high to low context. A *high context* communication is one in which most of the information is already in the person, while very little is in the coded, explicit, transmitted part of the message. A *low context* communication is just the opposite; the mass of the information is vested in the explicit code.

In the Indonesian Culture, which has *low individualism*, *high context*, and *high power distance*, people prefer to arrive at major meetings with all details negotiated so that there are no surprises (which may lead to "loss of face"). The term of "loss of face", related to protecting your "face", is actually one of Confucian work dynamism (CCC, 1987). This reflects the 'high context' attitude of Indonesians. These face-to-face meetings are usually attended by a large number of people, including many only loosely related to the task, which reflects the 'high collectivism' attitude of Indonesians where there is a conscious desire to get everyone involved (and is also related to high context). The result is usually already known because most of the work has done before the meeting. In such a culture and resulting process, Indonesians tend to pay more attention to the pre-meeting of the meeting cycle.

In theory one might believe that national culture with strong uncertainty avoidance might seek a pre-meeting to overcome the uncertainty before coming to the "in-meeting" (see definition below). However, analysis by Hofstede reveals that Indonesia is one of weak uncertainty avoidance countries. This finding would seem to indicate that at least as far as the need for pre-meeting is concerned, other dimension of cultures such as power distance, individualism and context might have stronger influence.

Abdat and Pervan (1999) proposed a model using a basic meeting cycle to show how events surrounding the meeting are interrelated (see figure 1). The proposed definitions for these events are as follows:

1. **Meeting:** a group information process to achieve specific goals.
2. **In-meeting:** a scheduled event in which all participants of the meeting have a possibility to do communication and interaction at the same time (synchronous).
3. **Pre-meetings:** unscheduled events in which subsets of the participants of the meeting are able to communicate and interact, either at the same time (synchronous) or different time (asynchronous) before In-meeting. The purpose of these activities may be to exchange

information, discuss ideas, negotiate, and seek consensus before coming to the in-meeting.

4. **Post-meetings:** unscheduled events in which subsets of the participants of the meeting have a possibility to communicate and interact, either at the same time (synchronous) or different time (asynchronous) after the in-meeting. The purpose of these activities may be to clarify details from the “in-meeting”, and to organise and carry out the implementation of decisions made.

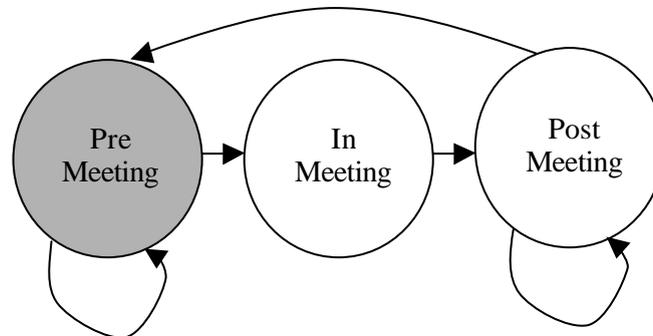


Figure 1. Basic Meeting Cycle

At the pre-meeting and post-meeting stage the communication and interaction are not only between the participants of the “in-meeting” but may involve communication with others persons. In the discussions that follow, the “group” is synonymous with the “in-meeting participants”.

Several authors (Oppenheim 1987; Schwartzman 1989; Bostrom & Anson 1992; Schwarz 1994) have discussed why pre-meetings are important. The pre-meeting provides participants with sufficient context and perspective about the tasks to be accomplished. Therefore participants come to meetings better prepared (Darr, 1996). This is very relevant to the *high context* cultures. Moreover, there are relationships according to Hofstede, in which *collectivism (low individualism)* tends to be *high context*. The next sections of the paper will focus only on asynchronous pre-meetings.

GSS REQUIREMENTS FOR ASYNCHRONOUS PRE-MEETINGS

GSS requirements for asynchronous communication in general have been proposed and discussed by Turoff (1991). The GSS requirements described in this section are not intended to replace the GSS requirements during face to face meetings. They should be viewed as complementary and synergistic to the face-to-face requirements. There are additional requirements for pre-meeting and reuse of some previously defined capabilities by taking into account the use of different time requirements and cultural appropriateness.

There are technological systems that can be used to enhance work in groups. They can be classified into four major types, on the basis of function(s) that they serve for the group: inter-member communication, extra-group communication, information/data access, and member task interaction (McGrath and Hollinghead, 1993). Moreover, the type of information/data should not be restricted to the specific media such as text only, but also include multimedia as the technology available to handle it.

General requirements, based on the definition of an asynchronous pre-meeting, are related to communication and memory aspects, as follows:

- Internal Group communication: meeting participants should be able to communicate with all participants or subsets of the participants at any time.
- External Group communication: meeting participants should be able to communicate with other relevant individuals or groups outside of the meeting participants at any time.
- Group Memory: meeting participants should be able to access information or knowledge created by the group and made available for the group.

- **Public Memory:** meeting participants should be able to access information or knowledge from sources outside the group, and selected individuals outside the group should be able to access information or knowledge made available to outsiders by the group.
- **Sub Group memory:** meeting participants should be able to access information or knowledge which is created by a subset of the participant or selected external individuals outside of the participant of the meeting and made available only for specific individuals.

In considering culture-based requirements to be taken into account for Indonesians, high power distance effects can (theoretically) be reduced using *anonymity*. However, Watson, Ho and Raman (1994) found that this feature might be inappropriate in certain circumstances for Singaporeans. This may also be the case in the Indonesian culture, so it is suggested that the use of *anonymity* should be switchable. It could then be used in specific situations, such as when there is a mix of high and low status participants, and the group wishes to reduce the status differential.

As indicated by Dennis et al. (1997) process support is a key element of success in GSS support of strategy formulation in the face-to-face setting. Abdat and Pervan, (1999) suggest that this is also likely to be the case in a dispersed and asynchronous setting. The key process support capabilities are summarised in Table 1 below, along with the corresponding needs in a dispersed, asynchronous setting which have been identified so far, and the Indonesian cultural aspects of these support needs.

Process Support Capabilities (same time same place meeting)	Process Support Capabilities (Asynchronous Pre-meeting)	Related Cultural Issues
<i>Parallelism</i>	<i>Selective broadcast</i>	Power Distance, Context
<i>Anonymity</i>	<i>Anonymity</i>	Power Distance
<i>Memory</i>	<i>Memory</i>	Context, Individualism

Table 1. The key process support capabilities for asynchronous pre-meetings

Selective broadcast is the capability of group support systems to distribute information to specified members of the group. In face-to-face meetings, information is broadcasted to all participants. However, in the pre-meeting stage subsets of the participants may need to communicate among themselves and may also involve people outside the core group of meeting participants (Abdat and Pervan, 1999). *Selective broadcast*, therefore, is one of the most significant GSS requirements in the Indonesian culture at the pre-meeting stage of strategy formulation. In certain situations it can be used to overcome the negative impacts in high power distance culture during asynchronous pre-meetings and so obviate the need for anonymity. This is the situation in which individuals want to initiate a new idea but they do not want to reveal to all participants until the idea is mature enough to be broadcasted and then become a group memory.

As indicated by de Vreede (de Vreede, 1995), people may hesitate to contribute if everything is stored immediately. During asynchronous pre-meetings the use of selective broadcast can become a medium to achieve a certain stage of ‘content-maturity’ before becoming group memory. In the Indonesian culture, which has the cultural characteristic of low individualism, individuals tend to think carefully about whether or not the idea or opinion will be useful for others. Therefore, instead of broadcasting the idea or opinion individuals usually check and verify their points to a colleague or superior. In this situation *selective broadcast* may have a positive effect with group memory by segmenting the memory process capability into group, subgroup and private memory.

A technology which may support this selective broadcast capability is Replicable Asynchronous Pre-meeting Application Template (RAPAT). Its architecture and implementation are discussed in the following sections.

ARCHITECTURE OF RAPAT

The architecture of RAPAT is developed based on client-server architecture. The design concept uses modular design components, which can be expanded to accommodate further requirements. The main components of the architecture of RAPAT is developed based on requirements which were discussed in the previous section, and consists of three layers, three services and a repository (see figure-2).

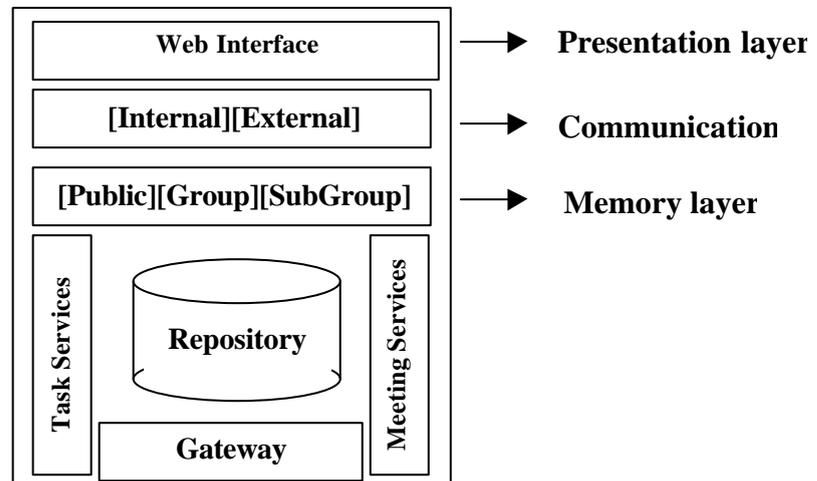


Figure-2, Architecture of RAPAT

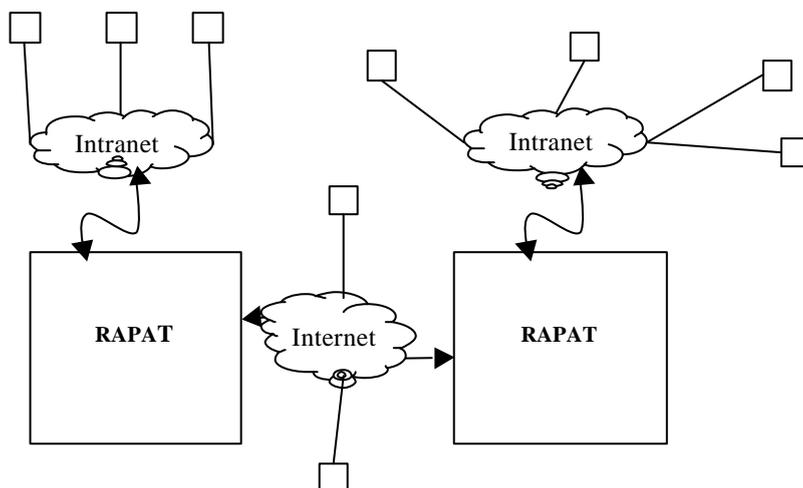
The functions of each component are as follows:

- *Presentation layer* is responsible for translating information to be ready for Web browser rendering in the participant workstation
- *Communication layer* is responsible for handling internal and external communication among participants. (Although we are focusing on the asynchronous communication, this layer could be expanded to support synchronous communication as well.)
- *Memory layer* is responsible for handling public memory, group memory and subgroup memory from group communication. This layer only provides a mechanism for tracking and organising shared memory. The actual information resides in the repository.
- *Task service* is responsible for handling task-related activities by providing a mechanism for task context, for example a strategy formulation task. The actual task related information resides on the repository.
- *Meeting service* is responsible for handling meeting related issues, for example meeting agenda, meeting resumption or decisions that can be used during the pre-meeting session. The actual meeting related information resides on the repository.
- *Gateway service* is responsible for handling communication of the RAPAT server with other information servers such as database servers, web servers or replication with another RAPAT server in a distributed environment.
- *Repository* is responsible for storing, organising, tracking and retrieval of all information sent/received by RAPAT server. Repository is centrally managed but can be replicated to another RAPAT server in a distributed environment through the gateway service.

The RAPAT server is Domino[®] server that runs application based on RAPAT design templates. The RAPAT client can be either a Lotus Notes client or any Web Client, which is capable of executing JavaScript and Java applet.

RAPAT is designed to support the asynchronous pre-meeting, which can be used at any location in which Web clients can be connected to RAPAT server(s) via Intranet or Internet (see figure 3). However, from the architecture point of view it is possible to expand this to accommodate for synchronous pre-meetings.

Figure-3, Distributed configuration of RAPAT



IMPLEMENTATION ASPECTS OF RAPAT

Based on TeamRoom (Cole and Johnson, 1996), one of the Domino[®] templates, RAPAT is being developed and will be used to study the pre-meeting stage of strategy formulation for some case studies in Indonesian organisations. While Domino[®] has a capability to define all the users belonging to specified groups or roles on its public address book under central administration control, each user can define a private address book to include other members under his/her control. This function can then be used and refined under the TeamRoom template. TeamRoom has a specified field to send information to a group and/or a specified sub group, and each participant can specify to whom the information should be automatically forwarded by defining conditions. For example if the subject related to the “quality of service” then it would be forwarded to all customer service officers.

TeamRoom has a capability to link each communication during pre-meeting to the specified event. This event might be one of the “in-meeting” stages or other related deadlines. In addition, the group has to specify the type and the category of the communication. In this situation participants can put task-related information such as SWOT (Strength, Weakness, Opportunity, and Threat) analysis, and can add the context of the strategy formulation task by including mission statements relevant to the specific situation. Although Domino[®] and the TeamRoom template seem to fulfil most of the requirements, some parts of the template still need modification in order to be more culturally sensitive for the Indonesian context.

Implementation of *selective broadcast* on RAPAT could be possible by making use of the Domino[®] standard messaging system which has the function to deliver information to specified users or groups defined on public address book or private address book. Managing subgroup memory as the impact of *selective broadcast* could be possible by making use Domino[®] “views” feature. Views enable a summary selection of documents. The selection can be programmed based on fields and formulae. For example a selected view of ingoing and outgoing communications could include one-to-one and one-to-many correspondences. The

ordering by communication partners could be extended to documents received as email attachments. In theory this could be extended to digital voice communication.

