

Modeling the Social and Technical Processes of Interorganizational Information Integration

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Introduction

Integrating and sharing information in multi-organizational government settings involves complex interactions within social and technological contexts. These integration processes often involve new work processes and significant organizational change. They are also embedded in larger political and institutional environments, which shape their goals and circumscribe their choices. The purpose of this research is to develop and test dynamic models of information integration in these settings.

Understanding and supporting information integration is a multidisciplinary undertaking. The project therefore combines perspectives from organizational behavior, computer and information science, and political science. Two forms of modeling are being used: system dynamics modeling that emphasizes the temporal and feedback aspects of the process, and social process modeling that emphasizes the way collaboration and shared meanings are developed.

The research addresses three basic questions:

1. What are the critical factors and processes involved in integrating information across levels and agencies in government? In particular, how do IT and social factors interact to influence the effectiveness of interorganizational information integration?
2. How do the factors and processes vary for different types and degrees of integration?
3. Can the processes of integration be modeled in ways that improve understanding of information system development and of interorganizational collaboration? Do these models contribute to new theoretical insights for developing and implementing advanced information technology?

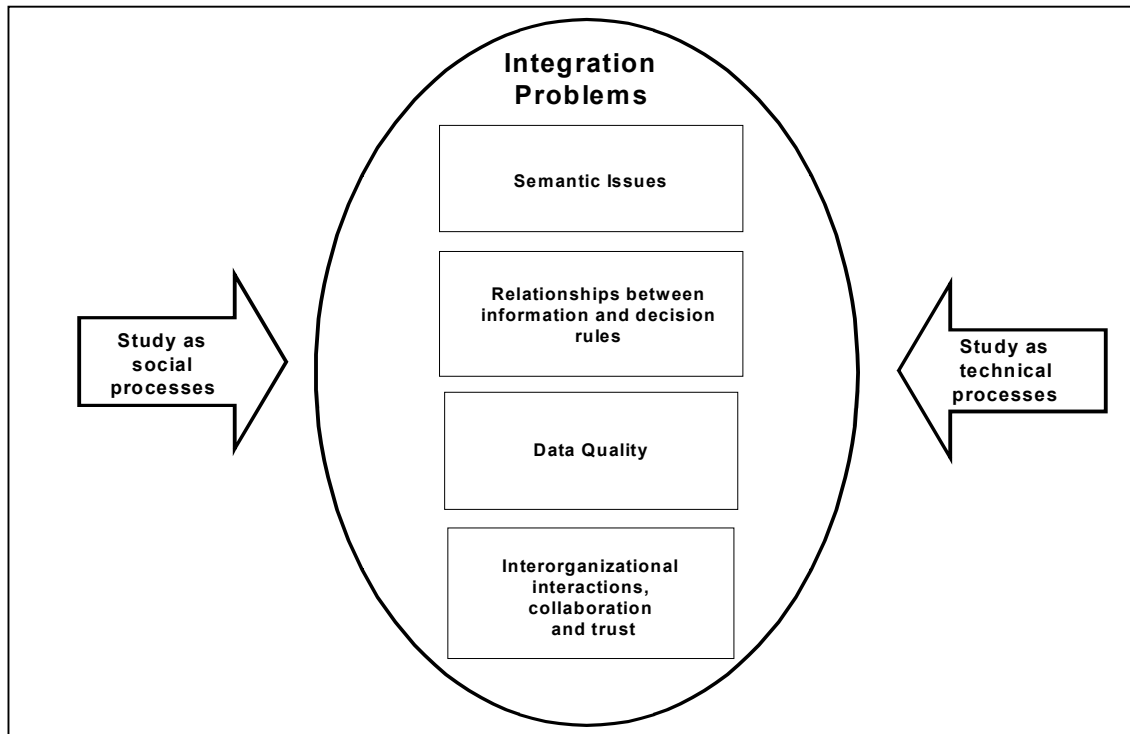
The two-year research program is concentrating on integration activities in two critical policy areas: justice and public health since they include a full range of functions across all three levels of government. These are also areas in which significant integration initiatives are underway and available for study. Federal and state government agencies are collaborating in the research, as are organizations of government professionals concerned with the role and use of information technology.

The research is being conducted in three overlapping phases. Phase one includes two intensive integration projects: one with the New York State Criminal Justice Community, which is comprised of the seven New York State criminal justice agencies, the New York State Unified Court System, and the New York State Office of Technology; and one with the New York State Department of Health and related agencies involved in integrating information about the 1999 West Nile Virus outbreak and planning for the reemergence in 2000. Phase two includes six field visits to other states to observe ongoing integration initiatives and to interview key actors. Phase three includes a survey designed to test the models of integration. Data is being collected throughout the three phases through individual and event observations, interviews, group decision conferences, and document analysis.

Digital Government Research Contribution

The research will improve the understanding of how information sharing and integration can best be enacted in the public sector. Multiple streams of analyses are well on their way to providing practical applications and new theoretical insights in support of this goal. More specifically, contributions include:

1. **Public sector governance of cross-agency information systems management** – Accomplishments to date include the development and implementation of a governance structure for integrated justice in the State of New York. The action research design implemented in this project has produced valuable lessons learned on the process of developing a sustainable interorganizational collaboration model capable of effective cross-agency decision-making.



2. **Benchmark for implementing multiple analytical strategies** – The successful implementation of an interdisciplinary theoretical framework has resulted in preliminary systems dynamics modeling and communication theory development. The application of multidisciplinary analyses is producing extremely rich and insightful results. This framework can serve as guide for future digital government research.
3. **Dynamic modeling of a collaborative effort** – The systems dynamics group model building effort is creating a theory of interorganizational collaboration for information integration. In particular, the modeling effort is improving understanding of the dynamics of the emergence of governance structures for information integration across governmental agencies. The outcome of the modeling exercises is also yielding a set of feedback-rich archetypes that can be used as practical heuristics for groups of people interested in the design and development of collaborative processes.
4. **Interaction of social processes and technical artifacts** – Preliminary analysis from the New York case studies is improving the understanding of the significant impact political and institutional environments have on information integration. Agency culture, leadership style, organizational structures, and past relationships are just a few of the factors that are emerging as key social variables that interact in the development of interorganizational technical artifacts.
5. **Contributing to the National Science Foundation's Information Technology Research Program objective** - to "enable research and education in multidisciplinary areas, focusing on emerging opportunities at the interfaces between information technology and other disciplines."