

# **Toward a Theory of Group Technology Choice: Emergent Perceptions of Task-Technology Fit**

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## **Extended Abstract**

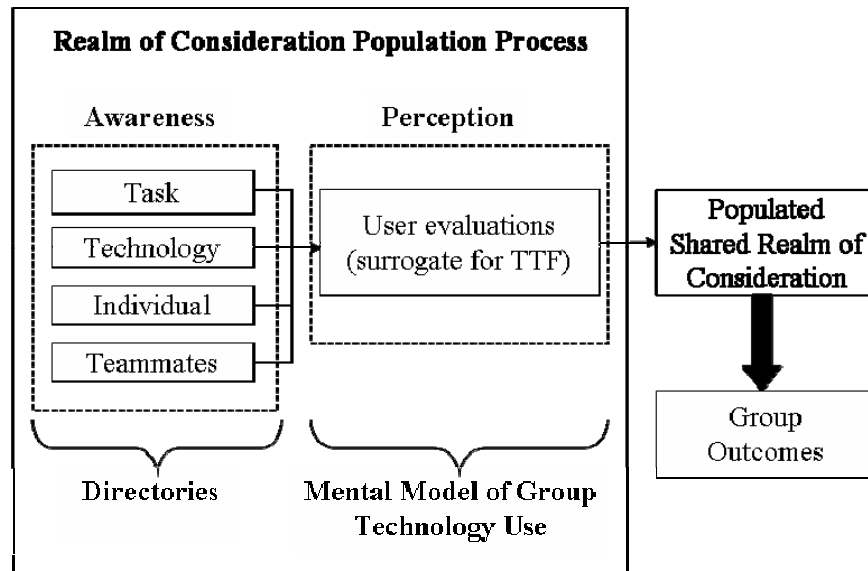
While a significant stream of research has examined individual technology adoption, considerably less effort has been focused on understanding how individuals negotiate technology choice in groups or teams. Previous work on group technology choice, such as task-technology fit (Zigurs and Buckland, 1998), has typically taken a deterministic perspective failing to substantively consider the impact of individual differences among team members in terms of experience, knowledge, and/or perceptions of the group's task and technology choices. We attempt to fill this gap in the literature by integrating the work on task-technology fit with the literature on mental models, shared mental models, and transactive memory.

It has been suggested that the work on individual mental models may provide a good starting point for examining the knowledge, understanding, and perspectives individuals bring to the group process (Massey et al., 1997). Further, work on shared mental models begins to describe the complex interrelationships among the individual mental models. As such, we explore literature on shared mental models, socially shared knowledge, and social cognition theory and derive five different knowledge domains which appear to be applicable to group technology choice: task, technology, self, team members, and team interaction.

Though each of these knowledge domains (task, technology, self, team members, and team interaction) relates strongly to mental models, the classification of types of knowledge (e.g., declarative and procedural) contained within each of them reveals problems with current conceptions of mental models. In order to account for these issues, we propose a distinction between mental models and directories. Directories contain information about the subject that can be known in isolation from other mental models. As such, the only type of knowledge that a user can store in directories is declarative knowledge. On the other hand, mental models contain information about the interaction between two or more subjects, about which individual knowledge would be contained in directories. Since it focuses on *interactions* between subjects, the knowledge contained in a mental model can be both declarative and procedural.

We argue that a user considering multiple technologies to accomplish a given task will have several different mental models of group technology use (one for each technology or functionality being considered), along with some judgment of fit from each of these models. These judgments of fit will populate what we refer to as the user's *realm of consideration*. A user's realm of consideration is a cognitive list of all technologies (or functionalities of those technologies) which the user perceives as being applicable to the scenario at hand (i.e., task and personnel).

Since individual mental models of group technology use will allow users to populate their realm of consideration, a transactive memory system (Wegner, 1987) comprised of individual mental models of group technology use will enable a *shared realm of consideration*, akin to Sarker, et al.'s (2005) concept of group valence. Since transactive memory systems require communication, and team members are more likely to discuss shared information than individual information (Dennis, 1996; Hollingshead, 1996), the shared realm of consideration will be comprised of the points of overlap between the individual realms of consideration of each member of a group (i.e., technologies or functionalities considered by more than one group member). Thus, we contend it is this shared realm of consideration from which team technology choices are made. Our theoretical model is shown below.



We focus on the relationship between the shared realm of consideration and group outcomes. Arguments are made concerning the value of cognitive diversity with regards to group outcomes (in terms of relational development and performance). Given these arguments, there appear to be three factors which are crucial to determining group outcomes: the size of the shared realm of consideration, the degree of heterogeneity of the shared realm of consideration, and the amount of time the group has been together. Our propositions are shown below.

***Proposition 1:*** *For zero-history teams, large and heterogeneous shared realms of consideration represent higher opportunity costs resulting in heightened individual cognitive loads and more extensive negotiation processes that negatively impact relational outcomes and performance.*

***Proposition 2:*** *Conversely, small and homogeneous shared realms of consideration represent relatively lower opportunity costs requiring less negotiation and result in more positive outcomes (both in terms of relational development and performance) for zero-history teams.*

***Proposition 3:*** *When discrepant events require new technology choices, teams with large and heterogeneous shared realms of consideration will be better able to develop new perceptions of task technology fit than those with small and homogeneous shared realms of consideration.*