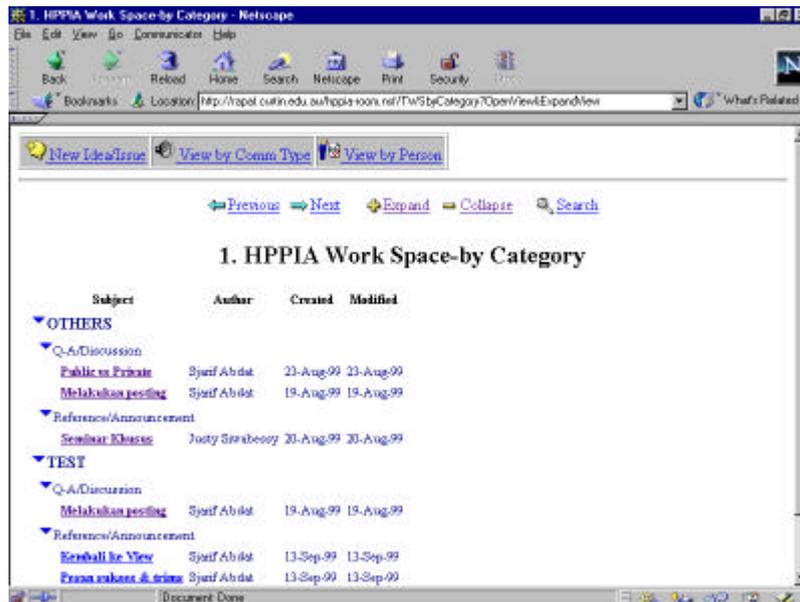


Figure-4, Example of RAPAT screen to view available information

Currently RAPAT is being used and reviewed by a group of Indonesian researcher in Western Australia to develop a strategic plan for their organization. The following example is captured from one of the use-cases, namely "Initiate Idea/Issue" (see figure 4). The user is provided with the facilities to view available information by category, communication type and Person. From this view the user can compose a new idea by clicking "New Idea/Issue" button. User has access to other facilities from this view including a searching facility and managing display using Previous-Next and Expand-Collapse.

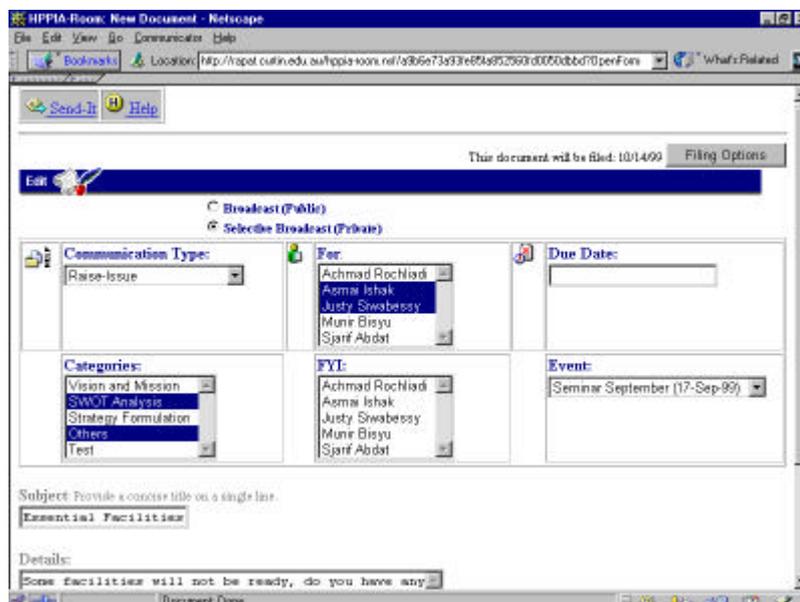


Figure-5, Example of RAPAT screen to initiate idea/issue

The above sample screen (Figure 5), shows how the user can compose a message for raising an issue, which is one of the communication types. This message by default will be sent to all participants (Broadcast), but in this example the user decides to send the message to specific members of the group by selecting their names (Selective Broadcast).

A message can be viewed from one or more categories. By choosing more than one category, a recipient can find the message listed in different views. Event can be included to view a message grouping by the specific event. After the user has finished filling in the subject and details of the message, the user can send the message by clicking on the Send-It button on the top of the page.

One of the limitations of RAPAT is the design choice of the use of Web browser as a main user client. This choice limits the use of all capabilities the Domino[®]. However, as Domino[®] evolves more and more capabilities can be used using the Web browser.

CONCLUSION AND FUTURE WORKS

In this paper we have discussed why pre-meeting is important at typical Indonesian meetings and how this has led to the development of RAPAT to support the asynchronous pre-meeting stage of strategy formulation for the Indonesian culture. Asynchronous pre-meeting requires *selective broadcast* as one addition to the GSS capabilities for process support. The discussion also includes the architecture of RAPAT, which is designed for Web users to be used “anytime/anyplace” and the implementation of *selective broadcast*.

It is intended that the prototype of RAPAT will be tested in case studies in Indonesia. Through this process the empirical results will be used to review the design, specific tools and interfaces of the RAPAT for the specific needs of this particular non-western culture.

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