

December 1996

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Recommended Citation

DeSanctis, Gerardine; Dickson, Gary; and Poole, Marshall, "The Dynamics of Teams and Technology: A Field Study of Groupware in a Network Organization" (1996). *ICIS 1996 Proceedings*. 31.

<http://aisel.aisnet.org/icis1996/31>

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THE DYNAMICS OF TEAMS AND TECHNOLOGY: A FIELD STUDY OF GROUPWARE IN A NETWORK ORGANIZATION

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Groupware technology, such as electronic communication systems, discussion databases, collaborative writing tools, and workflow applications, has been viewed by both scholars and practitioners as having the potential to facilitate productive teamwork and enable an organization's transition to the so-called network design. Networked organizations rely on multiparty cooperative relationships across structural and geographic boundaries, yielding dense, flexible communication patterns. Because groupware systems provide a platform on which teams can support their communication needs and shared work obligations, teams which use groupware should experience improved information exchange and fewer coordination problems than those that do not. Further, organizations that invest in groupware systems should make more rapid progress toward a network form than those that do not. The added value of groupware, relative to more primitive forms of communication support, should increase as team members become more facile in new technology use and modify their work practices to accommodate computer-mediated collaboration.

Large-scale, multimethod studies of groupware impacts are lacking, and so this study examined the coordination needs, practices, and technology uses of twenty work teams in each of four large business units of a global, Fortune 25 firm over a three-year period. Our data gathering methods included interviews, surveys, observation, and review of paper and electronic corporate documents. Our primary unit of analysis was the work team, but this was supplemented with data about individual team members and data about the organizational units in our study. Most data was drawn from team members, but unit managers, quality directors, technologists, and the Chief Information Officer also provided input to the study. In all, approximately 400 people participated in some aspect of this study over a three-year period.

Using propositions derived from writings about new organizational forms, an adaptive structuration theory view of groupware impacts, and empirical work on group structure and functioning, we derived key hypotheses such as the following:

- Groupware effects on teams will emerge over time, following greater experience and higher comfort with using the technology.
- Groupware systems should facilitate more fluid *team* structures, greater — and more horizontal — communication flow, and improved inter- and intra-team coordination.
- Effects of groupware on teams will, in time, impact *organizational* communication processes, in the form of greater — and more horizontal — communication flow, improved inter-unit communication, and higher perceived quality and efficiency of work.

Acknowledgments: The research was supported by National Science Foundation Award SES-9109167. The views expressed here are solely those of the authors and not of the research sponsors.

- More sophisticated groupware systems, such as discussion databases and workflow tools, will provide significantly more benefits to teams than simpler communication tools, such as electronic mail and bulletin board systems.
- Groupware use practices, including the degree of technology use, types of use, comfort with technology, and meaning of the technology, will vary depending on the team's structure and on the type of groupware used.

Our data analysis takes on three perspectives: (1) the impacts of team design factors on groupware uses and team communication and coordination processes (*team effects*); (2) variation in groupware impacts as a function of the types of systems teams use (*technology effects*); and (3) variation in groupware effects as a function of team, organizational, and technology use practices that occur over time (*time effects*). Major categories of variables in our study include group structure, technology type, organization structure, technology use, impacts on teams, and impacts on organizations. Our conference presentation will present the research model for this study, provide an overview of our measurement approach and data gathering methods, and review preliminary findings.