

A Framework for Analyzing Cross-Boundary e-Government Projects: The CapWIN Example

CHRISTINE B. WILLIAMS
Bentley College
Department of Behavioral and
Political Sciences
cwilliams@bentley.edu

JANE FEDOROWICZ
Bentley College
Departments of Accountancy and
Computer Information Systems
jfedorowicz@bentley.edu

1. INTRODUCTION

E-government has been a major beneficiary of Internet-enabled interorganizational systems (hereafter, IOS). IOS permit participating partners to share information and coordinate processes to achieve efficiencies in existing operations as well as to support new and more effective processes. These benefits do not come easily, given the challenges of coordinating IOS design and implementation. Moreover, the size and complexity of the federalist U.S. government tends to exacerbate the challenges of collaboration. The success of an IOS depends upon more than the ability of participating organizations and agencies to implement a good technology solution, although this is clearly a key factor in such a project. IOS designers, sponsors and participants also must take into consideration a number of environmental and organizational factors. In this paper, we propose a framework to describe the environmental, organizational and project specific factors that contribute to the success of an IOS. We illustrate this framework by describing a specific e-government IOS project, CapWIN.

2. FRAMEWORK

Our framework posits that outcomes of interorganizational e-government collaborations are generated by three sets of factors: those found at the level of analysis of the environment, the organization, and the IOS itself. Each **level** includes several **categories** of variables, which themselves have multiple indicators designated herein as **factors** or **properties**. While these categories of variables can apply to every governmental collaboration, the number and combination of factors or properties that are relevant and important depends upon the particular project or initiative. Each level will affect IOS success, or more generally, cross-boundary collaboration outcomes. In our model, outcomes include the actual adoption and use of the IOS, as well as measures of the effects or impacts of the IOS on the participating organizations. For purposes of this paper, we focus our remaining discussion on explicating the levels and categories that comprise the independent variables within our model. A complete description of the model is available from the authors.

The **Environment** level refers to all external influences on the interorganizational collaboration. There are three different categories of external influences on e-government initiatives: those that come from the political arena, those related to the economy or representing economic forces, and critical events, of either human design and intervention or natural causes, whether planned or unexpected. The **Organization** level refers to all categories of influence that derive from the respective participating government agencies. The focus of study may be on only one organization (at a time), such as a particular government agency, vendor or client/customer, or on the interaction between that participating organization and one or more others, in other words their interrelationship. The **IOS level** refers to the interorganizational collaboration or project itself. We define the IOS level broadly because the adoption, use and effects of an interorganizational collaboration depend on more than the technology and support systems that surround it. IT projects require and create new or significantly changed business processes within and between or among partner organizations. They also require and create rules, policies, controls and protocols that shape perceptions about, and thereby determine, its adoption and actual use/s, which we delineate in the category "confidence." Finally, an IT project typically has significant costs, benefits and risks attached to it. How these are distributed and shared will affect such things as the scope of the project or implementation, the product and features selected, the identity, number and mix of participants, as well as their levels of participation. To illustrate the factors or properties representing the various categories under each level in our framework, we turn to the CapWIN e-government initiative.

3. FIRST RESPONDER CASE

Findings from our ongoing longitudinal case study of a Washington, D.C.-area first responder network initiative, the Capitol Wireless Integrated Network (hereafter, CapWIN) serve to illustrate our framework. The CapWIN project is a partnership between the States of Maryland and Virginia, the District of Columbia and the federal government (US Department of Transportation and US Department of Justice) to develop an integrated transportation and criminal justice information wireless network. At full implementation, this project will integrate transportation and public safety data and voice communication systems, and will be the first multi-state transportation and public safety integrated wireless network in the United States.

4. CapWIN ILLUSTRATIONS OF THE FRAMEWORK ELEMENTS

The **Environment** is both a *critical catalyst* for, and shaper of, the CapWIN initiative. Initial planning was precipitated by an incident on the Woodrow Wilson Bridge on November 4, 1998. A man threatening to jump caused an enormous traffic tie up because the myriad of responding agencies and jurisdictions could not communicate with each other to coordinate and manage their activities. The September 11th attack on the Pentagon provided further impetus for the project by shaping the President's Homeland Security agenda, thereby reordering *economic priorities* and their *funding*, which in turn were reflected in other *federal agencies' mandates*. In the design stage, *federal laws* such as the Freedom of Information Act (FOIA) and Government Performance and Results Act (GPRA) would shape project requirements, and *state and local laws or regulations* of the Maryland and Virginia state legislatures, and the District of Columbia's City Council would affect implementation steps such as contract approvals or funding authorizations.

