Chapter 4
Strategic Overhaul of Government Operations:
Situated Action Analysis of Socio-Technical Innovation in the Public Sector

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ABSTRACT

Field operations in municipal governments have undergone fundamental adjustments. This empirical study investigated the ramifications of the strategic shift in government field operations when mobile information and communication technologies (ICTs) were introduced for field crews in a multiyear process. The implementation had to overcome several serious socio-technical challenges. The data were collected using cognitive work analysis (CWA) and interpreted from a structurationist perspective. The study filled an important methodological gap: While structuration theory (ST) has been criticized for its paucity of guidance for empirical research, CWA has been denounced for its deterministic engineering approach to social systems. However, the subordination of the micro-meso-level CWA framework into the grand theory of ST resulted in an approach referred to as situated action analysis, which was found particularly useful for elucidating the observed feedbacks between human agency, the shaping of the information (technology) artifact, and the organizational structure.

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INTRODUCTION

Like private-sector organizations, governments of the 21st century systematically pursue productivity gains, process streamlining, logistics optimization, and improved asset management. For example, as an early adopter, the City of Seattle experimented with mobile technology in its various guises beginning in the late 1990s. The City's public utilities (Seattle Public Utilities/SPU) embarked on a mobile pilot project in its field operations in 2003 with the intention of exploring the innovation potential of the most recent mobile and wireless technologies. The motivation was to study the effects of this particular innovation project in public-sector field operations, since those had not been systematically studied before, and the benefits of mobile technology use in public utilities field operations were not clear. A particular interest was directed toward understanding the role and effectiveness of the IT[1] artifact in these organizational and social transformation processes. In this project, huge productivity gains in field operations were documented along with improved asset and resource management as intended outcomes; however, also undesired side effects were witnessed in the transition and transformation, which were neither foreseen nor expected.

For studying the project in its various dimensions, the analytical framework known as *Cognitive Work Analysis* (CWA) was used (Fidel & Pejtersen, 2002; Rasmussen, 1986; Rasmussen, Pejtersen, & Goodstein, 1994; Rasmussen, Pejtersen, & Schmidt, 1990; Vicente, 1999), which has successfully been used in information system evaluation before (Fidel & Pejtersen, 2004). The framework is geared towards abstracting and delayering the rich context of a work domain under study by systematically observing and describing in detail what human actors in a specific domain do, what information they might need when they have to make decisions, and why they might act and decide as they do. CWA uses seven analytical layers for delayering organizational complexity. For understanding the organizational and socio-technical processes, the rich data were assessed and interpreted from a structurationist perspective (Giddens, 1984). In particular, the analysis of the structuring processes were a main focus as the system of interaction and the duality of structure, that is, the generative rules and resources (Bryant & Jary, 1991), at SPU's field operations upon introduction of mobile systems for crews and crew chiefs. As found in the process, the layered approach was of great utility in the structuration-oriented analysis.

This paper describes the mobile innovation project at SPU across multiple field cases. It has three aims: