The Fully Mobile City Government Project (MCity)

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ABSTRACT
The Fully Mobile City Government Project, also known as MCity, is an interdisciplinary research project on the premises, requirements, and effects of fully mobile, wirelessly connected applications (FMWC). The project will develop an analytical framework for interpreting the interaction and interdependence between main organizational variables and work context.

Categories and Subject Descriptors
H.1.2 [Information Systems]: Models and Principles – user/machine systems.

General Terms
Management, Performance, Design, Economics, Human Factors.

Keywords

1. INTRODUCTION
Digital government holds the promise of agile, lean, accountable, and citizen-centric government operations, which are responsive, fast, effective, efficient, and sufficiently integrated [1-6]. Within this context of digital government, mobile government, as some refer to the use of mobile devices and applications over wireless networks for integrated voice/data communications and transactions, opens new dimensions to and avenues towards that vision. In this vein, fully mobile wireless connected (FMWC) applications are being examined and tested by governments for their potential in giving government field operations an unprecedented quality of immediacy in accessing information needed for critical ad-hoc decision making. Many FMWC applications are also sensitive to the ambience and to the needs of a specific individual worker. The potential utility and efficacy of these applications might significantly help advance the Digital Government (DG) agenda. Since major variables of the organizational and work context are immediately impacted, the introduction of new base technologies is highly risky. By developing an analytical and formative model, this research intends to contribute to the understanding of critical interdependencies and interactions between important variables.

2. THE MCity PROJECT
2.1 Background
This project is being conducted with the support of the City of Seattle Public Utilities (SPU). The City of Seattle was one of the earliest adopters of DG concepts and has developed into a nationally recognized role model for innovative DG practices [7-9]. With the advent of sufficiently robust mobile Information and Communication Technology (ICT), the City began deploying and using mobile applications in its field operations. SPU was among the early adopters of first generation (1G) FMWC applications in its Water Operations group, where fieldworker crews were equipped with FMWC-enabled ruggedized laptops, cellular data phones, and Personal Digital Assistants (PDAs). Since the introduction of 1G-FMWC applications to the SPU Water Operations field crews, in 2002, numerous measured and intangible benefits have been accounted for – such as cost reductions, productivity increases, work process streamlining, increase of data integrity and quality, increased customer satisfaction, and reduced number of task delays among others [10]. These benefits are encouraging but SPU as well as City of Seattle ICT management, have become keenly aware of the multiple serious challenges when moving from a single-unit, small scale, and incremental pilot towards a multiple-agency, City-wide, ambience-specific deployment of FMWC applications with streamlined and enhanced backend interoperability as well as redesigned work processes in field operations. This study will address these challenges.

2.2 Proposed Research
Through field studies, observation and interviews at the SPU we will iteratively develop a formative model representing the constraints, interactions, and interdependencies of the studied fieldwork domains and their contexts, in which FMWC applications are either already in use or are under consideration for use. Based on this work- and task-anchored model, we will develop the requirements and characteristics of FMWC devices and applications. Finally, we will analyze and specify the organizational, social, individual, and technological impacts of FMWC applications for various fieldwork types.

3. PROJECT OUTLINE
This project is divided into three primary task areas; Task I: preparing the research team and development of the initial model; Task II: expansion and refinement of the initial model; and Task III: completion of the model and evaluation. A timeline of three years has been scheduled to conduct the project.
3.1 Task I: Prepare Research Staff and Develop Initial Model

We are currently in the beginning stages of the research. Over the course of the coming stages we will be reviewing the literature pertaining to subject areas relevant to the project. This will include FMWC applications and uses as well as literature relating to the information behavior of fieldworkers.

The SPU fieldworker population and different fieldwork types will be analyzed to determine potential participants based along previously determined selection criteria. A survey will be conducted and participants for the first round of the study will be chosen based on information obtained.

Five to seven initial cases will be observed and analyzed. Participants will undergo an entry interview. Data then collected through observation and analysis will be used to develop the initial model for the study. This stage will end with exit interviews of the participants.

3.2 Task II: Expand and Refine Models

Data will be collected from 25 additional fieldwork cases. This data will be analyzed and the findings integrated into the model. At this point we will have more than 30 cases in hand and expect general patterns of SPU fieldwork and specific FMWC requirements to emerge from the data.

3.3 Task III: Finalize and Evaluate Model

We will collect data on an additional 18 fieldwork cases. Again, we will analyze them and integrate the data into the model. The model will then be based on 50 fieldwork cases and we expect to be able to verify/falsify the patterns observed during earlier tasks. In addition, we will develop an evaluation framework for assessing the findings of the final model and exposure the model to peer and practitioner scrutiny.

4. INTELLECTUAL MERIT

This project has the capacity to break new ground in the following areas: (1) With the fieldwork domain-centered approach, we go beyond specifying the factors influencing the organizational outcomes of FMWC application uses as much research has done so far, and determine the effects of their interactions and interdependencies within a formative framework. (2) With the formative framework we increase the explanatory power of the structuration perspective on ICT as introduced by Orlikowski & Robey [11]. (3) We further define the requirements for FMWC applications and workflows as well as the policy choices available to decision-makers in DG. In this regard, the proposed research contributes significantly to the understanding of the elements and processes leading to the organizational success of FMWC applications in DG, and provides a mechanism for the evaluation of such technology.

5. BROADER IMPACTS

This research will help define the strategic choices and avoid costly failures, when adopting FMWC applications in DG. It will inform both academics and practitioners about the organizational prerequisites, consequences, and the specific requirements regarding FMWC technology. The potential utility of the expected findings, however, are not limited to government. They may be highly informative to other environments.

6. ACKNOWLEDGMENTS

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7. REFERENCES