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1. Introduction:

Advances in computer and communication technologies have provided fascinating opportunities for supporting the organizational information and decision-making processes. Academic researchers and corporate MIS departments have found Group Support Systems (GSS) to be a worthy technology, providing sustenance for their respective appetites. In a general sense, the process of GSS use by a group of individuals epitomizes an inquiry system (Churchman, 1971). In the same vein the determination of appropriate technological support for a given task/project is similar to designing an inquiry system. By virtue of the fact that GSS researchers agree that there exists no universal technology that matches all group tasks, one of the major challenges in GSS research and application activities is morphological in nature. That is, to draw distinctions among tasks and technologies and hence prescribe the right kind of technological support (electronic or non-electronic) for a given task/group.
GSSs differ in terms of the following permitted or required constraints (McGrath & Hollingshead, 1993): (i) temporal and spatial meeting arrangements (face-to-face, non-face-to-face with synchronous or asynchronous communication); and (ii) communication modalities (text, graphics, audio, or video). A well understood corollary to these distinctions is that the media of communication permitted (or required) by various GSS configurations differ in terms of the richness of information they are capable of conveying (Daft & Lengel, 1986). The face-to-face meeting offers the richest medium of communication, whereas the text based (non face-to-face) communication is considered to be the least rich medium. The audio and video modalities lie between the two extremes. The GSS literature provides useful guidelines for defining the fit among group tasks, the information richness requirements of tasks, and the GSS configurations that are suited for conveying the needed media richness (McGrath & Hollingshead, 1994). In this paper we present an alternative approach for defining this fit.

In essence we present an interpretation of inquiry philosophies that can be useful for prescribing group communication support features for various group problem solving (or decision making) situations. We argue that the nature of the problem/group determines the implicit/explicit approach a group adopts to validate the truth content of process outcome. And, the validation approach suggests suitable technologies (media support) that can be brought to bear on the effectiveness of the process.

1. Model of GSS Use and/or Research: A generally agreed upon model of research with GSS use is as follows:
Input ---> Process ---> Output

The input sector consists of variations of: task, GSS, and individuals/group. On the other hand, the output sector consists of a selected set of objective and/or subjective measures of quality, consensus, and satisfaction, etc. (Denniss, et al, 1988; Hiltz, et al, 1996; Pinsonneault & Kraemer, 1989; and others). Mitroff & Turoff (1973) proposed the following representation of process sector.

Raw data Filter Filter Informationor External --> and/or --> Model --> and/or --> Conclusionevents Transform Transform Recommendation

According to the above configuration, a group process starts with some "raw data set" that represents some aspect of the real world. The group applies some transformation to the data to bring it to a form useful for some "model" (or structured process, rules, or algorithms, or heuristic principles). The model is applied to the data and subsequently passed through some filtration process and finally recognized as a group outcome (or decision). Mitroff and Turoff argued that the Inquiring Systems (IS) can be differentiated based upon the (1) priority assigned to the various components of the above system (e.g., data vs. model); and (2) the degree of interdependence assigned to the various system components. In our terms, the two factors would serve to draw distinctions among the nature of problem solving (or decision making) process (Turoff, et al, 1993) and hence the approach adopted by the group to validate the truth matter of group decision/outcome.

The following section describes various inquiring systems. The inquiry philosophies described are taken from the work by Churchman (1971) and Merleau-Ponty and Heidegger (Kant, 1967). The objective is to highlight the distinctions and develop an interpretation useful for determining which IS would be most suitable for which type of group task situations. Once, the suitability of an IS for a given task situation is recognized we also argue for the level of media richness that would best serve the group process (Section 4).

3. The Inquiry Systems (or Philosophies): Leibnizian IS (Deductive): In this IS the model has priority over data. This approach involves the application of formal (symbolic) models to observations and findings (the data). The approach adopted to validate the truth content of the group result is primarily deductive in nature. While there may be a need for consensus on the final result, the relationships exposed in the problem solving process are largely accepted as obvious by the rational group members. The post-discussion degree of consensus rests upon the agreement on the applicability and faith in the assumptions of the adopted model. Since this approach is data independent, it is the logic and causality implied by the arguments that dominate the validation process.

A Leibnizian process is suited for tasks that are well understood (a well understood phenomenon could very well be complex in terms of the nature of relationships and information exposed in the process of problem solving). A real life situation where deductive validation is the preferred approach is determining the cost of a new product. In which case, the problem solving process will be dominated by logical relationships among fixed, variable, and overhead cost figures.

Lockean IS (Inductive): In a Lockean process the data has priority over model. It is the data that justifies the model, and hence the primary validation approach is inductive in nature. The truth content of the outcome is determined by the consensus among group members. The level of consensus on the validity of the outcome (i.e., solution acceptance) rests upon the level of agreement among group members on the implications of the data (or observations and findings). An inductive approach is generally applied when many of the connections to be made between observations of the group are largely subjective in nature. Example: Reviewing an ongoing project. In this case the subjective judgments and observations of group members, as opposed to logical sequencing of variables involved, play a strong role in arriving at the recommendations.