At the **Organization** level, CapWIN is a complex consortium of participants and sponsors representing multiple federal, state and local jurisdictions and functional areas within them: criminal justice (police), public safety (fire, EMT, hazardous materials), and highway/transportation. Layered into our framework for the CapWIN project collaboration are the *strategic objectives, budget, technology, and operations* of each of the participating and sponsoring organizations. CapWIN emerged concurrently with other agencies' initiatives, namely the Department of Transportation and the National Institute of Justice, whose similar technology needs, data resources and project objectives, made them obvious collaborators, and later, partners/sponsors. *IT readiness factors* varied across participating organizations, creating major integration problems for each. Indeed, these considerations dictated selection of the criminal justice application and police incident management and messaging functionality for phase 1 of CapWIN's design, testing and implementation.

All categories of the **IOS** level came into play as CapWIN moved forward with design and implementation decisions. Project objectives, together with the logistics of the planned geographic distribution and its physical attributes (e.g, terrain) led to the decision to use mobile, wireless *technology* with CapWIN providing an Internet hosted "communications bridge." Given the participants' investment in legacy systems, CapWIN's *application software* would have to run side by side (in a "sidecar") with *interface integration* accomplished by a transformation server that would convert to and from Justice's XML. *Confidence* in the system was addressed by assigning to each participating organization responsibility for creating the protocols, the input of user authorization and access codes/information, and adjudication of complaints or disciplinary action necessitated by any misuse or abuse of the system. In the

project planning and design stages, CapWIN benefited from the *leadership* of important political figures such as Senator Allen of Virginia, and project champions like Chiefs Samarra (Alexandria Police) and Plaughter (Arlington Fire) and project director George Ake. The *relationships* within this Organization could not have been achieved at all had not participating agencies and jurisdictions come to agreement in "The Clarksburg Accord" on the sharing of criminal data base records and resources. Their participation is governed by an Interstate Compact Agreement with operational oversight and administration under the control of the Center for Advanced Transportation Technology and the University of Maryland (UMD-CATT). CapWIN exists as a physical entity with the accoutrements of an office space, staff, and *governance structure* headed by an Executive Leadership Group.

5. CONCLUSION

We present a framework comprising levels of factors affecting the outcome of cross-boundary e-government projects. Using our framework, scholars will be able to identify and assess which factors from each level influence the success of individual e-government collaboration projects from the viewpoint of each participating organization as well as from the perspective of the IOS itself. Comparison across multiple projects will reveal elements they have in common, and these should be contrasted with those for private sector projects to understand the special challenges and advantages inherent in government-to-government and government-to-nongovernment collaborations. From this accumulated and shared knowledge, we propose to build a template for best practice.

The success of a collaboration is not simply a function of the quality and reliability of the project technology's capabilities and features. How agencies and their employees perceive and understand the value and operation of a system will affect the extent and nature of its use. In other words, optimal performance requires alignment between categories of factors within the Organization level and those within the IOS itself. The framework can be used to map those interdependencies and show how the individual factors in each level may influence the success of a particular technology solution's design. If we overlay or compare the IOS level factors with those for participating organizations, it should be easier to see where elements of the IT design match (or conflict) with respect to particular categories such as budget or operations. For example, are there redundant systems or processes that are inefficient or adding cost in excess of benefits? In the CapWIN case the incident management system operates alongside existing information systems, but is only used for cross-jurisdictional emergencies. It also takes up physical space in the vehicle and requires hands on operation, both of which work in police car applications but not fire trucks. Thus, we reiterate the value of this framework in being able to identify and predict the significance of issues at the design and planning stage, to prevent the need to fix problems upon implementation.

6. ACKNOWLEDGMENTS

This research was conducted as part of the Bentley College Invision Project, with Jane Fedorowicz, Principal Investigator See www.bentleyinvision.org. We thank George Ake and many others at CapWIN for their time and assistance.