Kantian IS (Relative): In a Kantian system the data and the model are inseparable. Neither the data nor the model have priority over one another. The models are built from data, but data cannot be collected without the prior presumption of the model. In terms of the group problem solving or decision making process any observation or finding that does not relate to the objective(s) is considered irrelevant. Truth is determined by comparing alternative findings in relationship to agreed objectives or goals. Either inductive or deductive methods may be employed to connect observations to findings and findings to objective. However, it is the relationship between findings and objectives that dominates the validation process. A Kantian process is well suited to situations where group has agreed upon objectives, the self interests of the group members are complementary, and the values (or belief systems) of group members are not in conflict. Example: Which computer system to buy is a situation where the decision making process will generally be dominated by comparing features and prices of various vendor products to the budgeted amount and the expected uses of a computer.

Merleau-Ponty & Heidegger (Negotiated): The group negotiates; truth does not necessarily depends upon the physical reality. A negotiated approach to validating the truth content of the task is typical of situations where there may be an agreement on values but self interests of parties involved are in conflict. Example: Deciding new strategy for a company, or union management negotiations.

Hegelian IS (Conflictual): In a Hegelian process a set of opposing arguments (or position) constitute the model sector. The data sector is secondary to the model in that, without the pro and con positions the data is not meaningful. It is assumed that for any issue a "for" and "against" position can be constructed. The intent of generating the counter positions is to identify the possible conflicts. The emergence of the truth depends upon the examination of the strongest possible conflict. It is hoped that once the strongest possible conflicts

of the parties involved have been identified, a synthesis of truth will emerge. However, in a conflictual validation approach there is no guarantee that the truth or a synthesis of truth will emerge. This validation approach is typical of situations where both values and self interests of the parties involved are in conflict. Example: A court case, or resolving an international or religious dispute. The resolution of disputes among Israeli and Palestinian leaders is case in point.

4. Validation Approach and Media Richness Requirements: The above validation approaches differ in terms of the analyzability of the task at hand and the equivocality of information exposed in the group process. Task analyzability refers to the probability that objective and logical procedures can be used in task performance (Daft & Macintosh, 1981; Daft & Lengel, 1984). High task analyzability correlates with the appropriateness of logical, objective, and routine procedures to validate the outcome. Under low task analyzability, group members use their judgment and past experience. Task analyzability is at its lowest under conditions of negotiated and conflictual approach to validation. Under such circumstances, group members exhibit a strong attachment to their self interests, beliefs and values, which in turn lead to very different interpretations of the problem situation. In organization theory literature, the phenomenon of multiple interpretations of existing information is referred to as equivocality. More precisely, equivocality is the multiplicity of meaning conveyed by the problem situation (Daft & Macintosh, 1981). Under conditions of high equivocality, the task environment is ambiguous and not amenable to objective analysis (Weick, 1979). The information exposed in the problem solving process leads to confusing and conflicting interpretations by group members.

In sum, the deductive validation approach correlates with high task analyzability and low equivocality, whereas low task analyzability and high equivocality are typical of a conflictual approach to validation. It should be emphasized that, even though the deductive validation approach may be best suited to task situations involving high analyzability and low equivocality, in reality the group members may or may not adopt this approach. Similarly, the situations suitable for one of the other approaches, such as inductive, relative, negotiated, or conflictual, could be subjected to an inappropriate validation approach by a group.

The media richness requirements of the tasks vary depending upon the analyzability of the task and the equivocality of the information exposed in the problem solving process. That is, tasks situations involving high equivocality and low analyzability require high richness media (Daft & Lengel, 1986; McGrath & Hollingshead, 1993). Conversely, an impoverished (or low richness) media is well suited for tasks with low equivocality and high analyzability.
It should be obvious to note that the media richness requirements are highest for task situations involving conflictual validation, and they are the lowest for the deductive validation. In other words, the need for enhanced communication support is a function of the higher levels of difficulty in validating the truth matter of the group outcome. That is, a high rich medium of communication (face-to-face meetings along with other computer based process support tools) would be more critical to the successful performance of group tasks involving conflictual approach, as compared to inductive or relative approaches to validation. See Table 1.

Conclusion:A conceptualization of group work (problem solving or decision making) as an inquiry system allows to draw distinctions among various task situations. It was argued that the implicit or explicit approach, adopted by a group to validate group process outcome would be instrumental in determining the communication support features (i.e., media richness) of a GSS. The advantage of the task conceptualization presented in this paper is that it is applicable to tasks that are realistic and extend over a considerable period of time. An analysis of the task and the group in terms of the characteristics described in this paper can be useful in prescribing the right type of communication support for a group process.

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